



# CCB<sub>30</sub> - UdM<sub>2023</sub>



Comité Camerounais des Biosciences (CCB)

## 30<sup>ème</sup> Conférence Annuelle

Thème:

**Biosciences et bien-être de la communauté:  
plus de 30 ans du CCB au service des Sciences  
du Développement et de l'Innovation**

**Université des Montagnes  
DU 28 Novembre au 02 Décembre 2023**



Edited by: MEUTCHIEYE Félix

Co-edited by: DOMNGANG N. Christelle, FOTSING K. Pierre René & TONJOCK Rosemary

# BIOSCIENCE ET BIEN-ETRE DE LA COMMUNAUTE : PLUS DE 30 ANS DU CCB AU SERVICE DES SCIENCES DU DEVELOPPMENT ET DE L'INNOVATION

## *BIOSCIENCE AND COMMUNITY WELL-BEING: OVER 30 YEARS OF CBS SERVING DEVELOPMENTAL AND INNOVATION SCIENCES*

### Date

28<sup>th</sup> November to 02<sup>nd</sup> December 2023

### Venue

Université des Montagnes (UdM), Bangangté, Cameroon

### Organizers

- Cameroon Biosciences Society (CBS)
- Université des Montagnes (UdM)

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MEUTCHIEYE Félix

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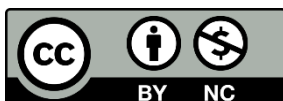
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## GENERAL PROGRAMME

<b>Tuesday, 28 November 2023: Preconference Workshop</b>			
08:00-09:00	Registration of participants	11:00-13:00	Workshop
09:00-10:30	Workshop	13:00-14:00	Lunch
10:30-11:00	Coffee/Tee Break	14:00-16h30	Workshop
<b>Wednesday, 29 November 2023: Preconference Workshop</b>			
08:00-09:00	Reflections on Day 1	11:00-13:00	Workshop
09:00-10:30	Workshop	13:00-14:00	Lunch
10:30-11:00	Coffee/Tea Break	14:00-16h30	Workshop
<b>Thursday, 30 November 2023: Conference</b>			
08:00-10:30	Registration of participants	12 :35-13 :15	Visit of the exhibition stands
10 :30-11 :00	Opening Ceremony	13 15-14 :00	Break/Lunch
11 :00-11 :45	Inaugural Lecture	14 :00-16 :30	Panel discussion
11 :45-12 :30	Inaugural Lecture 2/ Keynote talk	16 :30-17 :00	Communication from academic and entrepreneurial partners
12 :30-12 :35	Award and Photo	17 :00-17 :30	Tea, Coffee and Networking
<b>Friday, 01 December 2023</b>			
08 :00-09 :30	Plenary talks 1 and 2	14 :00-15:30	Oral session 3
09 :30-10 :00	Poster session 1 and Coffee/Tea Break	15:30-16 :30	Poster session 2 and Coffee/Tea Break
10 :00-13 :00	Oral sessions 1 and 2	16:30-17 :30	Oral session 4
13:00-14:00	Lunch	18:30-20:30	Conference dinner
<b>Saturday, 02 December 2023</b>			
08 :00-09 :30	Oral session 5	11 :30-13 :30	Nomination and Closing ceremony
09 :30-10 :00	Poster session 3 and Coffee/Tea Break	13 :30-14 :30	Closing Cocktail
10 :00-11 :30	My thesis in 180s	14:30-16:30	Touristic tour (Museum of the Bamoun Sultanate in Foumban)
16:30	End of the CBS30 - Udm 2023 Conference		

## PROGRAMME

Thursday, November 30, 2023

Venue: Esplanade Udm-CAMPUS, BANEKANE

### 11:00-12:30: OPENING LECTURES

**Chair:** Prof MOUNDIPA FEWOU Paul

**Co-Chairs:** Prof. DOMNGANG Christelle

**Secretary:** Prof. EFFA ONOMO Pierre

➤ **Inaugural Lecture:**

Prof KOM Ambroise, Professeur émérite des universités

*“Les défis de l'heure du Développement de la recherche dans l'enseignement Supérieur, une vue holistique”*

➤ **Keynote Lecture:**

Pr OBEN Julius, President and Co-Founder, J&A Oben Foundation

*“Bioscience and well-being: 30 years of adaptation and rebranding”*

### 14:00-16:30 PANEL DISCUSSION

**Chair:** Prof AWONO ONANA Charles

**Co-Chair:** Prof. EWANE Cécile

**Secretary:** Prof. EFFA ONOMO Pierre

➤ **Lecture (25 min)**

Prof. MOUNDIPA FEWOU Paul, Professeur titulaire de Biochimie

*35 years of live of the Cameroon Bioscience Society (CBS)*

➤ **Open discussion on Biosciences: Past and Future (1h20 min)**

- Prof. Jeanne NGOGANG
- Prof. Denis OMOKOLO
- Prof. Paul MOUNDIPA
- Prof. Julius OBEN
- Prof. Elias NUKENINE
- Prof. Nicolas NIEMENAK
- Prof. Téléspore NGUELEFACK

➤ **Communication From Academic & Entrepreneurial Partners**

- Cameroon Journal of Biological Sciences (CAMJOURNAL) (10 min)
- INQABA BIOTEC (5 min)

Friday, December 1<sup>st</sup>, 2023

ROOM A 103

PLENARY LECTURES

<b>Chair:</b> Prof. NGUELEFACK Télesphore <b>Secretary :</b> Dr OWONA Brice / Dr YIMTA FOUTSE	
8 :00- 9 :30	<b>PLENARY TALK 1:</b> Nicolas Yanou NJINTANG, <i>Professor</i> Creuset de Lean innovation numérique en Afrique centrale (Clinac) : Plateforme de formation en ligne conciliant Science et entrepreneuriat  <b>PLENARY TALK 2:</b> Bopda Waffo Alain, <i>Associate Professor</i> Qubevirus display system for functionality mapping and a biosensor toolkit.

PARALLEL SESSION 1

ROOM I: MEDICINAL PLANTS, NATURAL SUBSTANCES AND BIOACTIVITY (MNSB)

<b>Chair :</b> Prof. SOPBUE Emmanuel <b>Co-Chair :</b> Prof. BILANDA Claude	
10 :00- 10 :15	<b>OCBS-MNSB01</b> <b>Chemical constituents and biological activity from rhizomes of <i>Dryopteris kirbi</i> (Dryopteridaceae)</b> Matchide T. Marie Germaine <sup>1,2*</sup> , Saw Yu Yu Hnin <sup>2</sup> , Yves M. Mba Nguekeu <sup>1,2</sup> , Elodie Gaële Matheuda <sup>1</sup> , Josker Nghokeng <sup>1,2</sup> , Gaetan T. Tabakam <sup>1,2</sup> , Silvère Augustin Ngouela <sup>1</sup> , Yuan-E Lee <sup>1</sup> , Mathieu Tene <sup>1</sup> , Hiroyuki Morita <sup>2</sup> Maurice Ducret, Awouafack <sup>1,2</sup>
10 :15- 10 :30	<b>OCBS-MNSB02</b> <b>Chemical investigation of two Cameroonian medicinal plants: <i>Tristemma mauritianum</i> (Melastomataceae) and <i>Cassia siamea</i> (Fabaceae)</b> Christabel Mundzi Tantoh <sup>2</sup> , Soh Desire <sup>1</sup> , Bankeu Kezetas Jean Jules <sup>2</sup>
10 :30- 10 :45	<b>OCBS-MNSB03</b> <b>Synthetic Coumarin Derivatives: Synthesis, Characterisation and Antimicrobial Activity</b> Eunice N. Tiakouang <sup>1</sup> , Monique B. Ewonkem <sup>1*</sup> Pascaline M. Deussom <sup>1</sup> , Michel A. Mbock <sup>2</sup> , Emmanuel H. Ngeufa <sup>1</sup> , Alfred F. A. Toze <sup>1</sup> , Duplex J. Wansi <sup>1</sup>
10 :45- 11 :00	<b>OCBS-MNSB04</b> <b>Preventive Potential of the Aqueous Extract of the Mixture of <i>Bidens pilosa</i> (Asteraceae) and <i>Cymbopogon citratus</i> (Poaceae) Aerial Parts on Hypertension Induced by a Chronic Salt and Alcohol Consumption on the Rats</b> Tcheutchoua Y.C*, Bilanda D.C, Owona P, Fifen R, Kengne S, Bidingha R, Kahou R, Dzeufiet D.P.D, Kamtchouing P.
11 :00- 11 :15	<b>OCBS-MNSB05</b> <b>Formulation de gélules à visée antipaludéenne à base de graines de <i>picralima nitida</i> (stapf) t. durand &amp; h. durand (apocynaceae)</b> Ndjafang Jatsa Kevin Mike <sup>1</sup> ; Kanmogne Dayo Lydie Carole <sup>1</sup> ; Djoko Ernest <sup>1</sup> ; Woussidjewe Denis <sup>2</sup>
11 :15- 11 :30	<b>OCBS-MNSB06</b> <b>Antidiabetic activity and safety evaluation of antidiabetic “teas” from selected Cameroonian medicinal plants (<i>Magnifera indica</i>, <i>Persea americana</i>, <i>Senna alata</i>, <i>Ageratum conyzoides</i>)</b> Golda Lum Shu <sup>1,2*</sup> , Denis Zofou <sup>1,2</sup> , Emmanuella Ekuri Matumaboh <sup>1,2</sup> , Ngatunu Sandrine Asaba <sup>1</sup> , Achidi Aduni Ufuan <sup>2</sup> , Josepha Foba-Tendo <sup>3</sup>

ROOM II: HEALTH, ZONOSIS, EMERGING AND RE-EMERGING DISEASES, CHRONIC NON-COMMUNICABLE DISEASES (HZEC)

<b>Chair :</b> Prof. WATCHO Pierre <b>Co Chair :</b> Dr TASSE	
10 :00- 10 :15	<b>OCBS-HZEC01</b>

	<p><b>Relationship between obesity and hypertension using different measures of adiposity amongst adults in the Bamenda Health District.</b></p> <p>Loveline Lum Niba<sup>1</sup>, Lifoter Kenneth Navti<sup>2</sup> Ahmadou Jingi Musa<sup>3</sup></p>
10 :15- 10 :30	<p><b>OCBS-HZEC02</b></p> <p><b>Biofilm Formation Ability, Virulence Factors Analysis and Antibiotic Resistance Profile of Three <i>Staphylococcus</i> spp. Isolates from Urine and Synergistic Effects of Combination of Bioactive Natural Products with Currents Antibiotics.</b></p> <p>Ulrich Joël Tsopmene<sup>1</sup>, Jean Paul Dzoyem<sup>1*</sup></p>
10 :30- 10 :45	<p><b>OCBS-HZEC03</b></p> <p><b>Heterogeneity in the distribution of soil-transmitted helminth (STH) infections: contribution of adult in their transmission in the Akonolinga Health District, Centre Region, Cameroon</b></p> <p>Antonia Foka-Sindze<sup>1,2,*</sup>, Laurentine Sumo<sup>2,3</sup>, Flobert Njiokou<sup>1</sup>, Joseph Kamgno<sup>2,4</sup>, Hugues C. Nana-Djeunga<sup>2</sup></p>
10 :45- 11 :00	<p><b>OCBS-HZEC04</b></p> <p><b>Relationship between obesity and hypertension using different measures of adiposity amongst adults in the Bamenda Health District.</b></p> <p>Loveline Lum Niba<sup>1</sup>, Lifoter Kenneth Navti<sup>2</sup> Ahmadou Jingi Musa<sup>3</sup></p>
11 :00- 11 :15	<p><b>OCBS-HZEC05</b></p> <p><b>Biological Profile of Hepatic Lesions Induced by Analgesics and Antibiotics in Outpatients at the Yaoundé General Hospital.</b></p> <p>Foagui Fossouo B<sup>1</sup>, Fotsing Kwetche PR<sup>1</sup>, Talla Paul<sup>2</sup>, Chuisseu Djamen DP<sup>1</sup></p>
11 :15- 11 :30	<p><b>OCBS-HZEC06</b></p> <p><b>Tackling Bacteria Resistance in farms: Focus on Fluoroquinolones, Beta-lactams and Cyclines in poultry farms of the Bamboutos Division, West-Cameroon</b></p> <p>Léticia Saurelle Mbognou<sup>1,2</sup>, Blandine Pulcherie Tamatcho Kweyang<sup>3</sup>, O’Neal Dorsel Youté<sup>1,2</sup>, Anselme Michel Yawat Djogang<sup>1,4</sup>, Pierre René Fotsing Kwetché<sup>1,2,4</sup></p>

### ROOM III: ENVIRONEMENTAL QUALITY OF LIFE AND CLIMATE CHANGE (EQCC)

<p>Chair: Prof. TONJOCK Rosemary Co-Chair: Prof. FOTSING Pierre</p>	
10 :00- 10 :15	<p><b>OCBS-EQCC01</b></p> <p><b>Contribution des agroforêts cacaoyers et caféiers des savanes humides camerounaises dans la régulation du climat.</b></p> <p>Eric Cantona Ndonmou<sup>1</sup>, Christopher Mubeteneh Tankou<sup>1</sup>, Junior Baudoin Wouokoue Taffo<sup>3</sup>, Marie Louise Avana Tientcheu<sup>1</sup>, Romuald Duplex Djeuni<sup>1</sup>, Christian Hervé Sime Siohdjie<sup>4</sup></p>
10 :15- 10 :30	<p><b>OCBS-EQCC02</b></p> <p><b>Non-coffee plants species biodiversity and their ecological status in Robusta Coffee Agrosystems in Noun Division (Western Cameroon)</b></p> <p>Baleba<sup>1,2</sup> L., Mahob<sup>3*</sup> R. J, Moumbagna Mboutngam<sup>3</sup> M., Koga<sup>3</sup> Mang’dobara, Mbenoun<sup>3</sup> Massé P.S., And Mvondo Awono<sup>2</sup> J.P.</p>
10 :30- 10 :45	<p><b>OCBS-EQCC03</b></p> <p><b>Variations des stades preimaginaux des <i>culicidae</i> dans une zone marécageuse de la ville de Yaoundé (Cameroun).</b></p> <p>Biyong Crescence Christelle, Ajeegah Gidéon Aghaïndum.</p>
10 :45- 11 :00	<p><b>OCBS-EQCC04</b></p> <p><b>Characteristics and peasant perceptions of climate change in an equatorial climate with bimodal rainfall: the case of Lekié (Center-Cameroon)</b></p> <p>Dsonkouet Talonfo Williams*, Sagne Moumbe Joël Et Meli Fokeng Reeves.</p>
11 :00- 11 :15	<p><b>OCBS-EQCC05</b></p>

	<p><b>Diversité génétique des abeilles sans dard du genre <i>Meliponula</i> sur les hauts plateaux de l'ouest et la zone forestière à pluviométrie bimodale du Cameroun</b></p> <p>Nansong S G<sup>1</sup> ; Guedia T U<sup>2</sup> ; Gouffo J P<sup>3</sup> ; Meutchieye F<sup>1*</sup></p>
11 :15- 11 :30	<p><b>OCBS-EQCC06</b></p> <p><b>Diversité génétique des abeilles sans dard du genre <i>Dactylurina</i> dans les zones agro-écologiques des hautes terres de l'ouest et la zone forestière à pluviométrie bimodale de l'est Cameroun.</b></p> <p>Guedia T U<sup>1</sup>, Nansong G S<sup>2</sup>, Gouffo J P<sup>3</sup>, Mingoas K J P<sup>1</sup>, Meutchieye F<sup>2</sup></p>
11 :15- 11 :30	<p><b>OCBS-EQCC07</b></p> <p><b>Impact of altitude on spring macroinvertebrates and water quality in South West region of Cameroon</b></p> <p>Sylvie Belengfe Chinche<sup>1*</sup>, Christophe Piscart<sup>2</sup>, Pascale Mbanga Medjo<sup>3</sup> Serge Hubert Zebaze Togouet<sup>3</sup></p>

#### ROOM IV: AGRO-ECOSYSTEM AND FOOD (AGEF)

<p><b>Chair : Prof. MBOUOPDA Hermann</b> <b>Co Chair : Dr SOPPI</b></p>	
10 :00- 10 :15	<p><b>OCBS-AGEF01</b></p> <p><b>Variabilité phénotypique des populations de <i>Clarias jaensis</i> au Cameroun</b></p> <p>Djouatsa T J<sup>1</sup> ; Zango P<sup>2</sup> ; Nana T A<sup>3</sup> ; Wikondi J<sup>4</sup> ; Efole E T<sup>3</sup> ; Meutchieye F<sup>1</sup>.</p>
10 :15- 10 :30	<p><b>OCBS-AGEF02</b></p> <p><b>Diversité des insectes floricoles et son impact sur les rendements fruitiers et grainiers de <i>Arachis hypogaea</i> Linnaeus 1753 variété 28 - 206 (Fabaceae) à Ndogbong (Douala, Cameroun)</b></p> <p>Obono Philène Lydia<sup>1</sup>, Pharaon Mbianda Auguste<sup>*2</sup>, Akono Ntonga Patrick<sup>3</sup></p>
10 :30- 10 :45	<p><b>OCBS-AGEF03)</b></p> <p><b>Butinage des fleurs de <i>Solanum lycopersicum</i> (Solanaceae) par <i>Xylocopa olivaceae</i> (Hymenoptera : Apidae) et son impact sur la production fruitière à Ndogbong (Douala, Cameroun)</b></p> <p>Tchoutat Heuya Brucie Astride<sup>1</sup>, Pharaon Mbianda Auguste<sup>*2</sup>, Akono Ntonga Patrick<sup>3</sup></p>
10 :45- 11 :00	<p><b>OCBS-AGEF04</b></p> <p><b>Activités de butinage et de pollinisation de <i>Apis mellifera</i> et <i>Xylocopa olivacea</i> (Hymenoptera : Apidae) sur les fleurs de <i>Sesamum indicum</i> (Pedaliaceae) et <i>Vigna unguiculata</i> (Fabaceae) à Bilone (Obala, Cameroun)</b></p> <p>Pharaon Mbianda Auguste<sup>*1</sup>, Tchuenguem Fohouo Fernand - Nestor<sup>2</sup></p>
11 :00- 11 :15	<p><b>OCBS-AGEF05</b></p> <p><b>Caractérisation des systèmes d'élevage de l'abeille <i>Apis mellifera</i> (Hymenoptera : Apidae) dans les Monts Mandara (Extrême-Nord, Cameroun)</b></p> <p>Djarkbé Jackson Dapsia<sup>(1)</sup>, Zra Ganava Venceslas<sup>(1)*</sup>, Christian Wékéré<sup>(2)</sup>, Djonwangwé Denis<sup>(3)</sup>, Blama Yakouba<sup>(1)</sup> Et Tchuenguem Fohouo Fernand-Nestor<sup>(4)</sup></p>
11 :15- 11 :30	<p><b>OCBS-AGEF06</b></p> <p><b>Relation between quantitative descriptive analysis and textural analysis of boiled plantain</b></p> <p>Gérard Ngoh Newilah<sup>*1,2</sup>, Cédric Kendine Vepowo<sup>2,3</sup>, Annie Takam Ngouno<sup>1</sup>, Dallonnes Fangueng Kamgo<sup>4</sup>, Raymonde Nya Nzimi<sup>1</sup>, Jonas Tembe Tembe<sup>2</sup>, Eric Ngombi Ngombi<sup>2</sup>, Inocent Gouado<sup>3</sup>, Zoé Deuscher<sup>5</sup>, Alexandre Bouniol<sup>5,6</sup>, Oluwatoyin Ayetigbo<sup>5</sup>, Dominique Dufour<sup>5,7</sup></p>

PARALLEL SESSION 2

ROOM I: MEDICINAL PLANTS, NATURAL SUBSTANCES AND BIOACTIVITY (MNSB)

<p>Chair : Prof. DZEUFIEF Paul Co Chair : Prof. GALANI Rosnay</p>	
11 :30- 11 :45	<p><b>OCBS-MNSB07</b> <b>In vitro Anti-Onchocerca activity, phytochemical analysis and toxicity studies of extracts of <i>Azadiracta indica</i></b> Irene Memeh Tumanjong<sup>*</sup>, Faustin Pascal Manfor, Tobias Oben Apinjoh, Evans Ngandung Mainsah, Stanley Dobgima Gamua, Fidelis Cho-Ngwa</p>
11 :45- 12 :00	<p><b>OCBS-MNSB08</b> <b>Potentiels antibacteriens compares de l'extrait hydro-ethanolique des feuilles d'<i>Annona muricata</i> linn (annonaceae) a six antibiotiques courants</b> Teponno Tchifo P, Fotsing Kwetche Pr, Sipowo TR, Foutse Yimta,</p>
12 :00- 12 :15	<p><b>OCBS-MNSB09</b> <b>Antibacterial bio-guided investigation of a cameroonian medicinal plant: <i>Olox latifolia</i> (olacaceae)</b> Kenembeni Kameru Marie <sup>1,2</sup>; Kapche Wabo Fotso Gilbert Deccaux <sup>2</sup>; Mbazoa Djama Celine<sup>1</sup>; Lenta Ndjakou Bruno <sup>2</sup></p>
12 :15- 12 :30	<p><b>OCBS-MNSB10</b> <b>Antiplasmodial bio-guided investigation of <i>Combretum platypterum</i> (combretaceae)</b> Koudjou Nzofang Franky Liza<sup>1</sup>, Fotso Wabo Ghislain<sup>1</sup>, Lenta Ndjakou Bruno,<sup>2</sup> Sewald Norbert<sup>3</sup>, Ngadjui Tchaleu Bonaventure<sup>1</sup>, Kapche Wabo Fotso Gilbert Deccaux<sup>2</sup></p>
12 :30- 12 :45	<p><b>OCBS-MNSB11</b> <b><i>In vitro</i> filaricidal properties of aqueous extracts of <i>Combretum nigricans</i> (Combretaceae) on <i>Onchocerca ochengi</i> (Onchocercidae)</b> Banserne Brey Ignagali<sup>1</sup>, Betrosse Theodore<sup>1</sup> &amp; Borris Rosnay Galani Tietcheu<sup>1*</sup></p>
12 :45- 13 :00	<p><b>OCBS-MNSB12</b> <b>Research of novel anticancer and antiviral drugs derived from two Cameroonian medicinal plants: <i>Dorstenia psilurus</i> (Moraceae) and <i>Zanthoxylum armatum</i> (Rutaceae).</b> Nzoukeu stevine<sup>1</sup>, Tabopda Kuate Turibio<sup>1</sup></p>

ROOM II: HEALTH, ZONOSIS, EMERGING AND RE-EMERGING DISEASES, CHRONIC NON-COMMUNICABLE DISEASES (HZEC)

<p>Chair : Prof. SADO Sylvain Co Chair : Dr KOUAM Arnaud</p>	
11 :30- 11 :45	<p><b>OCBS-HZEC07</b> <b>Trends of antibacterial interactions in multidrug- resistant isolates: exploring resistance phenotypes in the Ndé division, West-Cameroon</b> Vanessa Ornella Alactio Tanguieu<sup>a,b,c</sup>, O'Neal Dorsel Youté<sup>a,b</sup>, Blandine Pulchérie Tamatcho Kweyang<sup>d</sup> and Pierre René Fotsing Kwetche<sup>a,b,e</sup>,</p>
11 :45- 12 :00	<p><b>OCBS-HZEC08</b> <b>Seroprevalence of <i>Toxoplasma gondii</i> and relationship with oxidative stress: The Impact of HIV Infections and Pregnancy in Female of Bandjoun, Koung-khi Division in the West Region of Cameroon</b> Ntonifor Helen Ngum<sup>1</sup>, Fotso Kouokam Nick Boris<sup>2*</sup>, Oumar Mahamat<sup>1</sup></p>
12 :00- 12 :15	<p><b>OCBS-HZEC09</b> <b>Relation entre le profil lipidique et la rétinopathie diabétique chez les patients atteints de diabète de type 2 dans 3 hôpitaux de la région de l'Ouest Cameroun</b></p>

	Domngang C 1 ; Temtsa L 1 ; Sobgwi E 2.
12 :15- 12 :30	<b>OCBS-HZEC10</b> <b>Aspect épidémiologique, biologie et clinique des patients souffrants d'hépatite médicamenteuse à l'hôpital général et l'hôpital Jamot de Yaoundé</b> Mouameni Assiga, Galani Tietcheu BR <sup>2</sup> , Chuisseu. Djamen DP, Moundipa FP.
12 :30- 12 :45	<b>OCBS-HZEC11</b> <b>Prévalence et étiologies des cholestases extra-hépatiques à l'hôpital régional de Bafoussam.</b> Makhu Tchinda MK <sup>1</sup> , Galani TBR <sup>2</sup> , Chuisseu Djamen DP <sup>1</sup> , Nsangou A <sup>1</sup> , Ngogang J <sup>1</sup> .
12 :45- 13 :00	<b>OCBS-HZEC12</b> <b>Parodontite et contrôle glycémique des patients vivant avec le diabète de type 2 suivis dans trois formations sanitaires du District de Santé de Dschang en 2023</b> Christian Deube Ngako <sup>1*</sup> , Sylvain Raoul Simeni Njonou <sup>2,3</sup> , Clarisse Mapa Tassou Mapa <sup>1</sup> , Herna Stella Chimy Tchouchui <sup>1</sup> , Fernando Kemta Lekpa <sup>2,4</sup> , Christian Ngongang Ouankou <sup>2,5</sup> , Marie-Josiane Ntsama Essomba Ntsama <sup>6,7</sup> , Jérôme Ateudjieu <sup>1</sup>

### ROOM III: ENVIRONMENTAL QUALITY OF LIFE AND CLIMATE CHANGE (EQCC)

<b>Chair :</b> Prof. ZEBAZE <b>Co Chair :</b> Dr NANA	
11 :30- 11 :45	<b>OCBS-EQCC08</b> <b>Impact des effluents de la Société de Développement du Coton (SODECOTON) et des abattoirs sur la structure des diatomées et des macroinvertébrés d'un cours d'eau temporaire sahélien (Extrême-Nord, Cameroun)</b> Ebang Menye, D.* <sup>1</sup> , Watersa, P. <sup>1</sup> , Mbowé Ngaché, I. <sup>1</sup> , Djongoe Gams, C.P. <sup>1</sup> , Noah Ewoti, O.V. <sup>2</sup> , Kalieu, W.I.A. <sup>1</sup> , Ramatou, I. <sup>1</sup> , Zebaze Togouet, S.H. <sup>2</sup> , Njine, T. <sup>2</sup>
11 :45- 12 :00	<b>OCBS-EQCC09</b> <b>Description des macroinvertébrés benthiques des cours d'eaux supérieurs du département de la mvila (sud-Cameroun)</b> Ndo Stevie*, Yede, Nzombi Azonfack Yannick, Ajeegah Aghaindum Gedeon
12 :00- 12 :15	<b>OCBS-EQCC10</b> <b>Distribution spatio-temporelle du zooplancton de quelques cours d'eau dans la zone agricole d'Awae (Centre-Cameroun)</b> Nsangou Moundignigni Hénock Yves <sup>1</sup> , Nonga Tang Brillant <sup>1</sup> , Sob Nangou Paul Bertrand <sup>1</sup> Zébazé Togouet Serge Hubert <sup>1*</sup>
12 :15- 12 :30	<b>OCBS-EQCC11</b> <b>Communauté des macroinvertébrés benthiques et qualité des eaux du cours d'eau Wamie à Kribi dans la Région du Sud Cameroun</b> Bisse Ndiva Thérèse Inès, Foto Menbohan Samuel, Ajeegah Aghaindum Gideon
12 :30- 12 :45	<b>OCBS-EQCC12</b>

### ROOM IV: AGRO-ECOSYSTEM AND FOOD (AGEF)

<b>Chair:</b> Prof. EWANE Cécile <b>Co-Chair :</b> Dr KOUENGOUA Armelle	
11 :30- 11 :45	<b>OCBS-AGEF07</b> <b>The effect of njansan (<i>Ricinodendron heudelotii</i> bail) oil and sardine oil (<i>Sardina pilchardus</i>) from Maga on some metabolic markers of obese male wistar rats</b> Soh Nde Florent <sup>1</sup> , Ghomdim Nzali Horliane* <sup>2</sup> , Ejoh Aba Richard <sup>1</sup>

11 :45- 12 :00	<b>OCBS-AGEF08</b> <b>Formulation et qualité nutritionnelle de quelques farines infantiles (type oms) à base d'ingrédients locaux</b> Tedonkou Cheychou Sinclair <sup>1</sup> ; Pahane Majesté <sup>1,2</sup> ; Djoko Ernest <sup>1</sup> ; Masiala Tsobo C. <sup>1,3</sup>
12 :00- 12 :15	<b>OCBS-AGEF09</b> <b>Connaissances des femmes enceintes sur la bonne pratique alimentaire pendant la grossesse à l'Hôpital Régional de Bafoussam</b> Mitchou Biankeu M <sup>1</sup> ; Pokam L <sup>1</sup> ; Mekieje Tumchou M-P <sup>1</sup> ; Kohpe Kapseu S <sup>1</sup> ; Tchokonte-Nana V <sup>1</sup>
12 :15- 12 :30	<b>OCBS-AGEF10</b> <b>Amino acids and sensory profiles of some controlled pollinated Cameroonian cocoa (<i>Theobroma cacao</i> L.) hybrids</b> Martin Paul Arnaud Mbida <sup>a,b</sup> , Simon Perrez Akoa <sup>c</sup> , Pierre Effa Onomo <sup>a,b</sup> and Martine Louise Ondobo <sup>b</sup>
12 :30- 12 :45	<b>OCBS-AGEF11</b> <b>Amino acids and sensory profiles of some controlled pollinated Cameroonian cocoa (<i>Theobroma cacao</i> L.) hybrids</b> Martin Paul Arnaud Mbida <sup>a,b*</sup> , Simon Perrez Akoa <sup>c</sup> , Keriane Carissa Makoukam Wochie <sup>a,b</sup> , Pierre Effa Onomo <sup>a,b</sup> and Martine Louise Ondobo <sup>b</sup>
12 :45- 13 :00	<b>OCBS-AGEF12</b> <b>Comportement de ponte des mouches des fruits (Diptera : Tephritidae) sur les fruits de Cucurbitacées à ngaoundéré (Adamaoua, Cameroun).</b> Tanegang Lambou Ulrich <sup>1</sup> , Yonta Tafackda Jodele Flavie <sup>1</sup> , Ndakabo Atougour <sup>2</sup> , Mokam Didi Gaëlle <sup>1</sup> , Djieto-Lordon Champlain <sup>2</sup> , Ngamo Tinkeu Léonard Simon <sup>2</sup>

### PARALLEL SESSION 3

#### ROOM I: MEDICINAL PLANTS, NATURAL SUBSTANCES AND BIOACTIVITY (MNSB)

<b>Chair :</b> Prof. TELEFO Phélix Bruno <b>Co Chair :</b> Pr MVONDO Marie Alfrede	
14 :00- 14 :15	<b>OCBS-MNSB13</b> <b>Ethnobotanical knowledge of <i>Prunus africana</i> (Hook.F.) Kalkman (Rosaceae) by people living in community forests in North Kivu, Eastern Democratic Republic of Congo</b> Eloge Kambale Muhesi <sup>1,2</sup> , Jean Lagarde Betti <sup>1,3,4</sup> , Ndongo Din <sup>1</sup> , Moïse Musubao Kapiri <sup>5,6</sup> , Harmelle Natacha Nana Afiong <sup>1</sup> , Pascal Billong Fils <sup>1</sup>
14 :15- 14 :30	<b>OCBS-MNSB14</b> <b>Anti-ulcer activity of leaf extract obtained from <i>Ficus lingua</i> (Moraceae) against glacial acetic acid-induced gastric ulcer in rats.</b> Gustave Lebeau Otto Ndji <sup>1</sup> , Félicité Zobo Louanga <sup>1</sup> , Joseph Fleurie Emakoua <sup>2</sup> , Mesmine Kuissu Teukam <sup>3</sup> , Christophe Mezui <sup>4</sup> and Paul Vernyuy Tan <sup>2</sup>
14 :30- 14 :45	<b>OCBS-MNSB15</b>
14 :45- 15 :00	<b>OCBS-MNSB16</b> <b>Eco-friendly synthesis, characterization and <i>in vitro</i> antioxidant properties of the stem bark silver nanoparticles (AgNPs) of <i>Xeroderris stuhlmanni</i> Taub. (Fabaceae)</b> Russelle Camélie Nguemngang Tchatchouang, <sup>2</sup> Edwige Laure Nguemfo, <sup>1</sup> Calvin Bogning Zanguéu, <sup>1</sup> Yousseu Nana William, <sup>1</sup> Jacky Joyce Kojom Wanche <sup>1</sup> Augustine Nkojap Kuinze, <sup>2</sup> Philippe Belle Ebanda Kedi, <sup>3</sup> Francois Meva Eya'ane and <sup>1</sup> Alain Bertrand Dongmo
15 :00- 15 :15	<b>OCBS-MNSB17</b> <b>Insecticidal effect of <i>Calotropis procera</i>, <i>Eucalyptus camaldulensis</i> and <i>Tithonia diversifolia</i> powders on the foraging activity of <i>Apis mellifera</i> on <i>Vigna unguiculata</i> flowers in Dang (Ngaoundéré - Cameroon).</b>

	Adamou Moïse <sup>2, 3</sup> , Mohammadou Moukhtar <sup>1*</sup> , Taïmanga <sup>1</sup> , Youssoufa Ousmana <sup>1</sup> , Fouelifack-Nintidem Boris <sup>1</sup> , Abraham Tchoubou-Sale Abraham <sup>2</sup> , Yomon Abdel Kayoum <sup>1</sup> , Odette Dabole Massah <sup>2</sup> & Kenne Martin <sup>1</sup>
15 :15- 15 :30	<b>OCBS-MNSB18</b> <b>Attenuation of Hyperglycemia and diabetic nephropathy in High Fat Diet, Streptozotocin-Induced Type 2 Diabetic Male Wistar Rats by the Aqueous Extract of <i>Asparagus africanus</i> (Asparaceae).</b> Focham Evans Ngwenah <sup>1*</sup> , Oumar Mahamat <sup>2</sup> , Tume Chrisopher <sup>1</sup>

**ROOM II: MEDICINAL PLANTS, NATURAL SUBSTANCES AND BIOACTIVITY (MNSB)**

Chair : Prof. MANFO Faustin Co-Chair : Dr TEDONG Léonard	
14 :00- 14 :15	<b>OCBS-MNSB19</b> <b>Reversal Effect of ethanol-induced Impairment in Testicular Parameters and Serum Haptoglobin and Interleukin-1 levels by the Aqueous Extract of <i>Solanum torvum</i> Sw. (Solanaceae) in Male Wistar Rats</b>  Oumar Mahamat, Bih Beltha Lilian Fubi*, Salah Martin Anchang , Tangu Patience Neng, Mumbi Laurentine Ngenteh, Ndifor Rose Nchang, Kada Sanda Antoine
14 :15- 14 :30	<b>OCBS-MNSB20</b> <b>Aqueous leaves extract of <i>Xeroderris stuhlmannii</i> taub. (Fabaceae) modulates blood pressure against cadmium chloride - induced hypertension in Wistar albino rats</b>  Augustine Nkojap Kuinze <sup>1</sup> , Edwige Laure Nguemfo <sup>2</sup> , William Nana Yousseu <sup>1</sup> , Calvin Bogning Zangueu <sup>1</sup> , Jacquy Joyce Wanche Kojom <sup>1</sup> , Russelle Camélie Nguemnang Tchatchouang <sup>1</sup> , Christelle Stéphanie Sonfack <sup>1</sup> , Dafane Ferro Nkwagwa Nkwayep <sup>1</sup> , Timo D Stark <sup>3</sup> , Alain Bertrand Dongmo <sup>1*</sup>
14 :30- 14 :45	<b>OCBS-MNSB21</b> <b>Aqueous leaves extract of <i>Xeroderris stuhlmannii</i> taub. (Fabaceae) modulates blood pressure against cadmium chloride - induced hypertension in Wistar albino rats</b>  Augustine Nkojap Kuinze <sup>1</sup> , Edwige Laure Nguemfo <sup>2</sup> , William Nana Yousseu <sup>1</sup> , Calvin Bogning Zangueu <sup>1</sup> , Jacquy Joyce Wanche Kojom <sup>1</sup> , Russelle Camélie Nguemnang Tchatchouang <sup>1</sup> , Christelle Stéphanie Sonfack <sup>1</sup> , Dafane Ferro Nkwagwa Nkwayep <sup>1</sup> , Timo D Stark <sup>3</sup> , Alain Bertrand Dongmo <sup>1*</sup>
14 :45- 15 :00	<b>OCBS-MNSB22</b> <b>Effects of <i>Zingiber officinale</i> essential oil as a feed additive on zootechnical performance and some biochemical parameters in broilers chickens</b>  Hippolyte Mekuiko Watsop <sup>1*</sup> , Moïse Ondua <sup>1</sup> , François Djitie Kouatcho <sup>2</sup> , Eric Nzouda <sup>1</sup> , Jules Lemoufouet <sup>3</sup> , Justin Kouamo <sup>1</sup> , Ion Calin <sup>4</sup>
15 :00- 15 :15	<b>OCBS-MNSB23</b> <b>Ameliorative effects of stern bark the aqueous extract of <i>Khaya anthotheca</i> (Welw.) C. DC (Meliaceae) in vanadium induced neurodegeneration in mice</b>  Zemo Gamo Franklin <sup>a*</sup> , Djiogue Sefiin <sup>a</sup> , Amany Digal Ladagu <sup>b</sup> , Oluwabusayo Rachael Folarin <sup>c</sup> , James Olukayode Olopade <sup>b</sup> , Njamen Dieudonne <sup>a</sup>
15 :15- 15 :30	<b>OCBS-MNSB24</b> <b>Chemo preventive potential of <i>Xylopiya aethiopica</i> Dry Fruits Ethanol Extract on Breast Cancer induced by 7,12-dimethylbenz(a)anthracene in Female Wistar rats</b>

**ROOM III: HEALTH, ZOONOSIS, EMERGING AND RE-EMERGING DISEASES, CHRONIC NON-COMMUNICABLE DISEASES (HZEC)**

Chair : Prof. MOUNDIPA Paul Co Chair : Dr SIMO LOUOKDOM Josué	
14 :00- 14 :15	<b>OCBS-HZEC23</b> <b>Challenge in the management of Diabetes Mellitus (DM): Could Vitamin D be of help?</b>

	Denis Zofou <sup>1,2*</sup> , Delphine Anye Tangoh <sup>3</sup> , Nkwa Brian Esong <sup>1</sup> , Noubissie Claudia Nzechieu <sup>1</sup> , Sirri Kelley Ambe <sup>1,2</sup> , Hostin Nahbum Mua <sup>1,2</sup> , Golda Shu Lum <sup>1,2</sup> and Aduni U. Achidi <sup>2</sup> , and Nda Mefo'o Jean-Pierre <sup>4</sup>
14 :15- 14 :30	<b>OCBS-HZEC24</b> <b>Impact de l'appartenance à un groupe de soutien sur les connaissances, attitudes et pratiques des parents d'enfants drépanocytaires dans la ville de Yaoundé</b> Simo Louokdom Josue <sup>1</sup> ; Fagna Mbiada Priscille <sup>1</sup> et Koki Ndombo Paul Olivier <sup>2</sup>
14 :30- 14 :45	<b>OCBS-HZEC25</b> <b>Oxidized palm oil impairs reproductive functions and architectures in female rats.</b> Kengne TI <sup>1*</sup> , Wankeu-Nya M <sup>1</sup> , Ateba BS <sup>1</sup> , Bend FE <sup>2</sup> , Djeumeni ON <sup>1</sup> , Hatho TDH <sup>1</sup> , Ngadjui E <sup>4</sup> , Moundipa FP <sup>3</sup> , Massoma LD <sup>1</sup> , Dongmo AB <sup>1</sup> , Watcho P <sup>3</sup> .
14 :45- 15 :00	<b>OCBS-HZEC26</b> <b>Metabolic Profiles Associated with Toxoplasma gondii Infestation in Goats and Sheep in Cameroon</b> Nankam Chimi Roland <sup>1*</sup> , Justin Kouamo <sup>3</sup> , Kouengoua Kouengoua Armelle Prudence <sup>1</sup> , Grace Jedida Toukem Tchize <sup>1</sup> , Ferdinand Ngoula <sup>2</sup>

#### ROOM IV: AGRO-ECOSYSTEM AND FOOD (AGEF)

Chair : Prof. FONKOU Théophile Co Chair : Prof. TAMOKOU Jean De Dieu	
14 :00- 14 :15	<b>OCBS-AGEF13</b> <b>Diversity of Endomycorrhizal Fungi in Northern Cameroon Soil's : Implications for growth improvement and the Success of soils restauration</b> Koulagna Issa Honoré <sup>1*</sup> , Ismael Ramza Haman <sup>2</sup> , Tchuenteu Tatchum Lucien <sup>3</sup> , Yaouba Aoudou <sup>1</sup> , Kosma Philippe <sup>4</sup> , Megueni Clauilde <sup>3</sup> .
14 :15- 14 :30	<b>OCBS-AGEF14</b> <b>Système d'irrigation goutte à goutte et de fertilisation agrochimique des tomates dans les sols légers de châtaigniers de la région de la basse Volga</b> Gertrude Keegoui
14 :30- 14 :45	<b>OCBS-AGEF15</b> <b>Diversity and dendrology of cocoa trees in an agroforest in the humid dense forest</b>
14 :45- 15 :00	<b>OCBS-AGEF16</b> <b>Impact of Hymenoptera on <i>Abelmoschus esculentus</i> (L.) Moench, 1794 (Malvaceae) seed yields at Bilone (Obala, Cameroon)</b> Pharaon Mbianda Auguste <sup>1*</sup> , Douka Chantale <sup>2</sup> , Dounia <sup>2</sup> , Fernand - Nestor Tchuenguem Fohouo <sup>3</sup>
15 :00- 15 :15	<b>OCBS-AGEF17</b> <b>Assessing the Efficacy of upland Rice/Beans based Intercropping System at Different Plant Population Densities Bambili.</b> Baba Conscience Lamfe , <sup>2</sup> Njualem Dominic, <sup>3</sup> Tata Eugene
15 :15- 15 :30	<b>OCBS-AGEF18</b> <b>Effect of Ginger (<i>Zingiber officinale</i>) and Black pepper (<i>Piper nigrum</i>) spices on nutritional content, storage stability and sensory quality of smoked <i>Chrysichthys nigrodigitatus</i> from Nkamwouri River in Cameroon</b> Djopnang Djimbie Justin <sup>1</sup> , Ngo Mback Madeleine Nina Love <sup>1</sup> , Awoh Anyi Charis <sup>1</sup> , Tchoumboungang François <sup>1</sup> , Tomedi-Tabi Eyango Minette <sup>1</sup> , Womeni Hilaire Macaire <sup>2</sup> , Gouado Inocent <sup>3</sup>

PARALLEL SESSION 4

ROOM I: MEDICINAL PLANTS, NATURAL SUBSTANCES AND BIOACTIVITY (MNSB)

Chair : Pr DZOYEM Jean Paul Co-Chair : Dr KOUAM Arnaud	
16 :30- 16 :45	<b>OCBS-MNSB25</b> <b>Anti-obesity, antihyperglycemic and antihyperlipidemic effects of aqueous extract from <i>Alchornea cordifolia</i> fruits in Wistar rats fed a hypercaloric diet</b>  Muriel Gameleu <sup>1</sup> , William Dakam <sup>2*</sup> , Jules Manz <sup>1</sup> , Lolita Ngo'o Panyere <sup>1</sup> , Mathieu Ndomou <sup>1</sup>
16 :45- 17 :00	<b>OCBS-MNSB26</b> <b><i>In vivo</i> evaluation of the antihypertensive activities of <i>Lippia alba</i> n. E. Brown (verbenaceae) aqueous leaf extract on l-name induced hypertension in rats and physical analysis of <i>lippia alba</i> tea leaves</b>  Anapa B.1, 2; Metchi M.2; Foutse Y.1; Nguimatsia F.1; Dimo T.2
17 :00- 17 :15	<b>OCBS-MNSB27</b> <b>Antihypergesic and Antinociceptive effect of the Aqueous and methanolic extract from fruit of <i>Canthium venosum</i>.</b>  Wandji Bibiane Aimée <sup>1</sup> , Foguieng Sadié Roger Herman <sup>1</sup> , Koho Wamba Cedric <sup>1</sup> , Mbankou Ngassam Sorelle, Dongmo Appolinaire <sup>2</sup> , Chouna Jean Rodophe <sup>2</sup> , Nkeng-Efouet Alango Pepin <sup>2</sup> , Nguielefack Téléphore Benoît <sup>1*</sup> .
17 :15- 17 :30	<b>OCBS-MNSB28</b> <b><i>In vitro</i> and <i>in vivo</i> hypoglycemic and antidiabetic activity, anti-inflammatory of <i>Erythrina senegalensis</i> DC (Fabaceae) stem bark aqueous extract.</b>  Bidingha à Goufani CR <sup>*</sup> , Bilanda DC., Dzeufiet PD., Tcheutchoua YC., Owona PE., Mbolang L., Kamtchouing P.

ROOM II: HEALTH, ZONOSIS, EMERGING AND RE-EMERGING DISEASES, CHRONIC NON-COMMUNICABLE DISEASES (HZEC)

Chair : Prof. DJUIKWO Félicité Co-Chair : Dr OWONA Brice	
16 :30- 16 :45	<b>OCBS-HZEC13</b> <b>Croissance staturo-pondérale et développement psychomoteur des nouveaux nés prématurés suivis sous Méthode Mère-Kangourou A l'hôpital de district de Bonassama à Douala.</b>  Michelle Kambou 1, Fotsing Pierre <sup>1</sup> , Yanelle Wandji 2, Séraphin Nguéfac 4.
16 :45- 17 :00	<b>OCBS-HZEC14</b> <b>Characterization of malaria transmission and susceptibility profile of <i>Anopheles gambiae</i> and <i>Anopheles coluzzii</i> to insecticide in two localities in the Eastern Region of Cameroun (Bélabo and Ouami)</b>  Ndjeunia Mbiakop P <sup>1,2*</sup> , Ngangue Siewe Idriss Nasser <sup>1,3</sup> , Talipouo Abdou <sup>1,2</sup> , Doumbe-Belisse Patricia <sup>1,2</sup> , Tombi Jeannette <sup>2</sup> , Antonio-Nkondjio Christophe <sup>1,4</sup>
17 :00- 17 :15	<b>OCBS-HZEC15</b> <b>Entomological longitudinal surveys in two contrasted eco-climatic settings in Cameroon reveal a high malaria transmission from <i>Anopheles funestus</i> associated with <i>GSTe2</i> metabolic resistance</b>  Brice Natchema S.F. <sup>1,2,*</sup> , Magellan Tchouakui <sup>1</sup> , Benjamin D. Menze <sup>1</sup> , Leon M. J. Mugenzi <sup>1</sup> , Derrick Fofie <sup>1,2</sup> , Daniel Nguiffo-Nguete <sup>1</sup> , Lucia Nkengazong <sup>4</sup> , Jeannette Tombi <sup>2</sup> and Charles S. Wondji <sup>1,3,*</sup>
17 :15- 17 :30	<b>OCBS-HZEC16</b> <b>Field Assessment of Cocoa Dieback Due to the Neglected Mosquito True Bug, <i>Helopeltis</i> sp. (Hemiptera: Miridae) and Associated Pathogenic Fungi Infections in Southern Cameroon</b>  Nsoga Etam <sup>1,3</sup> P.B., Mahob <sup>1*</sup> R.J., Yede <sup>1</sup> , Moumbagna Mbutngam <sup>1</sup> M., Mbenoun Massé <sup>1</sup> P.S., Koga Mang'dobara <sup>1</sup> , Bilong Bilong <sup>1</sup> C. F.

**ROOM III: PRODUCTION AND INNOVATION: BIOTECHNOLOGIES AND BIOMEDICAL TECHNOLOGIES (PIBB)**

Chair: Prof. NGUELEFACK Elvine Co-Chair : Dr DJOKO Ernest	
16 :30-16 :45	<b>OCB-PIBB01</b> <b>Prototyping of a digital microscope adapted for low-income countries</b> Nde Desmond <sup>1</sup> , Momo Foutse <sup>1,*</sup> , Youssoufa Mohamadou <sup>4</sup> , Pascaline Tiam Kapen <sup>2,3</sup> , Pierre René Fotsing Kwetche <sup>5</sup> ,
16 :45-17 :00	<b>OCB-PIBB02</b> <b>Evaluation de l'efficacité d'un pool de plasma humain en vue d'une utilisation comme matériel de contrôle qualité interne en biologie clinique</b> Ebono Ekono B A <sup>1</sup> ; Simo Louokdom J <sup>1</sup> ; Kuate J R <sup>2</sup> .
17 :00-17 :15	<b>OCB-PIBB03</b> <b>Production d'un tensioactif non ionique par transesterification de la stearine et application en cosmétique</b> Gertrude Eléonore Djiobie Tchienou <sup>1,2*</sup> , Roli Karole Tsatsop Tsague <sup>2</sup> , Robert Beka <sup>2</sup> Fritz Klwas Ekouta Mbome <sup>2</sup> , And Martin Benoît Ngassoum <sup>2</sup>
	<b>OCB-PIBB04</b> <b>Production de la bactériocine par la souche <i>Lactococcus lactis</i> subsp. <i>lactis</i> 2MT dans un milieu formule à base de sous-produit de transformation du poisson et optimisation</b> Tchabou Tientcheu Michèle Letitia <sup>1</sup> , Kaktcham Pierre <sup>1</sup> Marie

**ROOM IV: GENETICS, EPIGENETICS AND GENOMICS (GEGE)**

Chair: Prof. SIMO Gustave Co-Chair: Prof. MEUTCHIEYE Félix	
16 :30-16 :45	<b>OCBS-GEGE01</b> <b>Archived hiv-1 antiretroviral resistance mutations in the cellular reservoirs of vertically infected adolescents in the central region of Cameroon</b> Leslie Kenou <sup>1</sup> , Nelson Sonela <sup>1</sup> , Georgia Ambada <sup>1</sup> , Bertrand Sagnia <sup>1</sup> , Aubin Nanfack <sup>1</sup>
16 :45-17 :00	<b>OCBS-GEGE02</b> <b>Prevalence of multi-drug resistant and Extended spectrum <math>\beta</math>-lactamase producing <i>Enterobacteriales</i> isolated from wound patients having diabetes mellitus in Western region in Cameroon</b> Cyrielle Mawout Signe <sup>1#</sup> , Raspail Carrel Founou <sup>2,3,4</sup> , Luria Leslie Founou <sup>4,5</sup> , Jessica Ravanola Zemtsa <sup>4</sup> , Patrice Landry Koudoum <sup>3</sup> , Brice Davy Dimani <sup>3</sup> , Aurelia Djeumako Mbossi <sup>4</sup> , Michel Noubom <sup>1,7</sup>
17 :00-17 :15	<b>OCBS-GEGE03</b> <b>Haptoglobin gene polymorphism and iron profile in sickle cell disease patients with inflammation in Yaounde, Cameroon</b> Romaric Tuono De Manfouo <sup>1,2,6</sup> , Josué Simo Louokdom <sup>2</sup> , Prosper Cabral Biapa Nya <sup>3</sup> , Jean Paul Chedjou <sup>4</sup> , Christian Bernard Kengne Fotsing <sup>3</sup> , Bernard Claude Chetcha <sup>1</sup> , Calvino Fomboh Tah <sup>4</sup> , Claude Tayou Tagny <sup>1</sup> , Wilfried Fon Mbatcham <sup>4,5</sup> , Constant Anatole Pieme <sup>6*</sup>
17 :15-17 :30	<b>OCBS-GEGE04</b> <b>Effect of ammonium nitrate and ammonium sulfate concentration on regulatory factors for cellular reprogramming during somatic embryogenesis in <i>Theobroma cacao</i> l.</b> Franc Olivier Nzogang <sup>1</sup> , Samuel Didier Ngombi Tulag <sup>2</sup> , Rolande Eugénie Makondy Ango <sup>1</sup> , Nicky Widdis Yepgang <sup>2</sup> , Dorice Chateline Djantha Nguenou <sup>2</sup> , Joel Dajio Tchoumi <sup>2</sup> , Nicolas Niemenak <sup>1</sup> , Alexandre Noah Mboene <sup>2*</sup>

Saturday, December 2<sup>nd</sup>, 2023

PARALLEL SESSION 5

ROOM I: MEDICINAL PLANTS, NATURAL SUBSTANCES AND BIOACTIVITY (MNSB)

Chair : Prof BILANDA Claude Danielle Co-Chair : Dr BEBOY EDJENGUELE Sara Nathalie	
08 :00-08 :15	<b>OCBS-MNSB29</b> <b>Chemical and fatty acid composition of <i>Myrianthus arboreus</i> and <i>Terminalia catappa</i> seed oils and their effects on biochemical parameters of Wistar albino rats</b> Etame Ekaney Ntube Neola <sup>1</sup> , Tiencheu Bernard <sup>2</sup> , Feumba Romelle Dibanda <sup>2</sup> , Mbofung Carl Moses <sup>1</sup>
08 :15-08 :30	<b>OCBS-MNSB30</b> <b>Chemical study and evaluation of antiplasmodial activity of one Cameroonian medicinal plant: <i>Sapium cornutum</i> (Euphorbiaceae).</b> Litchang Martial Lamere <sup>1*</sup> , Nguena Dongue Branly <sup>2</sup> , Mkounga Pierre <sup>1</sup>
08 :30-08 :45	<b>OCBS-MNSB31</b> <b>Chemical investigation of <i>Vitex madiensis</i> (Veberaceae) and evaluation of its antiplasmodial potential</b> Babey Cynthia Mkeh <sup>1*</sup> , Noella Efange <sup>2</sup> , Awantu Angelbert Fusi <sup>1</sup> , Lenta Ndjakou Bruno <sup>3</sup>
08 :45-09 :00	<b>OCBS-MNSB32</b> <b>Effects of the alkaloid rich methanolic extract of <i>Coffea arabica</i> (rubiaceae) leaves on <i>plasmodium berghei</i> infected wistar rats</b> Mbanya Emmanuella N. <sup>1*</sup> ; Sipowo Tala R. <sup>1</sup> ; Mbopi Yamen P. <sup>1</sup> ; Tsakem J. <sup>2</sup> ; Ngwem L. <sup>2</sup> ; Gounoue R. <sup>2</sup> ; Moyou R. <sup>1</sup> ; Dimo T. <sup>1,2</sup> .
09 :00-09 :15	<b>OCBS-MNSB33</b> <b>Targeting the intra-erythrocytic life cycle of malaria to discover new drugs from <i>Drymaria cordata</i> and <i>Macaranga monandra</i></b> Kamche Aubin Youbi, Brice Tchatat, Hassan Souleyman, Hubert Djigang, Patrick Tsouh, Fabrice Boyom Fekam
09 :15-09 :30	<b>OCBS-MNSB34</b> <b>Aphrodisiac and androgenic effects of the aqueous extract of the roots of <i>Vepris afzelii</i> on cyproterone acetate-induced hypogonadism in rat</b> Djeumeni Néely Ornéla <sup>1</sup> , Wankeu-Nya Modeste <sup>1*</sup> , Massoma Lembe Dieudonné <sup>1</sup> , Kengne Tomutou Inès <sup>1</sup> , Hatho Towo Dominique Hyacinthe <sup>1</sup> , Nde Zacharie <sup>1</sup> , Dongmo Alain Bertrand <sup>1</sup> , Moundipa Fewou Paul <sup>2</sup> , Watcho Pierre <sup>3</sup>

ROOM II: HEALTH, ZONOSIS, EMERGING AND RE-EMERGING DISEASES, CHRONIC NON-COMMUNICABLE DISEASES (HZEC)

Chair : Prof. WOMENI Hilaire Co-Chair : Dr SIMO Josué / Dr WOGUIA Alice	
08 :00-08 :15	<b>OCBS-HZEC17</b> <b>Bionomics of <i>Aedes</i> mosquito species in three eco-epidemiological settings of Cameroon and their susceptibilities profiles to insecticides</b> Bertille Carine Theno Djapoum <sup>1,3</sup> , Gisele Aurelie Foko Dadji <sup>2</sup> , Borel Djiappi-Tchamen <sup>3,4</sup> , Abdou Talipouo <sup>1,3</sup> , Abraham Fomena <sup>1</sup> , Joseph Lebel Tamesse <sup>2</sup> , and Antonio-Nkondjio Christophe <sup>3,5</sup>
08 :15-08 :30	<b>OCBS-HZEC18</b> <b>Study of the circulation of <i>Crimean congo</i> hemorrhagic fever (cchf) and tick-borne encephalitis (tbe) viruses in shepherds and febrile patients in Cameroon</b> Chantal Urmes Teagho Sobjio <sup>1</sup> , Brice Fredy Nemg Simo <sup>1</sup> , Corinne Raissa Nngnameko <sup>1,2</sup> , Basile Kamgang <sup>3</sup> , Nigel Makoah Aminake <sup>4</sup> , Charles Wondji <sup>3</sup> and Paul Moundipa Fewou <sup>1</sup>
08 :30-08 :45	<b>OCBS-HZEC19</b> <b>Evaluation of some regulated mycotoxins in blood of normal and hepatocellular carcinoma patients in Cameroon</b>

	Tsabet Hermes <sup>1,2*</sup> , Njouom Richard <sup>3</sup> , Njitoyap N, Phillipe Herman <sup>2</sup> , Moundipa Fewou Paul <sup>2</sup> .
08 :45-09 :00	<b>OCBS-HZEC20</b> <b>Preparation of IgY from viral Hepatitis B synthetic peptides as a tool for Hepatitis B diagnosis.</b> Njitoyap Nfombouot Philippe Herman <sup>1,2*</sup> , Kouam Fondjo Arnaud <sup>2,3</sup> , Foupouapouognigni Yacouba <sup>2</sup> , Moundipa Fewou Paul <sup>2</sup>
09 :00-09 :15	<b>OCBS-HZEC21</b> <b>Obesity grade and impact on sexual behaviour and fertilities in rat under high fat diet</b> Selakong Nzekuie Quelie <sup>1*</sup> , Ayina Ayina Clarisse Noël <sup>1</sup> , Etaga Noël Babayana <sup>1</sup> , Tenezogang Takoukam Christian <sup>1</sup> , Nguemo Tetio Joël <sup>1</sup> , Mandengue Samuel Honoré <sup>1</sup> , Taiwe Sotoing Germain <sup>2</sup> , Bongue Bienvenu <sup>3</sup> , Massoma Lembe Dieudonné <sup>1</sup>
09 :15-09 :30	<b>OCBS-HZEC22</b> <b>Connaissances Attitudes et Pratiques des personnes avec albinisme oculo-cutané sur les allergies alimentaires</b> Epanya LNW <sup>1</sup> , Tuendom GFN <sup>1</sup> , Moyou RS <sup>1</sup>

### ROOM III: ENVIRONEMENTAL QUALITY OF LIFE AND CLIMATE CHANGE (EQCC)

<b>Chair : Prof. EFFA ONOMO Pierre</b> <b>Co-Chair : Dr SOPPI</b>	
08 :00-08 :15	<b>OCBS-EQCC13</b> <b>Microbiological Quality of Commercial flavored Soy-cheese (Tofu) Skewer in the West region of Cameroon and Critical Control Points (CCPs) during the Production Process;</b> Solefack Nguepi Elsa <sup>1</sup> , Zokou Ronice <sup>1</sup> , Teboukeu Giresse <sup>2</sup> , Ndomou Serge <sup>3</sup> , Kohole Herman <sup>1</sup> , Klang Julie Mathilde <sup>1</sup> , Tiencheu Bernard <sup>4</sup> , Womeni Hilaire Macaire <sup>1*</sup>
08 :15-08 :30	<b>OCBS-EQCC14</b> <b>Evaluation of the efficacy of different larvicides on various mosquito breeding sites in the city of yaoundé, cameroon</b> Matso Yesnick <sup>1,2</sup> , Djepan Thierry <sup>1,2</sup> , Ngadjeu Carmene <sup>1,2</sup> , Nkahe Leslie <sup>1,2</sup> , Tankou Juvénal <sup>1,2</sup> , Fomena Abraham <sup>2</sup> And Antonio-Nkondjio Christophe <sup>1*</sup>
08 :30-08 :45	<b>OCBS-EQCC15</b> <b>Altitudinal baseline and stress-induced glucose change in Western Mountain Greenbul (<i>Arizelocichla tephrolaema</i>) and African Thrush (<i>Turdus pelios</i>) in a tropical environment</b> Judith Pouadjeu Manialeu <sup>1*</sup> , Oldrich Tomasek <sup>2</sup> , Ondrej Kauzal <sup>2</sup> , Eric Djomo Nana <sup>4</sup> , Tomas Albrecht <sup>2,3</sup> , Télésphore Benoit Nguelefack <sup>1</sup>
08 :45-09 :00	<b>OCBS-EQCC16</b> <b>Occupational use of agrochemicals resulted in altered haematological and hepatic parameters among farmers in Fako Division, Cameroon</b> Christian Fusi Suh <sup>1,2</sup> , Faustin Pascal Tsagué Manfo <sup>1,2*</sup> , Edouard Akono Nantia <sup>3</sup> , Ndie Ngalame Dionysius <sup>1,2</sup> , Jude Nkeng Fombebe <sup>4</sup> , Daisy Lum Suh <sup>4</sup> , Etienne Philemon Atabonkeng <sup>5</sup> , Paul Fewou Moundipa <sup>6</sup> , Fidelis Cho-Ngwa <sup>2,7</sup> ,
09 :00-09 :15	<b>OCBS-EQCC17</b> <b>Effect of commercial and farm-made feeds on water quality of tank-raised <i>Clarias gariepinus</i> (Burchell, 1822)</b> Sulem Yong Nina Nindum <sup>1,2</sup> , Tchiedjo Marie Laure D. <sup>1,2</sup> , Boudem Cecile Rita <sup>1</sup> , Essoh Etouke Adrien M. <sup>2,3</sup> , Noudjio Claude K. <sup>2</sup> , Yong-Sulem Steve <sup>2</sup> , Etchu A. Kingsley <sup>2</sup> , Zebeze T. Serge H <sup>1*</sup> , Nola Moïse <sup>1</sup>
09 :15-09 :30	<b>OCBS-EQCC18</b>

	<p><b>Réduction de la charge organique des effluents d’huileries de palme par combinaison d’un filtre à sable et lit bactérien.</b></p> <p>Djien Nyami Félicité<sup>1</sup>, Noubou Takam Daïna<sup>1</sup>, Fobasso Tagnikeu Roméo<sup>1</sup>, Tcheugoue Styve Joël<sup>1</sup>, Njicoumbe Fatima<sup>1</sup>, Ndzobo Ndzana Joël<sup>1</sup>, Mpondo Mpondo Emmanuel <sup>3</sup>, Penlap Beng Véronique <sup>3</sup>, Tavea Frédéric Marie<sup>1*</sup></p>
09 :15-09 :30	<b>OCBS-EQCC19</b>

**ROOM IV: GENETICS, EPIGENETICS AND GENOMICS (GEGE)**

<p><b>Chair: Prof. NGAMLI FEWOU Simon</b>  <b>Co-Chair: Dr OWONA Brice</b></p>	
08 :00-08 :15	<p><b>OCBS-GEGE05</b></p> <p><b>Genetic Diversity and Origin of Ngaoundere Gudali cattle revealed by mtDNA D-loop sequence variation</b></p> <p>Ngono Ema P.J. <sup>1*</sup>, Wikondi J. <sup>1</sup>, Meutchieye F <sup>2</sup> . Manjeli Y<sup>2</sup></p>
08 :15-08 :30	<p><b>OCBS-GEGE06</b></p> <p><b>The expression of <i>SsSOS1</i> and <i>SsHKT</i> in <i>Solanum scabrum</i> is important for salt stress tolerance by limiting Na uptake and translocation under moderate and high salinity.</b></p> <p>Dekoum V.M. Assaha<sup>1</sup>, Takumi Akahori<sup>2</sup>, Ahmad Mohammad M. Mekawy<sup>3</sup>, Liyun Liu<sup>2</sup>, Akihiro Ueda<sup>2</sup>, Hirofumi Saneoka<sup>2</sup></p>
08 :30-08 :45	<p><b>OCBS-GEGE07</b></p> <p><b>Genetic Diversity and Origin of Ngaoundere Gudali cattle revealed by mtDNA D-loop sequence variation</b></p> <p>Ngono Ema P.J. <sup>1*</sup>, Wikondi J. <sup>1</sup>, Meutchieye F <sup>2</sup> . Manjeli Y<sup>2</sup>.</p>

## ORAL PRESENTATIONS

### TRACK 1: MEDICINAL PLANTS, NATURAL SUBSTANCES AND BIOACTIVITY

#### OCBS-MNSB01

#### Chemical constituents and biological activity from rhizomes of *Dryopteris kirbi* (Dryopteridaee)

Matchide T. Marie Germaine<sup>1,2\*</sup>, Saw Yu Yu Hnin<sup>2</sup>, Yves M. Mba Nguekeu<sup>1,2</sup>, Elodie Gaële Matheuda<sup>1</sup>, Josker Nghokeng<sup>1,2</sup>, Gaetan T. Tabakam<sup>1,2</sup>, Silvère Augustin Ngouela<sup>1</sup>, Yuan-E Lee<sup>1</sup>, Mathieu Tene<sup>1</sup>, Hiroyuki Morita<sup>2</sup> Maurice Ducret, Awouafack<sup>1,2</sup>

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#### Abstract

**Background:** *Dryopteris kirbi*, a fern that could have 50 cm in height, has ascending rhizomes covered with brown scale and is distributed in Asia, Europe and Africa. Their rhizomes are used in African ethnomedicine for the treatment of worms and hemorrhoids **Objectives:** This work was designed to carry out the chemical study and biological (cytotoxic and antibacterial) activities from rhizomes of *D. kirbi*. **Methods:** We described here the isolation of compounds together with their cytotoxic and antibacterial activities. **Results:** The chemical study led to the isolation of a new fructofuranoside glycerol, 2-*O*-(2'-*O*-methyl- $\alpha$ -D-fructofuranosyl)glycerol (1) along with fourteen known compounds, eriodictin (2), neoeriocitrin (3), 1-(2,6-dihydroxy-4-methoxy-3-methylphenyl)ethan-1-one (4), aspidinol P (5), aspidinol B (6), 1-pentacosanol (7),  $\beta$ -D-glucopyranosyl-(1 $\rightarrow$ 1)- $\beta$ -D-fructofuranosyl-(2 $\rightarrow$ 1)- $\alpha$ -D-glucopyranoside (8), sucrose (9), 1-linoleoyl glycerol (10), N-[1-( $\beta$ -D-glucopyranosyloxy)-3,4-dihydroxyoctadecan-2-yl]tetradecanamide (11), a mixture of  $\beta$ -sitosterol (12) and stigmaterol (13) and  $\beta$ -sitosterol-3-*O*- $\beta$ -D-glucopyranoside (14). The *n*-hexane-soluble portion and the EAF<sub>A</sub> fraction showed strong activities against lung, breast, and cervical human cancer cell lines (IC<sub>50</sub> values ranging from 4.0 to 8.8  $\mu$ g/mL). Aspidinol P and aspidinol B exhibited moderate to low cytotoxicity on all cell lines (IC<sub>50</sub> values ranging from 20.4 to 58.7  $\mu$ M). The MeOH extract and *n*-hexane-soluble portion had excellent activities against *Staphylococcus aureus* and *Bacillus subtilis* (MICs 11.7 and 23.4  $\mu$ g/mL), whereas the EtOAc- and *n*-BuOH-soluble portions were significantly active on *S. aureus* (MICs 46.9 and 93.8  $\mu$ g/mL). The main fractions EAF<sub>B</sub>, EAF<sub>C</sub> and nBF<sub>B</sub> displayed excellent activity against *S. aureus* (MICs 11.7 and 23.4  $\mu$ g/mL). Aspidinol B (6) had significant activity, while aspidinol P (5) was moderately active against *S. aureus* and *B. subtilis* (MICs 42.0 and 89.5  $\mu$ M). **Conclusion:** Our results on the isolation of a new fructofuranosyl glycerol, 2-*O*-(2'-*O*-methyl- $\alpha$ -D-fructofuranosyl)glycerol, along with fourteen known compounds as well as the cytotoxic and antibacterial activities demonstrate the capacity of using the *n*-hexane soluble portion and the main fraction from CC, EAF<sub>A</sub>, and the acylphloroglucinols aspidinols B and P as good candidates for drugs discovery development to fight against lung, breast, and cervical human cancers and Gram-positive bacterial infections.

**Keywords:** *Dryopteris kirbi*; Dryopteridaee; Cytotoxic; antibacterial

Chemical investigation of two Cameroonian medicinal plants: *Tristemma mauritianum* (Melastomataceae) and *Cassia siamea* (Fabaceae)

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**Abstract**

**Introduction:** Many plants are known to possess anti-bacterial activities. Among them are *Cassia siamea* and *Tristemma Mauritianum*. These plants are locally used in managing various illnesses, some of which are caused by resistant microbes like Salmonella. Typhoid fever remains an important problem of public health generally in sub-Saharan Africa and Cameroon in Particular (WHO, 2020). This work aimed to obtain active extracts/fractions/active compounds from *C. siamea* and *T. mauritianum* which can be used as a raw material for the preparation of a phyto-medicine or contribute to the development of new drugs against typhoid fevers. **Methodology:** Plants were harvested and extracted with suitable solvents. Open Column chromatography (silica gel and sephadex) was used for isolation of compounds. The structures of compounds were determined by comprehensive interpretation of their spectral data using 1D- 2D-NMR (1H-1H COSY, HSQC, and HMBC) spectroscopic and mass spectrometric analysis. The Micro dilution technique was used to obtain the MICs for all biological assays **Results:** Nine compounds were characterized from *T. Mauritianum* while eight compounds were characterized from *C. siamea*. These compounds were classified as triperpenes, flavonoids and sterols. The *n*-butanol fraction of *T. mauritianum* showed significant activity (31.5 µg/mL to 62.5 µg/mL) against tested *Salmonella* strains. **Conclusion:** The compounds obtained from this study are known to possess antimicrobial activity therefore justifying the traditional use of these plants in the treatment of antimicrobial diseases. **Impact of study:** This study contains relevant information like anti-salmonella activity supporting the use of these plants in traditional treatment of typhoid fever and therefore contributing to the fight against infectious diseases.

Key words: *T. Mauritianum*, *C. siamea*, Flavonoids, Triterpenes, anti-salmonella activity.

## Synthetic Coumarin Derivatives: Synthesis, Characterisation and Antimicrobial Activity

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### Abstract:

In recent years, coumarins have received significant attention for their potential as antibacterial and antifungal agents due to the emergence of multidrug-resistant bacteria/fungi and the lack of effective treatments for these infections. Studies demonstrated that substituted coumarins deriving from the modification of some functional groups of simple ones enhanced their biological properties and decreased their toxicity allowing them to interact easily with the biopolymers of the living systems. Indeed, the presence of ester or etheric bonds as well as methylene groups or halogen atoms has shown a growing of the microbial inhibitory effect of certain parent-coumarins since these moieties enhance the lipophilicity of the molecules. The main objective of this work was to prepare new lipophilic coumarins and evaluate their *in vitro* antibacterial/antifungal properties for their possible use as drugs. Herein, five coumarins were synthesized from coumarin-3-carboxylic acid and 7-hydroxyl-4-methylcoumarin using 1,4-dibromobutane as linker in esterification/etherification reactions. FT-IR, NMR and HRMS-ESI analyses confirmed their structures. *In vitro* antimicrobial studies revealed the bactericidal and fungicidal effects coumarins against several bacteria and fungi strains, with increased antibacterial activity for monocoumarins and better antifungal activity for bis-coumarins. A broad antibacterial spectrum was observed for one monobromocoumarin with activities ranging from very good (MIC 31.25 µg/mL), good (62.5 µg/mL) to moderate (125 µg/mL) against *Salmonella typhi*, *Staphylococcus aureus*, *Escherichia coli* and *Pseudomonas aeruginosa*. Two bis-coumarins exhibited the best antifungal properties with excellent activity (15.62 µg/mL) on *Candida krusei* and good (62.5 µg/mL) on *Candida albicans*, *Cryptococcus neoformans* and *Candida parasilosis*. It was deduced that the antibacterial activities increase with etheric bond, Br atom and alkyl chain and diminish with ester bonds at the 3-position of the pyrone ring or an addition of second coumarin unit, while the antifungal activities are improved by the ester bonds and deactivated with Br atom.

**Keywords:** Coumarins - lipophilicity - bacteria - fungi.

**Preventive Potential of the Aqueous Extract of the Mixture of *Bidens pilosa* (Asteraceae) and *Cymbopogon citratus* (Poaceae) Aerial Parts on Hypertension Induced by a Chronic Salt and Alcohol Consumption on the Rats**

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**Abstract**

High blood pressure (HBP) is currently one of the main risk factors for cardiovascular and kidney diseases. Nowadays, populations make extensive use of alternative medicine for their health problems. *Bidens pilosa* (*B. pilosa*) and *Cymbopogon citratus* (*C. citratus*) are used individually in the traditional treatment of cardiovascular disorders. This study assessed the effects of the mixture of these two plants aqueous extract on HBP in rats. Male rats (42) were divided into 7 groups of 6 rats each. Normotensive rats received only distilled water and formed group 1. The other animals received ethanol+salt preceded by distilled water (10 mL/ kg; group 2) and spironolactone (10 mg/kg; group 3); the aqueous extracts of the mixture (100 and 200 mg/kg; groups 4 and 5) isolated plants *B. pilosa* (200 mg/kg; group 6) and *C. citratus* (200 mg/kg; group 7). Animals were treated for 7 weeks during which water consumption and urine volume were assessed; then, hemodynamic parameters were recorded, and rats were sacrificed. Serum and some organs (liver, kidney, heart, and aorta) were used to evaluate biochemical parameters. Ingestion of ethanol+salt leads to a significant increase in urinary volume and water intake that were significantly prevented by the extracts from the mixture and isolated plants. Ethanol+salt solution significantly increased the blood pressure, heart rate, dyslipidaemia, kidney function parameters, and malondialdehyde levels. However, the levels of reduced glutathione, catalase, and superoxide dismutase activity were significantly reduced. Extracts of the mixture and isolated plants significantly prevented all these variations with a more pronounced action for the lowest dose (100 mg/kg) of the mixture on the lipid profile, oxidative stress, and kidney function. These effects are due to the vasorelaxant, lipid-lowering, antioxidant and nephroprotective activities of its compounds. This confirms the idea that polytherapy could be used to reduce the dose and eventually toxicity of substances.

**Key words:** hypertension, alcohol, salt, *Bidens pilosa*, *Cymbopogon citratus*.

**Formulation de gélules à visée antipaludéenne à base de graines de *Picralima nitida* (stapf) t. Durand & h. Durand (apocynaceae)**

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## Résumé

**Introduction :** Le paludisme est une maladie parasitaire largement répandue dans le monde. On estime à environ 500 millions le nombre de cas annuel ; le continent Africain est le plus affecté avec 95 % des cas. Pour le traitement, l'OMS recommande les combinaisons à base d'artémisinine ; malheureusement le coût de ces combinaisons est relativement élevé et les rend difficilement accessibles aux populations. C'est ce qui justifie la recherche de nouveaux médicaments antipaludiques. Un grand nombre d'espèces végétales au Cameroun, ont été identifiées comme plantes médicinales antipaludiques. *Picralima nitida* fait partie des plantes habituellement utilisées pour la prise en charge du paludisme en médecine traditionnelle ; son activité antipaludéenne *in vitro*, *in vivo* ainsi que son profil toxicologique ont déjà été scientifiquement démontrés. La présente étude avait pour objectif de formuler des gélules à base de l'extrait aqueux du fruit de *Picralima nitida* afin d'essayer de rationaliser son utilisation dans le traitement du paludisme. **Méthodologie:** L'extrait aqueux du fruit de *Picralima Nitida* a été préparé par macération ; ses caractères physicochimiques ont été déterminés. La quantité journalière d'extrait nécessaire dans la prise en charge du paludisme a été déterminée en milligrammes d'alcaloïdes totaux. L'extrait a été stabilisé avant d'être mis en gélules suivant les techniques de la pharmacopée européenne. Les gélules ont également fait l'objet d'un contrôle suivant les techniques de la pharmacopée européenne 11<sup>e</sup> édition. **Résultats:** L'extrait a été obtenu avec un rendement de 6,25%. Cet extrait était mou, hygroscopique, de couleur marron, de saveur très amère et à odeur de caramel. Les groupes phytochimiques suivants étaient présents dans l'extrait : alcaloïdes, composés phénoliques, tanins flavonoïdes, anthocyanes, saponines, terpènes, stérols. La teneur en alcaloïdes totaux était de 0,11g par gramme d'extrait. Pour stabiliser l'extrait et le rendre apte à la mise en gélules, il a fallu lui ajouter 25% de silice colloïdale et 13% de cellulose microcristalline. L'extrait stabilisé présentait une bonne aptitude à l'écoulement (temps d'écoulement de 6s, indice de Carr 11,8% et indice de Hausner de 1,13) ; il avait la texture d'une poudre modérément fine (d<sub>50</sub> < 300um) et une distribution homogène. La dose journalière déterminée pour un adulte de 60kg était de 3900mg d'extrait, correspondant à 313mg d'alcaloïdes totaux et pouvant être répartis dans 8 gélules N°0 ou 12 gélules N°00. Au contrôle, les gélules se sont révélées conformes aux exigences de la pharmacopée européenne 11<sup>e</sup> édition. **Conclusion:** Les caractéristiques des gélules formulées sont favorables pour en faire un bon candidat aux diverses phases d'essai clinique en vue d'en faire un médicament traditionnel amélioré (MTA).

**Antidiabetic activity and safety evaluation of antidiabetic “teas” from selected Cameroonian medicinal plants (*Mangifera indica*, *Persea americana*, *Senna alata*, *Ageratum conyzoides*)**

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**Abstract**

Diabetes mellitus has become increasingly prevalent globally. Due to the complexity of this condition, the wide range of drugs used for control do not completely cure diabetes, have adverse side effects and are beyond the reach of low income populations. Amongst other plants, *Mangifera indica* (MI), *Persea americana* (PA) *Ageratum conyzoides* (AC) and *Senna alata* are used in local diabetes management. This study set out to evaluate the *in vivo* antidiabetic activity and safety of traditional remedies (teas) prepared from these plants, and explore possibilities of improving their potentials through combination. Briefly a total of 4 monoherbal teas (MI, AC, PA, SA) 4 bi-herbal teas (MI+SA, MI+PA, MI+AC, PA+AC) and one polyherbal tea (AC+PA+MI) were prepared from mature plant leaves following methods employed by local traditional healers. Antidiabetic activity focused on the Oral Glucose Tolerance Test (OGTT) for hypoglycemic effect in male Wistar albino rats and the streptozotocin-induced diabetic rat model for acute antidiabetic assay. Safety was evaluated using the *in vivo* acute toxicity test in mouse model. The OGTT revealed a significant drop in post prandial glucose peak in rats treated with 20mg/kg MI tea, as compared to the negative control. Polyherbal tea (AC+MI+PA) at a dose of 20mg/kg returned the glucose levels to normal 30mins after the glucose peak. Also, AC+MI+PA and MI showed antidiabetic activity by significantly reducing fasting blood glucose levels ( $p \leq 0.5$ ) compared to the control group. Furthermore, the AC+MI+PA, SA, and MI exhibited hepato-protective while AC+MI+PA and MI showed nephron-protective activities. Based on the *in vivo* acute toxicity test, the teas were not toxic as there was no record of mortality and adverse effects in physical appearance and behavior. Out of the 9 teas, 2 showed antidiabetic potential with both hypoglycemic activity and subacute antidiabetic activity. This work highlighted the antidiabetic potential of MI and AC+MI+PA, justifying their further investigation as active ingredients in the formulation of improved phytomedicines for diabetes.

**Keywords;** Diabetes mellitus, antidiabetic activity, polyherbal tea

**In vitro Anti-onchocerca activity, phytochemical analysis and toxicity studies of extracts of *Azadiracta indica***

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**Résumé**

Elimination of onchocerciasis is hindered by the absence of suitable drugs. Ivermectin and moxidectin are currently the only recommended drugs for the treatment of this disease, with the former being the most widely used. However, both drugs have limitations in their use as anti-onchocercal agents. There is the need to identify novel anti-onchocercal agents including from plant sources. This project investigated the anti-onchocercal activity of extracts of *Azadiracta indica* that could eventually yield new drug leads for the cure of onchocerciasis. Organic extracts were obtained from the leaves and seeds of *A. indica* using solvents of different polarities and tested *in vitro* against two developmental stages of the bovine model parasite, *Onchocerca ochengi*. Both microfilariae (mf) and adult male worm viabilities were assessed by motility reduction, while adult female worm viability was evaluated using the standard MTT/formazan assay. Toxicity of active extracts was assessed on monkey kidney epithelial cells (LLC-MK2) and in BALB/c mice. The methylene chloride extract of the leaves was the most active against the adult female worms and the mf while the hexane extract of the leaves was the most active against the adult male worms. Selectivity indices for the most active extracts were 1.12 for adult females, 7.77 for the mf and 7.35 for adult males indicating that the extracts are selectively active on the parasites. The most active extracts showed no acute toxicity to Balb/c mice and had no significant effect on the liver enzymes, alanine aminotransferase, and aspartate aminotransferase, and markers of kidney function, urea, and creatinine ( $p < 0.05$ ). Phytochemical analysis revealed the presence of saponins, flavonoids, steroids, tannins, alkaloids, polyphenols and terpenoids. The anti-onchocercal activity and selectivity indices of *A. indica* extracts suggest the plant is a potential source of new anti-onchocercal drug leads justifying further investigations for the identification and isolation of the bioactive compounds.

**Keywords:** *Azadiracta indica*, Onchocerciasis, Phytochemical, plants, toxicity

Potentiels antibactériens comparés de l'extrait  
hydro-éthanolique des feuilles d'*Annona muricata* Linn (Annonaceae) à six antibiotiques  
courants

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**Résumé :**

Justification: La recherche sur les phytomédicaments comme alternative aux traitements conventionnels contre les pathologies humaines et animales est une priorité pour les systèmes de santé car les maladies infectieuses restent responsables de la moitié des décès dans les pays en développement par contre dans les pays développés il s'agit plutôt des pathologies cardiovasculaires.

Objectif : Cette étude avait pour but de Comparer le potentiel antibactérien de l'extrait hydroéthanolique ou aqueux des feuilles d'*Annona muricata* L à six antibiotiques courants.

Méthodologie : L'extrait hydro-éthanolique (HE) était obtenu par macération dans le solvant (éthanol/eau 70/30 v/v) et l'extrait aqueux (AQ) par macération dans de l'eau distillée. Les antibiotiques utilisés étaient sélectionnés sur la base d'un questionnaire rempli auprès des structures pharmaceutiques camerounaises. L'activité antibactérienne quant à elle était évaluée par la détermination des Concentrations Minimale Inhibitrice et Bactéricide (CMI et CMB, respectivement) sur *Pseudomonas aeruginosa*, *Staphylococcus aureus* et *Enterobacter cloacae* sélectionnés pour leur caractère multi-résistant et leur rôle dans les infections hospitalières.

Résultats : Le rendement de l'extraction HE et AQ étaient similaires (14,3% et 13,05%, respectivement). L'analyse des données a révélé que les antibiotiques les plus utilisés étaient les bêta-lactamines. Les valeurs des CMI obtenues étaient comprises entre  $33,75 \pm 7,5$  mg/ml et  $67,5 \pm 15$  mg/ml pour l'extrait HE. Pour l'extrait aqueux les valeurs respectives étaient de  $17,52 \pm 3,15$  mg/ml à  $24,45 \pm 8,6$  mg/ml. Pour les antibiotiques, les CMI variaient entre 0,000015 et 6,25 mg/ml. La comparaison du potentiel antibactérien a montré qu'il faut une masse de poudre initiale de 38 à 15.71.334 fois plus élevé que celle de l'antibiotique conventionnel avec l'extrait hydroéthanolique et de 22 à 8.806.667 fois plus élevé avec l'extrait aqueux pour une activité équivalente avec les six antibiotiques considérés.

Conclusion : Ces résultats soulignent la nécessité de mise en place des politiques qui concourent à la production à grande échelle de la matière première.

**Mots clés** : *Annona muricata* Linn, masse extrait, CMI, CMB, antibiotiques.

**Antibacterial bio-guided investigation of a Cameroonian medicinal plant: *Olax latifolia*  
(Olacaceae)**

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**Abstract:**

**Background:** Infectious diseases caused by bacteria are one of the leading causes of deaths in the world. Some respiratory tract infections are caused by bacteria and are considered as one of the major public health problems leading to morbidity and mortality. Thus, in recent years there has been increased use of plants and their derivatives in treatment of cough, tuberculosis and bronchitis. *Olax latifolia* is one of those plants used in traditional medicine for the treatment of these ailments. **Purpose:** The aim of this work is to obtain active extracts, fractions, or compounds with less toxicity which could serve for a trial formulation of a phytodrug against respiratory tract infection. **Methods:** The stem bark and roots extracts of *Olax latifolia* were prepared and screened against four bacterial strains using Gentamycin as positive control. By trituration of these extracts using *n*-hexane, acetone and MeOH solvents, three fractions were obtained and then, submitted to the in-vitro antibacterial testing on *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Escherichia coli* using the microdilution method. Active fractions were submitted to chromatography separations using silica gel and sephadex LH-20 to afford pure compounds, which were characterized by spectroscopic and spectrometric analysis. **Results:** Extracts and fractions from roots and stem-bark of *Olax latifolia* displayed a significant activity with MICs ranging from 15.6 µg/mL to 1000 µg/mL. The most active fractions were recorded in the *n*-Hexane and ethyl acetate fractions from roots with MIC values of 15.6 µg/mL and 62.5 µg/mL against *Escherichia coli* and *Staphylococcus aureus* respectively. Concerning the stem-bark, the acetone fraction recorded the best activity with the value of 62.5 µg/mL against *Staphylococcus aureus*. Chemical investigation on this acetone fraction afforded seven compounds which were fully characterized among which 4'-O-Methylgallocatechin, gallocatechin glycoside, Stigmasterol glucoside and mixture of cis and trans isomers of dihydroflavan-3-O-glycosylated classes which have been separated using HPLC. **Conclusion:** Bio-guided investigation of *Olax latifolia* can lead to the formulation of an effective standardized phytomedicine that can be integrated into our health care system for sustainable development.

**Keywords:** Respiratory tract infection, *Olax latifolia*, Olacaceae, antibacterial activity, *Staphylococcus aureus*.

Anti-plasmodial bio-guided investigation of *Combretum platypterum* (combretaceae)

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**Abstract:**

**Background:** Plants belonging to *Combretum* genus are traditionally used to treat diseases such as fever and malaria showing their antiparasitic potential. Malaria is a disease caused by a parasite belonging to *Plasmodium* genus. This disease is transmitted by the bites of infected mosquitos. *Plasmodium falciparum* is the most dangerous species. Each year, about 13.7 million people worldwide died of malaria and about 3 million of these deaths occurred in children under 5 years. **Purpose statement:** Our research work is to investigate the anti-plasmodial potential of extracts, fractions and compounds from *Combretum platypterum*. **Methodology:** Different extracts of the roots, flowers and twigs of this plant were subjected to anti-plasmodial screening against Chloroquine multiresistant Dd2 and sensitive 3D7 strains of *Plasmodium falciparum* using SyBr Green fluorescence-based assay. These extracts were fractionated by liquid-liquid partition and subjected to usual chromatographic separation techniques to afford pure compounds. **Results:** The hydroethanolic extract of the roots have shown a good activity IC<sub>50</sub> 40.42 µg/mL on PfDd2 and the methanolic extracts of the roots, flowers and twigs showed good activities with IC<sub>50</sub> ranging from 32.1 to 40.49 µg/mL on PfDd2 and 42.72 to 47.7 µg/mL on Pf3D7. The n-hexane fraction of the twigs of this plant have shown a very good activity on the resistant strains of *Plasmodium falciparum* with the IC<sub>50</sub> of 4.67 µg/mL. The chemical investigation of the flowers of *Combretum platypterum* led to the isolation of seven compounds. The structures of three were elucidated based on their NMR data and by comparison with authentic samples as a mixture of stigmaterol and β-sitosterol, 3, 3', 4-tri-O-methylellagic acid and dioctyl terephthalate. The elucidation of the remaining compounds is ongoing. **Conclusion:** Given the interesting results *Combretum platypterum* could be the base for the pre-formulation of anti-plasmodial phytomedicine, if the extracts are non-toxic.

**Keywords:** *Combretum platypterum*, anti-plasmodial, phytomedicine.

*In vitro* filaricidal properties of aqueous extracts of *Combretum nigricans* (Combretaceae) on *Onchocerca ochengi* (Onchocercidae)

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**Abstract**

**Aim:** Onchocerciasis is an endemic parasitic disease in Sub-Saharan Africa that significantly impacts animal and human health. In Northern Cameroon, medicinal plants from the *Combretum* genus are used for onchocerciasis traditional treatment although there is no scientific evidence of their anti-filarial potential. This study evaluates the *in vitro* macro and microfilaricidal properties of water extracts from *Combretum nigricans* in *Onchocerca ochengi*. **Materials and methods:** *O. ochengi* microfilariae and adult male worms were recovered from cowhide fragments. Oxidative stress indicators and motility tests were used to assess the filaricidal impact. Female albino rats and mice were used to test for acute toxicity. The contents of secondary metabolites were quantified. **Results:** The bark aqueous extract was more active on macrofilariae at 1 mg/mL for 24 h (100%) than the leaves (63.9%) and roots (75%) extracts at the same concentration. Likewise, a stronger microfilaricidal effect was found with this extract at 0.5 mg/mL for 1h (100%) compared to roots and leaves extracts. The dose-response effect with the bark extract gave an IC<sub>50</sub> of 351 µg/mL vs 113 µg/mL for flubendazole after 24h incubation, while the microfilaricidal efficacy revealed an IC<sub>50</sub> of 158.7 µg/mL vs 54.09 µg/mL for ivermectin after 1-hour incubation. Examining stress indicators on parasite homogenates showed that macrofilaricidal activity is associated with a significant increase in nitric oxide, glutathione, and malondialdehyde generation and a decrease in catalase activity. At 2000 mg/kg, rats and mice showed no harm. The phytochemical investigation revealed that the barks contained more phenolic acids, condensed tannins, flavonoids, and saponins than the leaves (p< 0.001). **Conclusion:** These findings support *C. nigricans*' anti-filarial activity and identify oxidative stress indicators as prospective treatment targets in *O. ochengi*. It would be interesting to conduct *in vivo* studies to understand their anti-filarial activity better.

**Key words :** filaricidal properties, *Combretum nigricans*, *Onchocerca ochengi*, oxidative stress markers

**Research of novel anticancer and antiviral drugs derived from two Cameroonian medicinal plants: *Dorstenia psilurus* (Moraceae) and *Zanthoxylum armatum* (Rutaceae).**

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**Abstract**

Cancer is the generic term used to designate a large group of diseases which can affect any part of the body. It is caused by the loss of regulation of cells due of their uncontrolled proliferation. It has been reported that, cancer is a major public health problem in many countries and the second leading cause of death in the world with over 10 million deaths per year <sup>1</sup>. Projection indicates that, without urgent intervention, the number of deaths due to cancer will increase to nearly 1 million deaths per year by 2030. Since 2019, The world has been confronted to another health problem (the coronavirus (COVID-19)) which is highly contagious, surprised the whole world with its brutality, suddenness and rapid expansion. Despite all these rising rates in the world, Africa has been the least affected continent and this could due to the use of medicinal plants. Dorsilurins C, E and H, three flavonoids isolated from a Cameroonian spice, *D. psilurus*, in our laboratory, were identified as possible SARS-CoV-2 main proteins inhibitors upon docking. Some species of these genera (*Zanthoxylum* and *Dorstenia*) are used in traditional medicine to treat tumors, cancers, and viral infections. that is why we have decided to carry out our research work on *D. psilurus* and *Z. armatum*. Extracts of dry roots of *D.psilurus* and seeds of *Z.armatum* were subjected to column chromatography which led to obtaining 06 compounds from *D.psilurus* and 10 compounds from *Z.armatum* The structures of these compounds were elucidated using modern spectroscopic methods (1D NMR and 2D NMR) and mass spectroscopy. Amongst those compounds, two are described here for the first time these are: (2E,4E,8E,10E)-12,13-dihydroxy-N-(2-hydroxy-2-methylpropyl) tetradeca-2,4,8,10-tetraenamide and (2E,4E,9E,11E)-8,13-dihydroxy-N-(2-hydroxy-2-methylpropyl) tetradeca-2,4,9,11-tetraenamide. Cytotoxic and antiviral tests of fractions and pure compounds are still in progress.

**Key words:** *Dorstenia psilurus*, *Zanthoxylum armatum*, SARS-CoV-2, chromatography.

**Ethnobotanical knowledge of *Prunus africana* (Hook.F.) Kalkman (Rosaceae) by people living in community forests in North Kivu, Eastern Democratic Republic of Congo**

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**Abstract**

**Background:** *Prunus africana* (Hook.F.) Kalkman (*Rosaceae*) is a multi-purpose species with important utility value for the populations that depend on it. Indeed, local populations living in community forests use *P. africana*. The objective of this study is to document the different uses of *P. africana* by local populations in traditional medicine for a better vulgarization for a sustainable management of the resource. **Methods:** Ethnobotanical surveys were conducted in four *P. africana* distribution areas in North Kivu. Data were collected on the basis of a survey from 221 informants. Statistical analysis and calculation of ethnobotanical indices were performed using R 4.1.2 software. **Results:** Results of the investigations show that *P. africana* is by far used in medical practices (96.83%). It is also used as wood energy (60.18 %), charcoal (40.27 %), in handicrafts (7.24 %), construction (6.79 %), food (2.26 %) and traditional rites (0.45 %). In traditional pharmacopoeia, the characterization of the uses allowed us to identify 23 diseases for which *P. africana* extracts are used to treat them. The bark and leaves are the most used organs in the recipes. The decoction (99.5%), the macerated (10.41%) and the powders (7.69%) are the galenic or pharmaceutical forms in which the local populations prepare the remedies. The potions prepared are mainly administered orally (99.5%). **Conclusion:** The multiple forms of use of *P. africana* by the populations of North Kivu, both in medicine and in other categories of use, constitute a threat to its survival. For a sustainable management, the results of this study reveal that it is possible to substitute the species *P. africana* with other plant species with similar potential in order to limit its overexploitation.

**Keywords:** *Prunus africana*, community forests, multiple uses, traditional medicine, sustainable management, DR Congo

**Anti-ulcer activity of leaf extract obtained from *Ficus lingua* (Moraceae)  
against glacial acetic acid-induced gastric ulcer in rats**

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**Abstract**

*Ficus* genus is typically tropical plants and is among the earliest fruit trees cultivated by humans. The species *Ficus* genus are commonly used in traditional medicine for a wide range of diseases and contain rich secondary metabolites that have shown diverse applications such as antioxidant, cytotoxic, antimicrobial, antiinflammatory, antidiabetic, antiulcer, and anticonvulsant. Although many species within the genus *Ficus* have been encompassed by pharmacological investigations in previous years, there are many species such *Ficus lingua* that have not been studied. The present study was initiated to investigate the healing effects and to understand potential underlying mechanism of leaf extract obtained from *Ficus lingua* (EFL). Antiulcer activity was studied on chronic gastric ulcers induced by injection of 0.05 ml of acetic acid (30%) into the stomach wall. Rats were treated daily for 10 days after ulcer induction with EFL at the dose of 100mg/kg, 200mg/kg, and 400mg/kg. Ulcer index, percentage of healing, mucus secretion, histological, inflammatory cytokines marker and oxidative stress parameters were evaluated. EFL protected the gastric mucosa from acetic acid ulceration, as revealed by the improved macroscopic and histological appearance. EFL significantly increased the gastric homogenate content of SOD. EFL inhibited the lipid peroxidation as revealed by the reduced gastric content of malondialdehyde (MDA). Analysis of serum cytokines indicated that EFL pretreatment obviously elevated the decrease of interleukin-10 (IL-10) level, while markedly mitigated the increment of interleukin-6 (IL-6) and tumor necrosis factor alpha (TNF- $\alpha$ ) secretions in acetic acid-induced rats. Taken together, these results strongly indicate that FL could exert a gastro-healing effect, and the underlying mechanism might be associated with the stimulation of secretion of mucus, improvement of antioxidant and anti-inflammatory status.

**Keywords:** Gastric ulcer, *Ficus lingua*, Reactive oxygen species, anti-inflammatory.



**Eco-friendly synthesis, characterization and *in vitro* antioxidant properties of the stem bark silver nanoparticles (AgNPs) of *Xeroderris stuhlmannii* Taub. (Fabaceae)**

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**Abstract**

*Xeroderris stuhlmannii* is a plant belonging to the Fabaceae family. Their different parts are used in traditional african medicine for the treatment of various diseases. The present study was carried out with the aim to highlight the antioxidant potential of the stem bark silver nanoparticles (AgNPs) of *Xeroderris stuhlmannii*. A eco-friendly, rapid and cost effective method for the bio-synthesis of silver nanoparticles, using the aqueous stem bark extracts of *X. stuhlmannii* (AgNPXs) was developed. After optimization, the obtained AgNPXs were characterized by ultra-violet visible spectroscopy (UV-vis), powder X-ray diffraction patterns (PXRD), energy dispersive X-ray spectroscopy (EDS) and scanning electron microscopy (SEM). Antioxidant activity of AgNPXs is investigated using ferric reducing antioxidant power (FRAP), Diphenyl picryl-hydrazyl (DPPH), 2,2'-azino-bis-(3-ethylbenzothiazoline-6-sulfonique (ABTS), hydrogen peroxide and nitric oxide radical scavenging assays. The average size of the spherical AgNPs was found to be 23,65nm. AgNPXs exhibited remarkable ABTS, DPPH, hydrogen peroxide, nitric oxide, and hydroxyl radical scavenging activities as well as reducing power. Our results support the conclusion that the synthesized silver nanoparticles from the aqueous stem bark extracts of *X. stuhlmannii* present a potent antioxidant activities and could be successfully used as therapeutic tools for treatment of all diseases mediated by ERO.

**Keywords:** *Xeroderris stuhlmannii*, antioxidant activity, silver nanoparticles

**Insecticidal effect of *Calotropis procera*, *Eucalyptus camaldulensis* and *Tithonia diversifolia* powders on the foraging activity of *Apis mellifera* on *Vigna unguiculata* flowers in Dang (Ngaoundéré - Cameroon)**

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**Abstract**

**Introduction:** In order to evaluate the insecticidal effect of *Calotropis procera*, *Eucalyptus camaldulensis* and *Tithonia diversifolia* powders on the foraging activity of *Apis mellifera* on *Vigna unguiculata* flowers, studies were carried out in Dang, from June 22 to September 25, 2022. **Methodology:** During the rainy season, 44 plots of 4x3.5 m each were distributed according to a randomized complete block design model, including 04 untreated plots, 04 treated with parastar, and 36 plots treated with 10% aqueous leaf extracts, 20% and 30% sprayed separately. And 4 groups of flowers were randomly selected: (1) free, (2) protected from insects, (3) free exclusively from *A. mellifera* and (4) protected from insects. The foraging activity of *A. mellifera* was assessed in each plot. **Results:** 04 species of pollinating insects have been inventoried on cowpea flowers, *A. mellifera* occupies first place with 50% of visits. The activity of this bee is from 6 - 13 hours with a peak of activity between 8 - 9 hours. they collected nectar and pollen. The average abundance per 1000 flowers, visit duration and average foraging speed of *A. mellifera* were higher in plots treated with *E. camaldulensis* and *C. procera* than in other plots. **Conclusion:** Under the effect of botanical insecticides, *A. mellifera* significantly increased the fruiting rate, the average number of sheaths per fruit and the percentage of normal seeds.

**Keywords:** *Apis mellifera*, *Vigna unguiculata*, bio - insecticide, yield, Dang

**Attenuation of hyperglycemia and diabetic nephropathy in High Fat Diet, Streptozotocin-Induced Type 2 Diabetic Male Wistar Rats by the Aqueous Extract of *Asparagus africanus* (Asparaceae).**

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**Abstract**

**Background:** *Asparagus africanus* (Family: Asparagaceae) has been claimed to possess antidiabetic activity in the ethnomedicinal literature in Cameroon. Following the traditional indication, several people reported his efficacy in control of diabetes. **Purpose:** The present study was carried out to investigate the protective role of aqueous extract of *A. africanus* against experimentally induced type 2 diabetes mellitus and its associated nephropathy in Wistar rats **Methodology:** Study was carried out on high fat diet and streptozotocin -induced rats and 3 doses of *A. africanus* (250, 500 and 1000 mg/kg, orally) was tested. Fasting blood glucose level and body weight were weekly measured over during a treatment of 28 days. Later, were investigated the kidney weight, creatinine, albumin and urea in serum and urine, renal redox biomarkers such as Total oxidative status (TOS), total antioxidant defense (TAD), malondiaehyde, nitric oxide (NO), glutathione reductase (GSH), catalase (CAT) and superoxide dismutase (SOD) as well as kidney microstructure. **Findings:** Aqueous extract of *A. africanus* (AEAA) significantly increased body weight, lowered blood glucose levels and improved the renal function indicated by lowering the serum urea and creatinine and increasing serum albumin, while it caused the increase the concentration of urea and creatinine, and deceased albumin in urine. Additionally, the extract reduced the TOS, MDA and NO, while it caused the increase of TAD CAT, GSH and SOD in kidney. Furthermore, AEAA ameliorated kidney hypertrophy index and reduced the risk of glomerulosclerosis and tubular atrophy. **Conclusion:** These present results have delivered experimental evidence that AEAA delayed the progression of diabetes through the antihyperglycemic antioxidant activities and the improvement of the renal function and tissue.

**Keys words:** Type 2 Dabetes mellitus, Nephropathy, Antioxidant, Hypoglycemia

**Reversal Effect of ethanol-induced Impairment in Testicular Parameters and Serum Haptoglobin and Interleukin-1 levels by the Aqueous Extract of *Solanum torvum* Sw. (Solanaceae) in Male Wistar Rats**

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**Abstract**

**Background:** Drinking continues to be a major problem in the low-income countries and is the leading cause of cellular injury, inflammation and oxidative damage in testis that is one of the main infertility causes. There has been an increasing proof of medicinal plant use in male infertility treatment.

**Purpose:** This study examines the effect of *Solanum torvum* extract in sperm and testis parameters and anti-inflammatory in ethanol-intoxicated rats. **Methodology:** Thirty adult male rats ( $150 \pm 2$  g) were randomly divided into group of 5 rats and three doses of extract (100; 200 and 400 mg/kg) were tested. Animals were given the 6 mg/kg of ethanol followed by extract every 2 days for 60 days. After treatment, caudal epididymal spermatozoa were analysed for viability, count, and motility.

Also, was examined the histoarchitecture of seminiferous tubules, the testicular oxidative stress biomarkers and serum haptoglobin and IL-1 $\beta$  levels. **Results:** The findings revealed that *S. torvum* extract significantly ( $p < 0.05$ ) reserved the alcohol-induced decrease in testicular proteins, vesicular fructose levels, sperm density, and decrease in sperm motility compared to negative group. Also, *S. torvum* extract significantly ( $p < 0.05$ ) reserved in a dose-dependent manner the alcohol-induced increased in total oxidative stress CAT, SOD, TBARS and nitric oxide levels in testis and the increased in serum haptoglobin and IL-1 $\beta$  concentrations compared to negative group. **Conclusion:** Administration of the aqueous extract of leaves & fruits of *S. torvum* reversed the detrimental effect of chronic ethanol administration on male reproduction.

**Keywords:** Alcohol; Reproduction; Oxidative stress; Inflammation

**Aqueous leaves extract of *Xeroderris stuhlmannii* taub. (Fabaceae) modulates blood pressure against cadmium chloride - induced hypertension in Wistar albino rats**

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**Abstract**

Cadmium is a highly toxic heavy metal and environmental contaminant. It accumulates in tissues and causes various diseases such as hypertension, in part due to endothelial damage and oxidative stress. In this study, we investigated the effect of leaf aqueous extract of *Xeroderris stuhlmannii* (*X. stuhlmannii*) on CdCl<sub>2</sub> induced hypertension. In the study firstly the hypertension was induced in rat by giving CdCl<sub>2</sub> 1 mg/kg i.p for 21 days. After that, the rats were treated with aqueous extract (35, 100 and 300 mg/kg) of *X. stuhlmannii* or amlodipine (1 mg/kg) for two weeks. CODA non-invasive blood pressure system was used to record some cardiovascular parameters as blood pressure and heart rate. Biochemical analysis of various parameters, histopathological analysis of some organs and stress oxidative biomarkers were performed at the end of treatment. The extract was able to significant ( $P < 0.05$ ; 0.01; 0.001) decrease systolic blood pressure, diastolic blood pressure and heart rate. Plant extract also significantly reduced ALT (44.46%), AST (45.61%), urea (37.88%) concentrations. Moreover, the *X. stuhlmannii* extract had beneficial effects on *in vivo* antioxidant parameters as well as on histological sections of the heart, liver, kidneys and aorta. Our findings demonstrated that treatment with the *X. stuhlmannii* extract could protect against cadmium induced hypertension and justify its use against high blood pressure in traditional medicine.

**Keywords:** *Xeroderris stuhlmannii*, Hypertension, Cadmium chloride, Oxidative stress

**Aqueous leaves extract of *Xeroderris stuhlmannii* taub. (Fabaceae) modulates blood pressure against cadmium chloride - induced hypertension in Wistar albino rats**

Augustine Nkojap Kuinze<sup>1</sup>, Edwige Laure Nguemfo<sup>2</sup>, William Nana Yousseu<sup>1</sup>, Calvin Bogning Zangueu<sup>1</sup>, Jacquy Joyce Wanche Kojom<sup>1</sup>, Russelle Camélie Nguemnang Tchatchouang<sup>1</sup>, Christelle Stéphanie Sonfack<sup>1</sup>, Dafane Ferro Nkwagwa Nkwayep<sup>1</sup>, Timo D Stark<sup>3</sup>, Alain Bertrand Dongmo<sup>1\*</sup>

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**Abstract**

Cadmium is a highly toxic heavy metal and environmental contaminant. It accumulates in tissues and causes various diseases such as hypertension, in part due to endothelial damage and oxidative stress. In this study, we investigated the effect of leaf aqueous extract of *Xeroderris stuhlmannii* (*X. stuhlmannii*) on CdCl<sub>2</sub> induced hypertension. In the study firstly the hypertension was induced in rat by giving CdCl<sub>2</sub> 1 mg/kg i.p for 21 days. After that, the rats were treated with aqueous extract (35, 100 and 300 mg/kg) of *X. stuhlmannii* or amlodipine (1 mg/kg) for two weeks. CODA non-invasive blood pressure system was used to record some cardiovascular parameters as blood pressure and heart rate. Biochemical analysis of various parameters, histopathological analysis of some organs and stress oxidative biomarkers were performed at the end of treatment. The extract was able to significant ( $P < 0.05$ ;  $0.01$ ;  $0.001$ ) decrease systolic blood pressure, diastolic blood pressure and heart rate. Plant extract also significantly reduced ALT (44.46%), AST (45.61%), urea (37.88%) concentrations. Moreover, the *X. stuhlmannii* extract had beneficial effects on *in vivo* antioxidant parameters as well as on histological sections of the heart, liver, kidneys and aorta. Our findings demonstrated that treatment with the *X. stuhlmannii* extract could protect against cadmium induced hypertension and justify its use against high blood pressure in traditional medicine.

**Keywords:** *Xeroderris stuhlmannii*, Hypertension, Cadmium chloride, Oxidative stress

**Effects of *Zingiber officinale* essential oil as a feed additive on zootechnical performance and some biochemical parameters in broilers chickens**

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**Abstract**

In order to reduce the problems induced by the use of antibiotics as feed additives in broiler diet and to improve their digestive nutrient utilization capacity, the present study was carried out to evaluate the effect of *Zingiber officinale* essential oil as a feed additive on zootechnical performance and some biochemical parameters in broilers. The trial was carried out between January and June 2023 on 144 COBB 500 chicks (3-week-old with an average weight of 490±34.09 g). The chicks were divided into 4 batches of 36 birds, in a completely randomized design. Each treatment was subdivided into 3 sub-batches of 12 birds (6 males and 6 females), corresponding to the replicates. For 28 days, the birds were gavaged with 0, 20, 40 and 60 µl of ginger rhizome essential oil per kg body weight corresponding to the 4 treatments (LH0, LH20, LH40 and LH60). Results showed that live weight gain and average daily gain (56.09 ± 2.21 g/day, 59.37 ± 3.75 g/day 62.97 ± 5.27 g/day and 64.83 ± 3.66 g/day for LH0, LH20, LH40 and LH60 respectively) increased significantly (p<0.05) with increasing levels of *Zingiber officinale* essential oil. On the other hand, the use of essential oil led to a decrease in the feed conversion ratio. No significant differences (p<0.05) were observed for feed consumption, carcass characteristics and the biochemical parameters studied at any essential oil level compared to the control diet. In economic terms, a significant reduction (p<0.05) in the feed cost per kilogram of chicken live weight was recorded with the use of *Z. officinale* essential oil. Based on the results obtained, it can be concluded that the use of *Z. officinale* essential oil improved the zootechnical performance of broilers and could therefore be used as feed additive in poultry farming specifically in broilers.

**Key words:** Broilers, *Zingiber officinale* essential oil, zootechnical performance, biochemical parame

**Ameliorative effects of stern bark the aqueous extract of *Khaya anthotheca* (Welw.) C. DC (Meliaceae) in vanadium induced neurodegeneration in mice**

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**Abstract**

Ethnobotanical enquiries have revealed that *Khaya anthotheca* (Welw.) C.DC (Meliaceae) has anxiolytic properties and is used to alleviate vaginal dryness in postmenopausal women in Cameroon. The aim of this study was to evaluate the ameliorative effects of the aqueous extract of *K. anthotheca* in vanadium induced neurodegeneration in mice. To do this, forty neonatal female mice were used in this study. All animals received vanadium (3 mg/kg BW/72 h, by lactation and i.p.) for 20 weeks except the Control group. At 16 weeks old, mice were divided into 5 groups (n = 8): Control group received distilled water; V-group received vanadium (V) (3 mg/kg BW every 72 h i.p.), V + Vit E group received vitamin E (500 mg/kg BW/72 h) and vanadium (V) (3 mg/kg BW/72 h i.p, simultaneously). V + KA 125 and V + KA 250 groups received *K. anthotheca* extract at the doses of 125 and 250 mg/kg BW/day respectively and vanadium (V) (3 mg/kg BW/72 h i.p, simultaneously). The treatment was done *per os* at 10 mL/kg of volume of administration for 4 weeks. After sacrifice, brains were harvested and pathologies were assessed using cresyl violet staining and immunohistochemistry (GFAP, Iba-1 and MBP). As results, neurodegeneration induced by vanadium exposure was marked by an increase of GFAP-immunoreactive cells, microgliosis and demyelination. The treatment with *Khaya anthotheca* extract at the dose of 250 mg/kg BW resulted in the preservation of cellular integrity in the same anatomical regions with reduced astroglial and microglial activation and prevented demyelination. In conclusion, the experiments showed that *Khaya anthotheca* extract, administered in combination with vanadium reduces vanadium-induced brain injury. Therefore, to minimise vanadium induced toxicity, the plant should be given more emphasis as a candidate in developing a modern phytodrug.

**Keywords:** *Khaya anthotheca*, Neuroprotection, Vanadium, neurodegeneration.

**Chemo preventive potential of *Xylopi aethiopica* Dry Fruits Ethanol Extract on Breast Cancer induced by 7,12-dimethylbenz(a)anthracene in Female Wistar rats**

**Abstract**

***Introduction:*** Breast cancer remains a topic of interest due to its high mortality rate in Cameroonian women population associated with abnormal division of cells in the body. *Xylopi aethiopica* dry fruits used traditionally possess both nutritional and medicinal potential in the management and treatment of such malignant tumours. Breast cancer patients resurgence, the high cost of treatment (13500000 million for 6 courses of herceptin), the lack of infrastructure and the late diagnosis are reasons that have encouraged me to work on breast cancer with the aim of proposing alternative therapies which optimize prevention, curation and boost the immune system to allow it to defend in case of attack. ***Methodology:*** This study evaluated the *in vivo* chemo preventive potential of *Xylopi aethiopica* dry fruits extract on 7,12-dimethylbenz (a) anthracene (DMBA) induced mammary tumours. 42 female rats aged 45-55 days (~ 80g) received a unique dose of DMBA except the normal group was evaluated. The negative group received untreated DMBA, positive group received tamoxifen (3.3 mg/kg) as the reference drug and *Xylopi aethiopica* treated groups (75, 150, 300 mg/kg BW) for 20 weeks. The following parameters; tumour incidence, tumour burden and volume, CA 15-3 serum level, antioxidant, inflammatory status and histopathology were evaluated. ***Results:*** All the tested doses of *X. aethiopica* extract and tamoxifen significantly reduced the tumour incidence, tumour burden and volume without tumour growth noticed in the normal rats. Moreover, an increase in antioxidant (SOD, CAT, GSH) and a decrease in anti-inflammatory cytokines (TNF- $\alpha$ , INF- $\gamma$ , IL-6 and IL-12) in all tested doses and tamoxifen were observed. The DMBA untreated group significantly increases the MDA level and all the cytokines' levels. Results obtained could be justified by polyphenols, flavonoids, saponins, alkaloids, tannins and terpenoids content of the extract.

**Keywords:** *Xylopi aethiopica*, DMBA, oestrogen, Breast cancer

**Anti-obesity, antihyperglycemic and antihyperlipidemic effects of aqueous extract from *Alchornea cordifolia* fruits in Wistar rats fed a hypercaloric diet**

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**Abstract**

Obesity is a chronic disease due to high calorie intake and characterized by excessive accumulation of fat in various parts of the body and metabolic complications. The search for cost-efficient therapeutic as well as preventive agents derived from plants remains crucial. Therefore, the present study is investigating the effects of *Alchornea cordifolia* fruit aqueous extract (AcE) against some metabolic impairments linked to a hypercaloric diet (HCD) consumption in rats. Twenty male wistar rats were divided into four groups receiving the following treatments daily during 4 weeks : negative control (standard laboratory diet + distilled water ; SLD-Ctrl), positive control (hypercaloric diet + distilled water ; HCD-Ctrl), reference group (hypercaloric diet + atorvastatin 10 mg/kg bw ; HCD-Ref) and test group (hypercaloric diet + AcE 100 mg/kg bw; HCD-AcE). Body weight gain and morphometric indices were monitored every 2 days. Fasting as well as postprandial blood glucose and lipid profile were assessed using enzymatic-colorimetric methods. As compared to the HCD-Ctrl group, rats from the test group had significantly lower weight gain (22.60% vs 35.40% ; p<0.05), reduced fasting blood glucose (-12.94% ; p<0.05) and postprandial incremental glucose (-45,71% ; p<0.05), lower concentrations of total cholesterol (125.71±2.35 vs 199.36±2.65 mg/dl ; p<0.05), triglycerides (170.56±5.25 vs 212.48±6.91 mg/dl), LDL-cholesterol (27.36±4.52 vs 126.96±4.25 mg/dl ; p<0.05) and higher concentrations of HDL-cholesterol (64.23±2.91 vs 29.90±2.55 mg/dl ; p<0.05). These results highlight the anti-obesity, antihyperglycemic and antihyperlipidemic properties of *A. cordifolia* fruits in response to a hypercaloric diet. Such properties would find applications in the management and the prevention of obesity and its metabolic complications.

**Keywords:** obesity, blood glucose, lipid profile, hypercaloric diet, *A. cordifolia*

***In vivo* evaluation of the antihypertensive activities of *Lippia alba* n. E. Brown (Verbenaceae) aqueous leaf extract on L-name induced hypertension in rats and physical analysis of *Lippia alba* tea leaves**

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**Abstract**

**Background:** Hypertension is dangerous, costly and can alter an individual's living condition. Phytomedicine (*Lippia alba*) is used to control and treat many diseases including arterial hypertension. Tea leaves are also commonly used locally and abroad to prevent and control HTA. **Objectives:** This study is aimed on investigating the antihypertensive activities of *Lippia alba* aqueous leaves extract on L-NAME-induced hypertension in rats and carry out physical analysis on the tea leaves of *Lippia alba*. **Methodology:** Extraction, analysis and screening of the plant was done. For induction, animals were randomly divided into 2 groups of normotensive rats (G1 received NaCl 0,9% (0.1ml/100g) and G2 received L-NAME (25mg/kg) for 21 days intraperitoneally). After test for hypertension, rats were further randomised into 5 groups (n=5). Normal-control received DW (1ml/100g), negative-control received L-NAME (12.5mg/kg), positive-control took captopril (25mg/kg), test-groups received plant extract at 75 and 150mg/kg (PO for 21 days). Hemodynamic parameters were measured after treatment. Lipid profile, hepatic and renal function markers, oxidative status, microstructure (heart, aorta, liver, kidney) were evaluated. Tea bags were made at the end and analyzed (color, flavor, CCM). Infusion was done at deferent time intervals (5, 10, 15, 20, 25 and 30 mins) and the concentration of extract was gotten with respect to time of infusion. **Results:** L-NAME significantly increase BP and HR, caused dyslipidemia characterised by hypertriglyceridemia and hypercholesterolemia, oxidative stress alterations, elevation in levels and activities of biochemical parameters compared to normal-control. Plant extract significantly reduced BP and HR, ameliorated oxidative status and biochemical parameters, reducing lesions in liver, aortic and kidney. The concentration of extract was directly proportional to time of infusion and CCM showed no contamination after conservation. Characteristic color and flavor were noted. **Conclusion:** This shows that the aqueous leaf extract of *Lippia alba* is able to treat LNAME-induced hypertension in rats. These results confirmed existent biological effects whenever this plant is empirically used to treat hypertension.

**Keywords:** Arterial hypertension, *Lippia alba*, L-NAME, Rats, Tea leave

**Antihypergesic and Antinociceptive effect of the Aqueous and methanolic extract from fruit of *Canthium venosum*).**

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**Abstract**

**Background:** Popular and historical accounts suggest that *Canthium venosum* which is medicinal plant used in Cameroon traditional medicine may treat various ailments including pain and inflammation. **Aim:** The present work was undertaken to evaluate the antinociceptive and antihypergesic effects of the aqueous and methanol extract from the fruit of *Canthium venosum* (AECV; MECV) **Methods:** Mice and rats (male and female) aged between 3 and 4 months were used. One hour after treatment with the different substances AECV or MECV (50, 100 and 200 mg/kg) and reference drugs (Diclofenac; 5mg/kg) and ruthenium red), animals received an intra-plantar injection of a solution of allyl isothiocyanate (20 µl/paw; 500 µmol) or formalin (2.5%). These animals were immediately placed in the observation cage for quantification of spontaneous pain. Then, animals which received allyl isothiocyanate were returned to the cages for a Von Frey test at the 2nd and 4th hours. Following the Von Frey test, the acetone test were carried out. Some parameters of oxidative stress were also performed in animals subjected to hyperalgesia induced by CFA. **Results:** Aqueous and methanolic extracts (50, 100 and 200 mg/kg), induced significant antinociception on neurogenic and inflammatory phases on acute pain induced by formalin. Moreover, administration AECV or MECV significantly inhibited both pain induced by allyl isothiocyanate and those induced by acetone and von Frey. The effect of these extracts on hyper algesia was cumulatively significant. **Conclusion:** The mechanisms involved in their action are seem to involve the inhibition of TRPA1 receptors.

*In vitro* and *in vivo* hypoglycemic and antidiabetic activity, anti-inflammatory of *Erythrina senegalensis* DC (Fabaceae) stem bark aqueous extract

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**Abstract**

**Introduction:** Diabetes mellitus is a serious complex multifactorial disorder characterized by hyperglycemia and glucose intolerance, either due to the relative deficiency in insulin secretion/action to enhance glucose uptake. If left untreated, it can lead to severe complications as micro- and macro-vascular diseases such as neuropathy, nephropathy, and cardiovascular diseases. Some conventionally available treatment options include insulin, amylin analogs and islet-transplantation and oral hypoglycemic, are more expensive and associated with various side effects, cost and inaccessibility for locations in developing countries hence the use of plants for their primary health needs. The aim of this study is to investigate the *in vitro* and *in vivo* antidiabetic, anti-inflammatory activities of *Erythrina senegalensis* DC and determine the mechanism of action using various models designed to stimulate specific antidiabetic targets. **Methodology:** *In vitro* studies were carried out with the extract at different concentrations to determine the anti-inflammatory properties and to evaluate the glycation of hemoglobin as well as the glucose uptake. *in vivo*, normoglycemic rats received glucose, maltose and starch for tolerance tests. **Results:** The plant extract at different concentrations resulted in inhibition of proteases and albumin denaturation. With regard to enzymes which hydrolyze sugars, an inhibition of alpha-amylase and alpha-glucosidase has been observed. these inhibitions were of the order of (77.06 %), (73.44 %), (81.79 %), (75.39 %), respectively. The extract resulted in increased glucose uptake, similarly the extract reduced the glycation of hemoglobin *in vitro*. Glucose, maltose and starch tolerance tests show inhibition of the hyperglycemic peak unlike the normal control batch on normoglycemic rats. **Conclusion:** These results show that the aqueous extract of *Erythrina senegalenses* stem bark exhibits anti-inflammatory, hypoglycaemic and antidiabetic properties. **Impact of study:** The development of an improved traditional medicine can significantly reduce the number of deaths from diabetes and its complications.

**Keywords:** Anti-diabetic, anti-inflammatory, rats, aqueuos extract, *Erythrina senegalenses*

**Chemical and fatty acid composition of *Myrianthus arboreus* and *Terminalia catappa* seed oils and their effects on biochemical parameters of Wistar albino rats**

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**Abstract**

The remarkable diversity of plant species in Cameroon holds untapped potential for uncovering novel dietary lipid sources. Edible seeds have been used as traditional food in several countries and provide high quality proteins, minerals, vitamins and lipids. Some of these seeds contain significant levels of unsaturated fatty acids whose consumption has been linked to having beneficial effects on human health. Seed oils are known for their diverse applications in various industries. Understanding the physicochemical properties of these oils is crucial for evaluating their quality and potential applications. The present study aimed at extracting oil from the almonds or seeds of *Myrianthus arboreus* and *Terminalia catappa* fruits, two indigenous plant species in Cameroon, study their Physicochemical properties, fatty acid composition as well as effects of their consumption on serum lipid profile of Wistar albino rats. The seeds were decorticated, dried, ground and defatted by maceration with hexane. The crude oils obtained were analysed for fatty acid composition using Gas Liquid chromatography. The oil quality was also analysed using methods by AOAC. The extracted oils were then used as supplements to the basal diet and administered orally to rats for a period of 4 weeks to determine their effect on lipidemia, after dissection. Results showed that the oil extracted from *Myrianthus arboreus* almonds had a higher percentage of unsaturated fatty acids (67.29%) compared to *Terminalia catappa* almond oil (48.09%). The dominant fatty acids in both oils were oleic acid and linoleic acid. The physicochemical properties of the oils extracted from *T. catappa* and *M. arboreus* revealed 2.24 and 5.61 mg KOH/g for acid value, 222.2 and 196.62 mg KOH/g for saponification value, 71.50 and 171.45 mg/100g for Iodine value, 5.50 and 2.04 meq/kg for peroxide value and 60.26% and 38.10% for crude lipids respectively. Both oils showed significant effect ( $P < 0.05$ ) in reducing total serum cholesterol, triglycerides and low density lipoprotein (LDL) concentrations compared to the control group. A similar corresponding significant increase ( $P < 0.05$ ) in the activities of serum enzymes AST and ALT were observed in rats fed with *T. catappa* oil. The implication of these findings demonstrate hypolipidemic effects and suggest that *M. arboreus* and *T. catappa* oils could possess potential applications in the food, cosmetics, and pharmaceutical industries.

**Keywords:** *Terminalia catappa*, *Myrianthus arboreus*, seed oils, biochemical parameters

Chemical study and evaluation of anti-plasmodial activity of one Cameroonian medicinal plant:  
*Sapium cornutum* (Euphorbiaceae).

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**Background:** *Plasmodium falciparum* is responsible for the majority of malarial deaths. According to WHO's World Malaria report 2021, there were an estimated 247 million malaria cases and 405,000 related deaths in 2018. These statistics on malaria mortality suggest that the development of novel, effective, and safe antimalarial drugs is of critical importance for controlling malaria. The main objective was performing a chemical study of *Sapium cornutum* and evaluation their anti-plasmodial activity against *plasmodium falciparum*. **Methodology:** To achieve that, the whole plant of *sapium cornutum* were dried, powdered and extracted by maceration in methanol. The different crude extracts obtained were evaluated regarding their anti-plasmodial potential against *Plasmodium falciparum*. Extracts were fractionated, and purified through column chromatography. The structures of all isolated compounds will be elucidated using spectroscopic techniques. **Results:** The methanol crude extracts from diferents parts of *Sapium cornutum* such as leaves, roots fruits, stems back and twigs shows the very and most activities against *plasmodium falciparum*(Pf3D7 and PfDd2). with the IC<sub>50</sub> values 2.015 and 2.799 µg/mL; 1.856 and 16.400 µg/mL; 1.999 and 2.770 µg/mL; 0.755 and 1.805 µg/mL; 10.591 and 58.435 µg/mL. Moreover, the different fractions of leaves and stems back of *Sapium cornutum* displayed IC<sub>50</sub> ranging from 1.511 µg/mL to 65.190 µg/mL and 2.225 µg/mL to 89.070 µg/mL. Eighteen pure compounds were isolated: five steroids, one triterpene, one shikimic acid, four ellagic acid, four flavonoids, one stilbene and two diterpenoids. **Conclusion :** The results of this study show that extracts of both plants can be used for the pre-formulation of a phyto-drug.

**Keywords:** Medicinal plants, Anti-plasmodial, Phyto-drug, *Sapium corntum*

Chemical investigation of *Vitex madiensis* (Veberaceae) and evaluation of its anti-plasmodial potential

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**Abstract**

Malaria, a parasitic disease endemic to several parts of the world especially in Sub-Saharan Africa bearing at about 90% of deaths still remains a threat to human health. Emergence of parasite resistant strains to available antimalarial drugs highly challenge the control of this disease. Thereby, triggering search for more effective drug alternatives to treat malaria. This study aims to search for active extracts, fractions and compounds from *Vitex madiensis* which can be recommended as phytodrugs or lead compounds in the development of better anti-malarial drugs. The crude extract of *V. madiensis* trunk bark was obtained using CH<sub>2</sub>Cl<sub>2</sub>-aMeOH (1:1, v/v) and its anti-plasmodial activity evaluated using the SYBER Green-I based fluorescence assay against *Plasmodium falciparum* chloroquine sensitive strain (*Pf3D7*), with chloroquine and artemisinin as reference drugs. This extract was partitioned to afford fractions which were screened for their anti-plasmodial activity. These fractions were subjected to successive column chromatography to afford pure compounds. Their structures elucidated using spectroscopic methods (1D and 2D NMR, MS) and by comparison with previously reported data. Chemical investigation of *V. madiensis* bark led to the isolation and characterization of 14 compounds: 05 simple phenolics, 05 phytoecdysteroids, and 04 triterpenoids. The CH<sub>2</sub>Cl<sub>2</sub>/MeOH (1:1, v/v) crude extract was not active. Whereas, the *n*-hexane and CH<sub>2</sub>Cl<sub>2</sub> fractions showed good anti-plasmodial activities against *Pf3D7* chloroquine sensitive strain with IC<sub>50</sub> values of 13.13 and 3.26 µg/mL respectively. The results obtained so far partially confirms the fact that *V. madiensis* could be a potential source for anti-plasmodial agents. Meanwhile, anti-plasmodial screening of the obtained compounds is ongoing.

**Key words:** *Vitex madiensis*, Anti-plasmodial activity, Phytoecdysteroids

**Effects of the alkaloid rich methanolic extract of *Coffea arabica* (Rubiaceae) leaves on *Plasmodium berghei* infected Wistar rats**

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**Abstract**

**Background:** Malaria persists as a formidable global health challenge, particularly in endemic regions, with an estimated 247 million cases and 619,000 deaths recorded in 2021. Sub-Saharan Africa bears the overwhelming burden, accounting for 95% of cases and 96% of global malaria-related deaths, with a staggering 78.9% of these fatalities occurring among children under 5 years. The annual mortality rate stands at 58.2 per 100,000 individuals, primarily due to the *Plasmodium falciparum* parasite, responsible for 95% of malaria cases. **Objective:** The primary objective is to assess the in-vivo antimalarial potential the alkaloid rich extract of *Coffea arabica* (ARECA) when administered to wistar rats infected with *P. berghei* ANKA.. **Methodology:** ARECA was extracted from the crude methanolic extract according to a slightly modified method. Twenty-five rats were infected with 0.5mL of inoculum containing  $1 \times 10^6$  *P. berghei* pRBCs. Three days post inoculation, parasitemia was controlled and animals were randomized into 5 groups. Different groups are treated orally with the extract at doses of 100, 200 and 400 mg/kg, distilled H<sub>2</sub>O and chloroquine. Bodyweights and parasitaemia were monitored daily. Animals were sacrificed and blood was collected for analysis of haematological and biochemical parameters involved in malaria. The liver, kidney, and spleen were collected for histopathological study and analysis of oxidative stress. **Results:** ARECA at 100 and 200mg/kg doses effectively mitigated weight loss associated with parasitic infestation and reduced parasitemia levels. Hematological analysis showed the extract improved platelet and haemoglobin while lowering the WBC count. ARECA resulted in decreased transaminase activity, total bilirubin, creatinine levels and increased serum proteins. Oxidative stress markers indicated increased GSH, catalase, and tissue protein levels, alongside reduced MDA and nitrite. Histopathological analysis confirmed the restorative properties of ARECA in the organs. **Conclusion:** The findings reveal that ARECA possesses an antimalarial activity and could be a potential new drug and/or a standardized antimalarial extract used for pre-clinical and clinical studies to develop effective and safe phythomedicines.

**Keywords:** *Coffea arabica*. Antimalarial activity. Alkaloids. *Plasmodium berghei*.

**Targeting the intra-erythrocytic life cycle of malaria to discover new drugs from *Drymaria cordata* and *Macaranga monandra***

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**Abstract**

The outbreak and spread of parasite strains less sensitive to artemisinin derivatives and the failure of treatment with artemisinin-based combination therapies underline the emergency of searching for new drugs against malaria. The intra-erythrocytic life cycle of the parasite is responsible for the clinical manifestations and represents a crucial target for the development of new antimalarial drugs to relieve the symptoms of the disease. Therefore, the objective of this work was to target the asexual blood stage of malaria to discover new drugs from *Drymaria cordata* and *Macaranga monandra*, two plants traditionally used in Cameroon for the treatment of malaria. Extracts of the whole plant of *D. cordata* and of the bark of *M. monandra* were tested *in vitro* against chloroquine-sensitive (Pf3D7) and multi-drug resistant (PfDd2) strains of *Plasmodium falciparum* via the SYBR Green-I test. Subsequently, effects of active extracts on erythrocytes membrane integrity and on viability of the Vero cell line were evaluated by the spectrophotometric method. The most active and selective extract was selected for bio-guided fractionation. Inhibition kinetics and action specificity of promising fractions on the intraerythrocytic development cycle of *P. falciparum* were studied. Only the ethanolic extract of *D. cordata* showed a good anti-plasmodial activity (IC<sub>50</sub>PfDd2: 18.9 µg/ml; IC<sub>50</sub>Pf3D7: 24.51 µg/ml) while all the extracts of *M. monandra* showed promising anti-plasmodial activities (IC<sub>50</sub> < 8 µg/ml). All active extracts showed no haemolytic or cytotoxic effects. Promising ethyl acetate (IC<sub>50</sub>PfDd2: 0.60 µg/ml, IC<sub>50</sub>Pf3D7: 3.42 µg/ml) and n-butanol (IC<sub>50</sub>PfDd2: 0.92 µg/ml, IC<sub>50</sub>Pf3D7: 2.46 µg/ml) fractions were found to be fast acting and would preferentially act by inhibiting ring development, inducing selective lysis of parasitized red blood cells harbouring trophozoites and blocking the release of new merozoites. In sum, ethyl acetate and n-butanol fractions of the methanolic extract of *M. monandra* bark can serve as a starting point for the development of a new drug for the management of *P. falciparum*.

**Keywords** *Plasmodium falciparum*, *Drymaria cordata*, *Macaranga monandra*, fractionation, mode of action

**Aphrodisiac and androgenic effects of the aqueous extract of the roots of *Vepris afzelii* on cyproterone acetate-induced hypogonadism in rat**

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**Abstract**

*Vepris afzelii* is a plant used in the locality of Bafia (Cameroon) to treat male sexual dysfunctions, but no scientific evidence has yet been reported on this practice. The aim of the present work was to evaluate the effects of the aqueous extract of *V. afzelii* roots in a rat model of cyproterone acetate-induced hypogonadism. A qualitative phytochemical screening and acute toxicity assessment of this extract was performed. Hypogonadism was induced by oral administration of cyproterone acetate (30 mg/kg) for ten days in 30 adults Wistar rats. The hypogonadal rats were subdivided into five groups of six rats each receiving for 14 days either distilled water (10 ml/kg), testosterone (4 mg/kg/3days) or aqueous extract of *V. afzelii* (100, 200 and 400 mg/kg). A group of six normal animals was used as control. Sexual behavior and sperm parameters, testosterone levels, histological and histomorphometric analyses of the testes were evaluated. Saponins, phytosterol, flavonoids, triterpenes and coumarins were revealed in this plant extract with an estimated LD<sub>50</sub> > 2000 mg/kg. Significant alterations in sexual behavior and sperm parameters (p<0.05), and testicular structure, associated to decreases in testosterone levels, diameter and height of the seminiferous tubules were observed in the hypogonadal control compare to control group. *V. afzelii* extract especially the dose 100 mg/kg improved all these alterations after 7 and 14 days of treatment respectively. These results attributed to the different secondary metabolites detected in the aqueous extract of *V. afzelii* thus confirm its aphrodisiac and androgenic properties.

**Key words:** Hypogonadism, *Vepris afzelii*, testosterone, rat, sexual behaviour.

**RELATIONSHIP BETWEEN OBESITY AND HYPERTENSION USING DIFFERENT MEASURES OF ADIPOSITIVITY AMONGST ADULTS IN THE BAMENDA HEALTH DISTRICT.**

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**Background and Justification:** The rising prevalence of obesity globally is becoming worrisome as excess weight is associated with hypertension and other adverse cardiovascular outcomes. **Purpose statement:** To determine the prevalence of obesity and to assess the relationship between obesity and hypertension amongst adults in the Bamenda Health District. **Methodologies:** A community based cross-sectional study involving 263 adults (mean age  $35.6 \pm 15.9$  years) recruited through a random sampling technique. Anthropometric measurements and blood pressure were measured following standard protocols. Data was analyzed using SPSS version 21. Linear regression analysis (unadjusted and adjusted) were used to assess the relationship between blood pressure and measures of obesity (BMI, WC, WHtR). Statistical significance was set at  $p < 0.05$ . **Results:** The prevalence of obesity with respect to BMI, WC, and WHtR was found to be 21%, 37.7%, and 35.7% respectively while the prevalence of hypertension in the study population was 42.2% (with 18.6% and 23.6% already in stage I and II respectively). We observed a significant ( $p < 0.05$ ) difference in the mean systolic blood pressure (SBP) across the different measures of obesity. Linear regression indicated a significant positive association ( $p < 0.05$ ) between WC ( $\beta = 0.75$ ) in the unadjusted and adjusted analysis WC ( $\beta = 0.56$ ) (after adjusting for age and gender) with SBP. In contrast, BMI was positively significantly ( $p < 0.05$ ) associated with diastolic BP both in the adjusted BMI ( $\beta = 0.38$ ) and unadjusted analysis BMI ( $\beta = 0.39$ ).

**Conclusion:** We found that WC was an independent predictor of hypertension in adults. Interventions should focus on the aspects of behavior (individual level) and culture (population level) which could play a vital role in reducing the prevalence of obesity and hypertension amongst adults in our setting.

**Keywords:** Obesity, hypertension, adults and Bamenda Health District.

**BIOFILM FORMATION ABILITY, VIRULENCE FACTORS ANALYSIS AND ANTIBIOTIC RESISTANCE PROFILE OF THREE *STAPHYLOCOCCUS SPP.* ISOLATES FROM URINE AND SYNERGISTIC EFFECTS OF COMBINATION OF BIOACTIVE NATURAL PRODUCTS WITH CURRENTS ANTIBIOTICS.**

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**Background.** According to the World Health Organization, the incidence of urinary tract infections is 150 million per year worldwide. This increase is explained by failures of antibiotic therapy in their management as well as by the ability of the uropathogenic bacteria to express virulence factors including the biofilm, giving them a multi-resistant phenotype (MDR). This study aimed to evaluate the prevalence and bacteriological profile of uropathogens at the Dschang district hospital and then identify natural substances that can serve as adjuvants to antibiotics to fight against multidrug resistance associated with biofilm. **Methods.** A cross-sectional study was conducted at the Dschang District Hospital over 5 months from March to July 2021 during which urine samples were collected and the uropathogens were identified using Chromagar orientation media and Mannitol salt agar then the confirmation of the identification of the isolates was done by API20E identification system. The resistance profile of the isolates was established using the antibiogram method. The virulence factors were detected using the standard methods. Then, the anti-biofilm activity of natural substances was assessed using the safranin staining method. The checkerboard method was used for combination studies. **Results.** A total of 62 isolates of *Staphylococcus spp.* were isolated from 342 urine samples with a prevalence of 18.12%. A total of 76.36% of the isolates presented an MDR phenotype with major resistance to cephalosporin and cefazolin antibiotics. Most isolates were moderate biofilm formers, with 44.44% positive for phospholipase, 31.75% for esterase, and 30.16% for hemolysin. Plumbagin, curcumin, berberine, and thymol showed antibiofilm activity activities ranging from 2-256, 64-1024, 64-512 and 64-1024 µg/mL respectively. The synergistic effects were obtained between the combination of these natural substances with antibiotics.

**Conclusions.** Combination therapy could be a promising strategy to fight against multi-resistant uropathogenic bacteria.

**Keywords:** Urinary tract infections, *Staphylococcus spp.*, virulence, natural substances, combination.

## HETEROGENEITY IN THE DISTRIBUTION OF SOIL-TRANSMITTED HELMINTH (STH) INFECTIONS: CONTRIBUTION OF ADULT IN THEIR TRANSMISSION IN THE AKONOLINGA HEALTH DISTRICT, CENTRE REGION, CAMEROON

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### Abstract

*Ascaris lumbricoides* and *Trichuris trichiura* are the most prevalent soil-transmitted helminths (STH) in the world. In Cameroon, more than 10 million people are affected. These parasites cause gastrointestinal problems such as diarrhea, abdominal pain, and anemia, and have a profound impact on people's ability to work, learn and thrive. Intervention to control their spread is a nationwide annual school-based deworming campaign, using a single dose of albendazole (400mg) or mebendazole (500mg) only to risk groups, others are not included. These efforts have significantly reduced the prevalence and intensity of infection throughout the country, but hotspot of disease remain. This underscores the need to identify areas of high transmission and formulate tailored interventions to eliminate the disease. The aim of our study was to identify such high transmission areas for soil-transmitted helminths in Akonolinga health district. We conducted a cross-sectional, community-based survey in this district, collecting stool samples from individuals aged 5-100 years, regardless of sex, and using the mini-flotac technique for analysis. socio-demographic data were collected and adherence to established strategies. Our investigation reveals a diverse distribution of STH within the Akonolinga health district, with remote communities demonstrating poorer adherence to medication and hygiene practices and experiencing the highest infection rates. These findings underscore the need for targeted interventions in hotspot areas beyond the traditional age groups at risk, as our study revealed high infection rates in non-targeted populations such as children under five and adults, who could potentially serve as parasite reservoirs.

**Keywords:** Soil-transmitted helminthiasis, hotspot, Akonolinga Health District, Cameroon.

**RELATIONSHIP BETWEEN OBESITY AND HYPERTENSION USING DIFFERENT MEASURES OF ADIPOSITY AMONGST ADULTS IN THE BAMENDA HEALTH DISTRICT.**

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**Abstract**

**Background and Justification:** The rising prevalence of obesity globally is becoming worrisome as excess weight is associated with hypertension and other adverse cardiovascular outcomes. **Purpose statement:** To determine the prevalence of obesity and to assess the relationship between obesity and hypertension amongst adults in the Bamenda Health District. **Methodologies:** A community based cross-sectional study involving 263 adults (mean age  $35.6 \pm 15.9$  years) recruited through a random sampling technique. Anthropometric measurements and blood pressure were measured following standard protocols. Data was analyzed using SPSS version 21. Linear regression analysis (unadjusted and adjusted) were used to assess the relationship between blood pressure and measures of obesity (BMI, WC, WHtR). Statistical significance was set at  $p < 0.05$ . **Results:** The prevalence of obesity with respect to BMI, WC, and WHtR was found to be 21%, 37.7%, and 35.7% respectively while the prevalence of hypertension in the study population was 42.2% (with 18.6% and 23.6% already in stage I and II respectively). We observed a significant ( $p < 0.05$ ) difference in the mean systolic blood pressure (SBP) across the different measures of obesity. Linear regression indicated a significant positive association ( $p < 0.05$ ) between WC ( $\beta = 0.75$ ) in the unadjusted and adjusted analysis WC ( $\beta = 0.56$ ) (after adjusting for age and gender) with SBP. In contrast, BMI was positively significantly ( $p < 0.05$ ) associated with diastolic BP both in the adjusted BMI ( $\beta = 0.38$ ) and unadjusted analysis BMI ( $\beta = 0.39$ ).

**Conclusion:** We found that WC was an independent predictor of hypertension in adults. Interventions should focus on the aspects of behavior (individual level) and culture (population level) which could play a vital role in reducing the prevalence of obesity and hypertension amongst adults in our setting.

**Keywords:** *Obesity, hypertension, adults and Bamenda Health District.*

**BIOLOGICAL PROFILE OF HEPATIC LESIONS INDUCED BY ANALGESICS AND ANTIBIOTICS IN OUTPATIENTS AT THE YAOUNDÉ GENERAL HOSPITAL.**

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**Introduction:** Chronic non-communicable diseases (NCDs) account for nearly 60% of global mortality, with 80% of NCD-related deaths occurring in low- and middle-income countries. Approximately 9 million deaths in 2005 were attributed to NCDs, affecting individuals under the age of 60. NCDs are the primary cause of death among the working-age population, and their prevalence among young adults is disproportionately higher in impoverished countries compared to wealthier nations. Antibiotics, whether naturally produced or chemically synthesized, exhibit antibacterial activity by specifically inhibiting or modifying vital processes in microorganisms. Drug-induced idiosyncratic liver damage is a rare condition that occurs independently of dosage, administration route, or duration of drug use. These adverse events are often underestimated and underreported. The major objective of this study was to determine the biological profile of liver damage induced by analgesics and antibiotics in outpatients at the Yaoundé General Hospital (YGH). **Methods:** A prospective analytical study was conducted from March to June 2023 at the YGH. All patients aged 18 and over, of both sexes, attending the general medicine outpatient clinic and emergency department were included. Sociodemographic, clinical, and paraclinical data were collected. Pre- and post-drug samples were obtained to measure transaminases (AST and ALT), alkaline phosphatase (ALP), as well as total and direct bilirubin. Data were entered and analyzed using Cs Pro 7.5 and SPSS 21.0 software. McNemar's exact test was employed to test the association between variables with  $p < 0.05$ . **Results:** The mean age was 47.79 years, with a relative female predominance (53.8%). The majority of patients were on analgesics (59%) compared to antibiotics (41%). No contributory or predisposing history was identified for drug-induced liver injury. There was no significant association between analgesic and/or antibiotic use and an increased ALT/ALP ratio ( $p = 0.09$ ) or increased total bilirubin ( $p = 0.289$ ). However, an association was noted between analgesic and/or antibiotic use and an increased direct bilirubin ( $p = 0.02$ ). **Conclusion:** Overall, drug-induced hepatitis is uncommon at YGH, where medical prescription guidelines are generally adhered to. Biological tests serve as earlier markers than clinical features in diagnosing drug-induced liver damage.

**Key words:** Chronic non-communicable diseases, Drug-induced liver injury, Analgesics, Antibiotics, Prospective.

**TACKLING BACTERIA RESISTANCE IN FARMS: FOCUS ON FLUOROQUINOLONES, BETA-LACTAMS AND CYCLINES IN POULTRY FARMS OF THE BAMBOUTOS DIVISION, WEST-CAMEROON**

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**Abstract**

**Background and Justification:** As one of the biggest known global health challenges of the 21<sup>st</sup> century, antimicrobial resistance (AMR), influences human and animal welfare beyond anticipation and affects the dynamics of biotic and abiotic systems. Identifying and prioritizing needs and actions in farming systems, healthcare and other sectors where engines of selection and dissemination of resistant traits occur appears primordial to address the threat. **Purpose statement:** The present transversal descriptive survey was conducted in four poultry farms in the Bamboutos Division (West-Cameroon) on common farming practices and bacterial susceptibility/resistance trends to antibiotics. **Methodologies:** Information on farm' management were collected with a questionnaire prior to biological specimens that were subjected to laboratory screening according to standard guidelines in the "Université des Montagnes" Teaching Hospital Laboratory of Microbiology. Primarily, the survey focused on fluoroquinolones, beta-lactams and cyclins in the target farms. **Results:** All farmers recognized the importance of antibacterial drugs in preventing and controlling infectious diseases in animal husbandry and acknowledged that their inappropriate use could adversely affect drug effectiveness, then the therapeutic expectation. Data analysis from the 471 isolates recovered revealed highest isolation rates of Gram-positive bacteria, overwhelmed by coagulase-negative *Staphylococcus* (59.3%), while in Gram-negative bacteria (40.7%), *Proteus* predominated. Resistance rates recorded were also largely above 50% for most drugs tested. **Conclusion:** Overall, the high rates observed with fluoroquinolones, beta-lactams and cyclins represent reliable motives for incentive policies aiming at addressing antibacterial resistance in Cameroon. Mapping resources, potential threats and prioritizing actions appear primordial to bring the threat under control. This success will build on assets like the human resources that could undergo easy training based on academic background of farmers.

**Keywords:** Bacteria, resistance, poultry, Bamboutos West-Cameroon

**TRENDS OF ANTIBACTERIAL INTERACTIONS IN MULTIDRUG- RESISTANT ISOLATES: EXPLORING RESISTANCE PHENOTYPES IN THE NDÉ DIVISION, WEST-CAMEROON**

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**Background and Justification:** Often context-dependent, reliable pieces of information concerning bacterial-antibiotic interactions are paramount assets for prevention and management of bacterial diseases. Human medicine, animal farming and crop production represent potential sites for selection and dissemination of multidrug-resistant bacteria that eventually affect human. **Purpose statement:** The present study aimed at detecting phenotypic characteristics of bacterial resistance in multidrug-resistant isolates recovered from clinical specimens at the “Université des Montagnes” Teaching Hospital. **Methodologies:** The total of 226 isolates (142 Gram-negative rods and 84 Gram-positive cocci) were subjected to phenotypic detection of a few resistance mechanisms they could expressed. All procedural steps in bacterial identification and susceptibility tests were conducted according to standard protocols and current advances in research on bacterial susceptibility to antibiotics. **Results:** Primary pieces of information revealed high rates of resistance, especially with beta-lactams and Trimethoprim/Sulfamethoxazole, while Nitrofurantoin and Imipenem were most effective. Amongst Gram-negative rods, 56% expressed one enzymatic resistance mechanism while 12% expressed two. Further, extended spectrum beta-lactamases, high level cephalosporinases and inducible cephalosporinases were most commonly observed. About 62% and 14% of Gram-positive cocci expressed constitutive and inducible resistance to Clindamycin, respectively. Decreased susceptibility to Ceftriaxone and Penicillin G was also recorded in mutant isolates selected by these antibiotics. **Conclusion:** Overall, positive and negative interactions evenly detected represent reliable clue for advocacy towards capacity building for rational use of antimicrobial agents in resistance selection-prone human domains and personalized combination therapies guided by routine affordable susceptibility tests during caretaking.

**Key words:** Resistant mechanisms, bacterial, antibiotic combination.

**SEROPREVALENCE OF *TOXOPLASMA GONDII* AND RELATIONSHIP WITH OXIDATIVE STRESS: THE IMPACT OF HIV INFECTIONS AND PREGNANCY IN FEMALE OF BANDJOUN, KOUNG-KHI DIVISION IN THE WEST REGION OF CAMEROON**

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**Abstract**

**Background:** *Toxoplasma gondii* is one of the most common worldwide parasitic infection that is present in almost all immunocompromised patients such pregnant and HIV positive patients. **Purpose:** The current study was designed to determine the seroprevalence of *T. gondii* among females its effect on the oxidative status among pregnant or not and HIV positive females. **Methodology:** A total of 306 females were assessed and blood samples and plasma separated for the diagnosis of *T. gondii* antibodies and HIV and to examine the oxidative stress status. **Findings:** The overall prevalence of *T. gondii* in females in Bandjoun was 55.22%. A significant relationship between age and having toxoplasmosis ( $p= 0.029$  for IgG;  $p= 0.007$  for IgM). The seroprevalence of *T. gondii* antibodies were higher in HIV subjects (61.5% for IgG; 34.6% for IgM) and pregnant women (62.5% for IgG; 20.8% for IgM) than in HIV negative subjects (51.7%) for IgG; 9.6% for IgM) and non-pregnant subjects (49.57% for IgG; 8.97% for IgM). Having cats was the most predisposing risk factors for the *T. gondii* infection mostly for chronic infection. Pregnant subjects and HIV positive with *T. gondii* acute infection had a high level of total oxidative stress ( $7.80\pm 5.50$  and  $1.97\pm 0.67$  respectively), while and total antioxidant defense ( $31.59\pm 0.15$ ;  $p=0.04$ ) was significant higher in uninfected pregnant subjects. Finally, a significant correlation was found between the increase in total oxidative stress level and the *T. gondii* IgG level in pregnant subjects ( $r= 0.76$ ;  $p=0.006$ ). **Conclusion:** The results of the study demonstrate that *T. gondii* is prevalent in females in Bandjoun and the infection promotes the oxidative stress in pregnant and HIV positive females.

**Key words:** *T. gondii*; Oxidative stress; Females; Pregnancy; HIV; Bandjoun.

## RELATION ENTRE LE PROFIL LIPIDIQUE ET LA RETINOPATHIE DIABETIQUE CHEZ LES PATIENTS ATTEINTS DE DIABETE DE TYPE 2 DANS 3 HOPITAUX DE LA REGION DE L'OUEST CAMEROUN

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### Résumé

Introduction : La rétinopathie diabétique [RD] est une complication du diabète et constitue une cause majeure de cécité et de malvoyance. La physiopathologie de la rétinopathie diabétique implique nombreux processus. La dyslipidémie est un facteur de risque cardiovasculaire majeur responsable de pathologies cardiovasculaires. L'objectif de cette étude était d'étudier la relation entre le profil lipidique et la rétinopathie diabétique chez les personnes atteintes de diabète de type 2. Méthodologie : une étude transversale analytique a été menée dans trois hôpitaux de la région de l'Ouest du Cameroun. Tous les participants ont bénéficié d'un examen ophtalmologique complet, d'une collecte des facteurs de risque liés au diabète [l'ancienneté du diabète taux d'hémoglobine glycosylée] et d'une analyse du profil lipidique à l'aide d'une méthode enzymatique. Les données cliniques et biologiques recueillies des patients analysés à l'aide de SPSS version 26.0. Résultats : Au total, 94 participants diabétiques de type 2, dont 30 (31,9%) avec RD et 64(68,1%) sans RD ont été inclus dans l'étude. L'âge moyen de la population était de 59+10 ans. La RD était non proliférante légère [n=16], modérée [n=13] et sévère [n=1]. La durée du diabète [ $>10$  ans] et le déséquilibre du diabète [ $>7\%$ ] étaient associées à la RD avec  $p = 0,01$  [Adjusted OR =6,6(2,4-31,4)] et  $p=0,02$  [Adjusted OR =6,6(1,3-31,3)] respectivement. Les taux médians de cholestérol total 179,5(161-202,5) mg/dl et de triglycérides 153(103,3-199) mg/dl étaient plus élevée chez les diabétiques avec RD [  $p=0,01$  et  $p=0,04$  respectivement]. Toutefois, seul les concentrations élevées de cholestérol [  $> 200$ mg/dl] restaient associés à la présence de la rétinopathie [ $p=0,04$ ; Adjusted OR =3,6(0,97-13,4)]. Conclusion : L'élévation du cholestérol total apparait comme un facteur de risque de la rétinopathie diabétique nécessitant un contrôle systématique au même titre que l'hémoglobine glycosylée afin de prévenir l'apparition de la rétinopathie diabétique.

Mots-clés : Diabète de type 2, Rétinopathie diabétique, Cholestérol, Dyslipidémie, Hémoglobine glycosylée.

## ASPECT ÉPIDÉMIOLOGIQUE, BIOLOGIE ET CLINIQUE DES PATIENTS SOUFFRANTS D'HÉPATITE MÉDICAMENTEUSE À L'HÔPITAL GÉNÉRAL ET L'HÔPITAL JAMOT DE YAOUNDÉ

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### RESUME

**Introduction :** L'hépatite médicamenteuse est un problème de santé grave très souvent méconnu. Elle survient lorsqu'un médicament endommage le foie et entraîne son inflammation. Le Cameroun est confronté à une augmentation préoccupante des cas d'hépatite médicamenteuse, mettant en péril la santé de sa population. Cette étude vise à examiner les caractéristiques épidémiologiques, cliniques, biologiques et évolutives des hépatites médicamenteuses dans deux hôpitaux de la ville de Yaoundé. **Méthodologie :** Il s'agit d'une étude transversale descriptive rétrospective menée de janvier 2012 à décembre 2021. Le diagnostic était établi en éliminant d'autres causes d'hépatites chez des patients présentant un taux élevé de transaminases, dépassant trois fois la normale, avec une histoire de prise médicamenteuse. Un questionnaire de collecte de données a été utilisé, et les dossiers incomplets ont été exclus. L'échantillonnage a été réalisé de manière consécutive, selon la formule de Cochran, et les données ont été saisies et analysées à l'aide du logiciel statistique EPI Info. **Résultats :** Sur les 95 dossiers recensés, 63 remplissaient les critères d'inclusion. Les femmes étaient plus nombreuses (35) que les hommes (28), avec une tranche d'âge prédominante de 33 à 43 ans (médiane à 37 ans). L'automédication était pratiquée par 61,9% des patients. Les principaux symptômes cliniques étaient l'asthénie (30,16%), l'épigastralgie et la douleur à l'hypochondre droit (28,57%). L'ictère était observé chez 36,51% des patients. Les antibiotiques étaient les médicaments les plus incriminés (43%), suivis des médicaments traditionnels (24%) et du paracétamol (14%). Les analyses biologiques ont révélé une médiane des aminotransférases de 92 pour l'ALAT, 109 pour l'ASAT, et une médiane de 88% pour le taux de prothrombine. L'arrêt du médicament a été effectué chez 31% des patients, avec une évolution favorable dans 41,27% des cas et un décès enregistré. **Conclusion :** Une prévalence non négligeable de l'hépatite médicamenteuse a été relevée, principalement chez les jeunes et chez les femmes. Plusieurs médicaments, notamment les antituberculeux, les médicaments traditionnels et le paracétamol, ont été identifiés comme principaux agents incriminés. Un diagnostic précoce est crucial pour prévenir une altération hépatique irréversible et éviter le décès du patient.

**Mots clés :** Maladies chroniques non transmissibles, Lésion hépatique, Hépatite médicamenteuse.

**PREVALENCE ET ETIOLOGIES DES CHOLESTASES EXTRA-HEPATIQUES A L'HOPITAL REGIONAL DE BAFOUSSAM.**

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**RESUME**

**Introduction :** Les cholestases extra-hépatiques représentent un défi clinique majeur, caractérisé par un ralentissement ou une obstruction de l'écoulement de la bile en dehors du foie. Ces affections, bien que relativement rares, peuvent avoir des implications graves sur la santé des individus concernés. Dans ce contexte, l'Hôpital Régional de Bafoussam (HRB) a été le cadre d'une étude visant à évaluer la prévalence et les étiologies des cholestases extra-hépatiques. L'objectif principal de cette recherche était de déterminer la fréquence de ces cholestases au sein de la population traitée à HRB, tout en identifiant les facteurs en relation avec ces obstructions biliaires. **Méthodes :** Cette étude transversale descriptive avec une collecte prospective et rétrospective de données sur une période de 5 mois et 3 ans respectivement s'est faite à partir des informations extraites des registres de consultation, d'hospitalisation et des dossiers patients de l'HRB. Une fiche d'enquête structurée a été utilisée pour garantir la cohérence des données. L'analyse statistique, effectuée avec le logiciel SPSS version 25.0, a utilisé le test de Chi-deux de Pearson ou le test exact de Fisher selon la distribution de la variable, avec un seuil de signification fixé à 5%. **Résultats :** Au total, sur 3957 patients au service d'Hépatogastro-Entérologie, 55 avaient une cholestase extra-hépatique confirmée. Le sexe masculin a prédominé avec un sexe ratio H/F=1,3. L'âge des patients variait entre 20 et 95 ans, avec une moyenne de 55,44± 18,63 ans. Les signes cliniques les plus fréquemment rencontrés étaient la douleur abdominale (85,5%) et l'ictère (78,2%). Sur le plan biologique, 19 cas (34,55%) ont été associés à une cytolysé hépatique. L'étiologie la plus fréquente était le cancer de la tête du pancréas qui représentait 38,2% suivi par les lithiases des voies biliaires qui représentaient 18,2%. Le regroupement des étiologies a permis de constater que les causes tumorales ont été les plus fréquentes avec 58,2%. Le cancer de la tête du pancréas est significativement associé à l'antécédent de diabète de type II (OR=10,312[1,11-95,76]). **Conclusion :** La prévalence des cholestases extra-hépatiques à l'HRB est estimée à 1,4% et représentent 79,71% des cholestases recensés

**Mots-clés :** cholestase extra hépatique, prévalence, étiologies, cancer de la tête du pancréas, lithiase biliaire.

## PARODONTITE ET CONTRÔLE GLYCÉMIQUE DES PATIENTS VIVANT AVEC LE DIABÈTE DE TYPE 2 SUIVIS DANS TROIS FORMATIONS SANITAIRES DU DISTRICT DE SANTÉ DE DSCHANG EN 2023

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### Résumé

Le diabète de type 2 (DT2) est la forme la plus répandue du diabète sucré, représentant plus de 90 % des patients vivant avec le diabète. La relation entre le diabète et la parodontite a été mise en évidence dans un grand nombre de travaux mais très peu d'études d'entre elles ont été réalisées dans notre contexte et se sont intéressées à la relation entre le contrôle glycémique et la parodontite. L'objectif de cette étude était de déterminer la distribution de la parodontite ainsi que l'association entre le mauvais contrôle glycémique (évalué par la mesure de l'hémoglobine glyquée) et la parodontite chez les patients vivant avec le DT2 dans trois formations sanitaires (FOSA) du District de Santé de Dschang. Nous avons mené une étude à deux volets sur une période de cinq mois (février à juin 2023). Le premier volet transversal descriptif ciblant les patients vivant avec le DT2 suivis dans ces FOSA remplissant les critères d'inclusion. Les données ont été collectées sur la base d'un questionnaire administré en face à face, des dossiers médicaux et d'une grille d'examen buccal. Le deuxième volet de type cas-témoins niché : les cas étaient les patients vivant avec le DT2 présentant une parodontite et les témoins ceux ne présentant pas de parodontite. La régression logistique a permis de déterminer l'association entre le mauvais contrôle glycémique et la parodontite. Le seuil de significativité était de 5 %. Nous avons recruté 217 patients vivant avec le DT2. L'âge moyen des participants était de 61,85 ± 10,6 ans. La proportion de patients avec un taux d'HbA1c supérieur ou égal à 7 % était de 57,6 %. Plus de la moitié (51,2 %) n'avait jamais bénéficié d'une consultation bucco-dentaire. La plupart (63,1 %) se nettoyait les dents une seule fois par jour. La prévalence de la parodontite était de 42,4 %. Le mauvais contrôle glycémique (ORa : 3,39 ; IC à 95 % [1,45-8,18] ;  $p=0,005$ ), l'absence d'une bonne hygiène buccodentaire (ORa : 10,06 ; IC à 95 % [2,95-47,04] ;  $p<0,001$ ) et une mauvaise méthode de brossage (ORa : 6,08 ; IC à 95 % [2,35-16,85] ;  $p<0,001$ ) augmentaient significativement le risque de parodontite. La parodontite est fréquente chez les patients vivant avec le DT2. Leur hygiène bucco-dentaire est médiocre. Il est donc capital d'impliquer les Chirurgiens-Dentistes dans leur prise en charge.

**Mots clés** : Diabète de type 2, hémoglobine glyquée, parodontite, mauvais contrôle glycémique, Cameroun.

**OCBS-HZEC13**

**Croissance saturo-pondérale et développement psychomoteur des nouveaux-nés prématurés suivis sur méthode mère-Kangourou à l'hôpital de District de Bonassama à Douala.**

Michele Kambou, Pierre Fotsing, Yamelle Wandji & Seraphin Nguéack

**CHARACTERIZATION OF MALARIA TRANSMISSION AND SUSCEPTIBILITY PROFILE OF *ANOPHELES GAMBIAE* AND *ANOPHELES COLUZZII* TO INSECTICIDE IN TWO LOCALITIES IN THE EASTERN REGION OF CAMEROUN (BÉLABO AND OUAMI)**

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**Abstract**

**Background:** for several years, the region of East Cameroon remains the most affected by malaria with more than 150 cases per 1000 inhabitants per year. However, despite the high prevalence of malaria in this part of the country, data on entomological factors that can help to understand the reasons for the maintenance of this high endemicity of malaria are almost non-existent. This study aims to assess the entomological parameters influencing the transmission of malaria and the sensitivity of vectors to insecticides used in public health. **Methodology:** the study took place from May 2021 to November 2022 in two localities in the East Cameroon region, Bélébo and Ouami. Human landing catches and U.S. Centers for Disease Control were used to assess vector density, species composition, human biting rate, sporozoite infection rates, entomological inoculation rate, and *Anopheles* vectorial capacity. 120 to 150 mosquitoes from larval collections in the field were used for insecticide sensitivity tests and the survivors of each test were used for the detection of genes involved in resistance. **Results:** A total of 3165 *Anopheles* mosquitoes from 04 species (or 06 including identified sub-species) were collected across all sites. The number of bites/man/night was 18.44 and 22.63 in Bélébo and Ouami respectively. A total of 42/1441 *Anopheles* in Bélébo and 15/1727 in Ouami were found positive for *Plasmodium falciparum*. Low mortality rates (<70%) were recorded in all sites with both permethrin 0.75% and deltamethrin 0.05%. A resistance of vector to malathion and bendicarb was observed in Ouami (95%, 76% respectively). the G119S mutation was found in Bélébo at a frequency of 54.1 in bendiocarb survivors, 72.3 in malathion survivors. **Conclusion:** the study reveals a resistance of *An. gambiae* s.l to insecticides as well as a high bite rate of *Anopheles* in the two localities. **Keywords:** *An. gambiae* s.l, Bélébo and Ouami.

## ENTOMOLOGICAL LONGITUDINAL SURVEYS IN TWO CONTRASTED ECO-CLIMATIC SETTINGS IN CAMEROON REVEAL A HIGH MALARIA TRANSMISSION FROM *ANOPHELES FUNESTUS* ASSOCIATED WITH *GSTE2* METABOLIC RESISTANCE

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### Abstract

**Background and justification:** The impact of metabolic resistance to insecticides on malaria transmission remains poorly characterised notably through application of entomological parameters. The lack of resistance markers has been one of the limiting factors preventing a robust assessment of such impact. **Purpose:** The present study sought to investigate how the L119F-*Gste2* metabolic gene influences entomological parameters underpinning mosquitos' propensity to transmit *Plasmodium* spp. **Methods:** Longitudinal studies were carried out in Mibellon and Elende, two different eco-climatic settings in Cameroon and mosquitoes were collected using HLC, CDC-LT and PSC techniques. *Plasmodium* sporozoite parasites were detected by TaqMan and Nested PCR, and blood meal origin by ELISA. The allele-specific PCR (AS-PCR) method was used to genotype the L119F-*GSTe2* marker and association with malaria transmission was established by comparing key transmission parameters such as the Entomological Inoculation Rate (EIR) between individuals with different L119F-*GSTe2* genotypes. **Results:** *An. funestus* s.l was the predominant malaria vector collected during the entomological survey in both sites (86.6% and 96.4% in Elende and Mibellon respectively) followed by *An. gambiae* s.l (7.5% and 2.4%, respectively). Sporozoite infection rates were very high in both collection sites (8.7% and 11% in Elende and Mibellon, respectively). *An. funestus* s.s exhibited a very high EIR (66 ib/h/month and 792 ib/h/year) and was responsible for 98.6% of all malaria transmission events occurring in both sites. The Human Blood Index was also high in both locations (HBI=94%). *An. funestus* s.s. mosquitoes with both 119F/F (RR) and L119F (RS) genotypes had a significantly higher transmission intensity than their susceptible L/L119 (SS) counterparts (IRR=2.2, 95%CI (1.1-5.2), p=0.03; IRR=2.5, 95% CI (1.2-5.8), p=0.01 respectively). **Conclusion:** This study highlights the major role that *An. funestus* s.s plays in malaria transmission in Cameroon with an aggravation from *GSTe2*-based metabolic resistance.

**Keywords:** *An. funestus*, sporozoite infection, malaria transmission, EIR, L119F-*GSTe2*.

## FIELD ASSESSMENT OF COCOA DIEBACK DUE TO THE NEGLECTED MOSQUITO TRUE BUG, HELOPELTIS SP. (HEMIPTERA: MIRIDAE) AND ASSOCIATED PATHOGENIC FUNGI INFECTIONS IN SOUTHERN CAMEROON

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### Abstract

**Background:** Cocoa dieback is an emergence disease in cocoa farms in West Africa, due to the synergistic action of *Sahlbergella singularis* Hagl. and/or *Distantiella theobroma* (Dist.) and opportunist fungi infestations/infections. Data regarding the involvement of others mirid species as *Helopeltis* sp., commonly encountered in plantations in Southern Cameroon, on dieback process of cocoa plants remain unknown. Then, we investigated the effect of *Helopeltis* sp. feeding and associated pathogenic fungi infections on cocoa dieback emergence. **Methodology:** Two different infestations (mirids and fine needles) alongside a control, on cocoa branches/twigs of eight genotypes (T79/501×SNK479, UPA143×NA33, T79/501×SNK13, UPA14×SNK64, SNK 7, TIKO 31, Pa 7 and IMC 60), were performed in plantations in order to characterize the cocoa dieback, and identify the associated pathogenic fungi using relevant dichotomous keys. **Results:** Apart from 20.0% of undetermined species, three pathogenic fungi taxa were inventoried in the study site, namely *Lasiodiplodia* sp. with the highest occurrence (54.3%), followed by *Botryosphaeria* sp. (17.4%), then *Fusarium* sp. (8.3%). Overall, the highest occurrence of pathogenic fungi associated with cocoa dieback disease were obtained on branches infested with mirids (80.0% of the total) compared to those with fine needles (16.0%) and control (4.0%). Our results showed that dieback progression on infested cocoa branches varied amongst cocoa genotypes, mean values ranging from  $3.0 \pm 1.51$  cm for genotype IMC60 (most tolerant) to  $10.8 \pm 2.16$  cm for genotype UPA143×SNK64 (most susceptible). **Conclusion:** The fungi identified behaved as opportunistic species due to the primary *Helopeltis* sp. infestations of the host plant leading to dieback. Our findings undoubtedly show the synergistic action of *Helopeltis* sp. and fungi in cocoa dieback handing out and should be taken into account in Integrated Pest Management (IPM) programs against the targeted cocoa disease.

**Keywords:** *Theobroma cacao* genotypes, neglected true bug *Helopeltis* sp., opportunistic fungi, infestations/infections, Dieback.

## BIONOMICS OF AEDES MOSQUITO SPECIES IN THREE ECO-EPIDEMIOLOGICAL SETTINGS OF CAMEROON AND THEIR SUSCEPTIBILITIES PROFILES TO INSECTICIDES

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### Abstract

**Background:** Arboviruses represent a serious concern in tropical/subtropical countries. In Cameroon, port cities and cities surrounded by forests constitute the main hot-spot of dengue and yellow fever. To date, little is known about bionomics of their main vectors *Aedes aegypti* and *Aedes albopictus* in such environments. This study aim to assess the bioecology, distribution and susceptibility profiles to insecticides of these vectors in three cities of Cameroon.

**Methodologies:** Entomological surveys were undertaken from September 2021 to October 2022 in Bertoua (savanna area), Kribi (city port) and Sangmelima (forested area). Immature stages of *Aedes* spp. were collected by deeping and *Stegomyia* indexes were estimated. After emergence and morphological identification, the F1 progeny of *Ae. aegypti* and *Ae. Albopictus* were tested using WHO bioassays and mortality rates were assessed according to the different insecticides tested. Results: A total 475 breeding sites in Sangmelima (41.47%), Kribi (33.47%) and Bertoua (25.05%) were identified. Tires and plastic containers were most abundant. A total of 2364 mosquitoes belonging to 4 genera and 9 species were collected. *Aedes* species recorded (1864) included *Ae. albopictus* (72%), *Ae. aegypti* (25.91%), and *Aedes* spp. (2.09%). These main vectors were present in all the study sites. *Ae. albopictus* was predominant in Sangmelima and Kribi while *Ae. aegypti* was mostly found in Bertoua. According to house indexes, transmission risk of dengue and yellow fever are high in Kribi and Bertoua. *Ae. aegypti* across study sites were found to be resistant to permethrin, deltamethrin and DDT, while *Ae. albopictus* was resistant to bendiocarb in Kribi and Bertoua. However, all these species were susceptible to malathion. **Conclusion:** Measures against vectors of arboviruses seem to enhance their proliferation and insecticide resistance. These data highlights the need for alternative strategies in vector control interventions in Cameroon.

**Keywords:** Arboviruses diseases, *Aedes aegypti*, *Aedes albopictus*, insecticides resistance, Cameroon.

**STUDY OF THE CIRCULATION OF CRIMEAN CONGO HEMORRHAGIC FEVER (CCHF) AND TICK-BORNE ENCEPHALITIS (TBE) VIRUSES IN SHEPHERDS AND FEBRILE PATIENTS IN CAMEROON**

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**Abstract**

Crimean-Congo Hemorrhagic Fever (CCHF) and Tick-borne Encephalitis (TBE) are two viral zoonoses primarily transmitted by ticks. Scared documentation exists for CCHF exposure in Cameroon. Current estimates of the exposure to CCHF and TBE have to be documented. In this context, a study was undertaken to search for antibodies against some viruses among person at risk; breeders and febrile patients in Cameroon. A cross-sectional study was conducted in the Ndé and Noun departments of the (Western Region), and in Yaoundé (Centre Region) from October 2020 to August 2021. Febrile patients were recruited in two hospitals of Yaoundé city. All the volunteers were investigated for the presence of total anti-CCHF and anti-TBEV IgG viruses' serological markers using immunochromatographic test. Ethical clearance and all administrative authorizations were obtained for the study. Twenty-eight male shepherds and 60 febrile patients were recruited. All the shepherds were under schooled, they were not aware of neither disease transmitted by the tick, and a majority were not compliant of good practices against the parasites. The following prevalences were obtained; 8.3% for CCHF and 6.6% for TBE in the group of febrile patients. Positive prevalences of 17.8% of total anti-CCHF Ig and 25% of anti-TBE IgG were obtained in breeders. The results also indicated an increasing percentage of positive anti-CCHF with age, with a majority of participants aged over 20 years. In addition, significant associations were reported between the seroprevalence of anti-TBE IgG and practice of shepherds' removal of ticks after contact with animals ( $P= 0.007$ ) and after returning from grazing ( $P=0.004$ ). The study provides first evidence of the circulation of CCHF and TBE in Cameroon. Effective in-depth studies of these viruses and preventive measures are needed.

**Keywords:** Tick-borne encephalitis virus, Crimean-Congo hemorrhagic fever virus, breeders, febrile patients, immunoglobulin, Cameroon.

## EVALUATION OF SOME REGULATED MYCOTOXINS IN BLOOD OF NORMAL AND HEPATOCELLULAR CARCINOMA PATIENTS IN CAMEROON

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### Abstract

Hepatocellular carcinoma (HCC) is the most common primary malignant tumor of the liver and figures among the most common cancers worldwide. The pathogenesis of hepatocellular carcinoma (HCC) is multifactorial. Environmental, infectious, nutritional, and metabolic factors contribute directly or indirectly. Though, mycotoxin exposure is associated with the development of several cancers, it has proved challenging to show a direct connection between exposure and oncogenic change. The present study was conducted on human sera of 48 positive and 54 negative hepatocellular carcinomas patients in central hospital of Yaoundé. The study which was conducted as a case control in Centre Pasteur du Cameroun, received the ethical approval of the Cameroon National Ethical Committee. It aimed at determining the level of Aflatoxins B1 (AFB1), ochratoxins A (OTA), Fumonisin B1 (FB1), and Deoxynivalenol (DON), four regulated mycotoxin in cancer patients. These mycotoxins were extracted by liquid phase extraction using specific organic solvents and quantified by competitive Enzyme-linked immunosorbent assay. From the results obtained at the end of this study, we found that, 91.67% and 95.85% of patients were exposed respectively to ochratoxin A and Fumonisin in the case population, whereas, in the control population, all the patients were exposed to Fumonisin and Ochratoxin (100%). Deoxynivalenol was the least represented in both populations, with a percentage of 25.92% and 43.75% in case and control population respectively. Moreover, Patients who consumed cassava and plantains were the most contaminated, with percentage value of 45,80% (OTA), and 33,30% (FB1) respectively in the study population. A significant difference was observed among the amounts of Ochratoxins, Deoxynivalenol and Fumonisin determined in the case and control population, with a P-value of 0.03, 0.03, and 0.0001 respectively. No significant difference was observed with Aflatoxin. Ochratoxin and Fumonisin showed a negative association with the occurrence of hepatocellular carcinoma. Finally, an important observation was made, the high frequency of patients positive to three mycotoxins at once (51,85% and 48,14%), followed by group of patients positive to two mycotoxins (31,48% and 22,22%) in the control and case population respectively. Patients positive to one mycotoxin only was the least observed.

The study demonstrates a high level of exposure of the investigated population to regulated mycotoxins.

**Key words;** hepatocellular carcinoma, aflatoxin, deoxynivalenol, fumonisin, Ochratoxin, serum.

**PREPARATION OF IGY FROM VIRAL HEPATITIS B SYNTHETIC PEPTIDES AS A TOOL FOR HEPATITIS B DIAGNOSIS.**

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**Abstract**

Hepatitis B is one of the leading causes of death in underdeveloped regions. The disease has affected 290 million people worldwide in 2019, according to the World Health Organization. Africa is the most affected continent due to insufficient screening and inadequate resources, which obstruct access to testing. However, early diagnosis is necessary for better management of this condition. The aim of this studies was to generate chicken IgY reactive to peptide of known immunogenic epitopes of HBsAg, a serological indicator of HB infection.

Two peptides (peptide 1 and peptide 2) from known immunogenic epitopes of HBsAg were designed, synthesized and used to immunise laying hens to produce IgY. From the egg collected after immunization, IgY was separated from the egg yolk by delipidation and ammonium sulphate salt precipitation followed by SDS-PAGE for evaluation of its purity. Three types of IgY obtained from peptide 1, peptide 2, and the mixture of both peptides were used for immunoreactivity evaluation. Rabbit IgG anti chicken antibody coupled to peroxidase was used to detect the obtained IgY. Immunoreactivity tests were performed using antigen concentrations of 10, 5, 2.5, 1.25, 0.5 and 0.1 µg/ml. Subsequently, the reactivity towards a positive and negative serums for HBsAg was tested by sandwich ELISA, and a viral isolate was assessed after various dilutions. SDS-PAGE revealed two bands with molecular weights of 68 and 25 kDa, specific for the heavy and light chains of IgY, with minor impurities. The results indicate that the immunoreactivity was greater at 0.1 µg/ml of antigen. Compared to those immunised with peptide 2 and peptide 1 separately, proteins from the group which received the mixture of two peptides showed greater reactivity. Seroreactivity of samples improved at 1/10 and 1/100 dilutions, indicating that the reactivity of the viral isolate was superior to that of diseased and healthy serum. Proteins isolated from the group receiving the two-peptide mixture showed higher immunoreactivity to positive serum, serum negative for HBsAg and viral isolate. These findings suggest that this approach may be useful for developing more effective and less expensive hepatitis B screening tests.

**Keywords:** Hepatitis B, peptide 1, peptide2 , IgY antibodies, ELISA test, Laying hens.

## OBESITY GRADE AND IMPACT ON SEXUAL BEHAVIOUR AND FERTILITIES IN RAT UNDER HIGH FAT DIET

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### Abstract

Obesity is a metabolic disease that can impair male reproductive potential. Hypogonadism which is a clinical condition characterized by altered gonadal function and androgen deficiency, is an important comorbidity of obesity named “Male obesity secondary hypogonadism (MOSH)”. MOSH affect sexual behaviour and fertility and the impact could be function of obesity grade. This study aimed to evaluate impact of different grade of obesity on sexual behaviour and fertility in rat under high fat diet (HFD). For that, 40 proven fertility Rats were randomly separated into 2 groups, negative control (NC) fed with standard diet and test group (HFDG) fed with HFD (30% palm oil and 20% concentrated sucrose solution). During the experiment rats were weighed weekly, sexual copulatory parameters such as mount latency (ML), intromission latency (IL), ejaculation latency (EL), mount frequency (MF), intromission frequency (IF), ejaculation frequency (EF) and post-ejaculatory interval (PEI) were recorded at 2, 3, 4, 5 and 6 months. For fertility parameters, at 2 and 6 months, rats of the two groups were sacrificed. Testis and accessory organs were removed and weighed. Sperm count, transit and motility were also evaluated. Results showed from 4<sup>th</sup> month progressive detracton in sexual behaviour through significant augmentation ( $p < 0.01$ ) in ML, IL, EL and PEI and significant decrease ( $p < 0.01$ ) in IF, MF IF and EF in HFD group when compared to control, reflecting a decline in sexual motivation and sexual performance. From 2<sup>nd</sup> month, fertility was altered trough significant decrease of mobility, daily sperm production (DSP) and transit of spermatozoids. These effects can be attribute to low testosterone level, oxidative stress, dyslipidemia and inflammation observe in HFD group. So overweigh and moderate obesity don't significantly affect sexual behaviour but fertility. However, high grade obesity decreases them, even leading to absence of ejaculation.

**Keys Words:** Obesity, fertility, High fat diet, sexual behaviour.

## CONNAISSANCES ATTITUDES ET PRATIQUES DES PERSONNES AVEC ALBINISME OCULO-CUTANE SUR LES ALLERGIES ALIMENTAIRES

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### Resumé

**Contexte et justification** : Un des facteurs de risque d'allergie alimentaire (AA) pourrait être un faible taux de vitamine D, laquelle est synthétisée à 90 % par la peau via les rayonnements ultraviolets du soleil. Les personnes avec albinisme oculo-cutané (P-AOC) dont l'exposition de la peau au soleil est proscrite du fait de l'absence de mélanine seraient ils sujets à des manifestations allergiques plus nombreuses. **But** : L'objectif principal de cette étude est d'évaluer le niveau de connaissances attitudes et pratiques des personnes avec albinisme oculo-cutané sur les allergies alimentaires. **Méthodologie** : Cette étude transversale a été conduite de Mai à Juin 2023 par appel à participation volontaire au sein des différentes associations dédiées aux P-AOC auxquelles ont été soumises un questionnaire. **Résultats** : Sur les 45 questionnaires soumis, 3 ont été exclus pour réponse incomplète. L'effectif était constitué de 46,5% des participants âgés de plus de 21 ans, dont 57% de sexe féminin. Les connaissances sur les AA provenaient à 37,5% du personnel de santé et très peu des médias (5%). Pour 78% des participants, l'allergie alimentaire est liée à un aliment dont les principaux incriminés étaient la crevette, le poisson, le gombo et l'ananas. Les symptômes les plus rapportés sont les manifestations cutanées. Chez 70% des participants, les symptômes apparaissaient en moins de 24h. Il n'existe pas de corrélation entre albinisme et AA pour 56% de participants. Dans la pratique, 59,5% de participants déclarent recourir à une éviction alimentaire sans consultation chez un spécialiste. **Conclusion** : Les CAP sur les AA par les P-AOC sont satisfaisantes. Toutefois le taux de consultation chez un spécialiste est faible.

**Mots clés** : Connaissances Attitudes et Pratiques - Allergie alimentaire - Personne avec albinisme oculo-cutané

### CHALLENGE IN THE MANAGEMENT OF DIABETES MELLITUS (DM): COULD VITAMIN D BE OF HELP?

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#### ABSTRACT

**Background:** Diabetes mellitus (DM) is a major health challenge that has reached alarming levels worldwide, due to lifestyle and limitations of existing therapies. Vitamin D deficiency has been shown to play key role in the pathogenesis affecting several pathophysiological processes and disease complications. Yet, controversies persist on the relevance of Vitamin D supplementation in DM management. This study aims at assessing association between Vitamin D and T2DM in local settings, and evaluate its suitability as a therapeutic adjuvant in the management of diabetes mellitus. **Methods:** Two hospital-based cross-sectional studies were carried out to assess the relationship between Vitamin D deficiency, hyperglycemia, inflammation, kidney function, and lipid profile in diabetic patients in Douala. Following findings from these clinical investigations, the effect of vitamin D supplementation was tested in experimental Wistar rat model of hypoglycemic/anti-hyperglycemic activity and the streptozotocin-induced T2DM. Three different drugs were considered, namely the typical type 1 DM Glibenclamide therapy, metformin for type 2 DM, and a category 3 Improved Traditional Medicine (ITM-1) under investigation at the University of Buea. **Results:** From clinical investigations, a significant inverse relationship was seen between vitamin D status and fasting plasma glucose ( $r=-0.214$ ,  $p=0.016$ ). A great proportion of participants (81.6%) had inflammation. A significant association was seen between vitamin D status and inflammation ( $p<0.001$ ) and dyslipidemia ( $p<0.001$ ) in diabetic patients. The experimental study showed that vitamin D significantly enhanced the activity of all the three anti-diabetic drugs through both their hypoglycemic /anti-hyperglycemic activity and the sub-acute anti diabetic activity with significant improvement on clinical markers, slight improvement in glycemic control; prevention of diabetic and metformin-induced nephropathy. Improvement in renal function was evidenced by significant decrease in creatinine and urea serum levels ( $p<0.01$ ). **Conclusion:** Findings from the present work suggested a potentials of vitamin D as therapeutic adjuvant for the management of Type 2 Diabetes Mellitus.

**Keywords:** Type 2 Diabetes Mellitus, vitamin D, Inflammation, dyslipidemia

## IMPACT DE L'APPARTENANCE A UN GROUPE DE SOUTIEN SUR LES CONNAISSANCES, ATTITUDES ET PRATIQUES DES PARENTS D'ENFANTS DRÉPANOCYTAIRES DANS LA VILLE DE YAOUNDE

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**Introduction.** La drépanocytose est une hémoglobinopathie à l'origine de la falciformation de l'érythrocyte. Au Cameroun, la prévalence de l'homozygotie SS varie de 1.7% à 9%. L'OMS a opté pour la création dans chaque État d'un programme national de lutte contre la drépanocytose dotée de missions telles que la création de groupes de soutien pour patients et parents dans les hôpitaux. 11 ans plus tard le programme n'a pas encore vu le jour dans notre pays mais néanmoins nous pouvons noter la présence de quelques hôpitaux qui ont organisé en leur sein des groupes de soutien. **Objectif.** Au vu de ce qui précède, nous nous sommes donc proposé d'évaluer l'impact de l'appartenance à un groupe de soutien sur les connaissances, attitudes et pratiques de parents d'enfants drépanocytaires dans la ville de Yaoundé. **Méthodes.** Nous avons réalisé une étude transversale analytique de type CAP pendant 4 mois dans les services de pédiatrie de trois hôpitaux de Yaoundé et leurs groupes de soutien respectifs.

**Résultats.** Nous avons au total recruté 400 parents dont 219 n'appartenant pas à un groupe de soutien et 181 qui y appartenaient suivant nos critères de sélection. La tranche d'âge de [30-40]était la plus représentée à 47% ; le sexe féminin quant à lui dominait avec 74,2% de représentation. Le suivi était fait par le médecin généraliste et le pédiatre simultanément chez 62,3% des patients. 96,7% de parents du groupe de soutien avaient de bonnes connaissances globales contre seulement 23% dans le groupe de parents qui n'y appartenaient pas ( $p < 0,001$ ). Nous avons également constaté que 82,3% et 95% de parents du groupe de soutien étaient respectivement non anxieux et non dépressifs contre 62,1% d'anxiété sévère et 49,3% de dépression modérée chez les parents n'y appartenant pas ( $p < 0,001$ ). 98% de parents du groupe de soutien avaient des pratiques adéquates contre 47,9% de pratiques inadéquates chez les parents n'en étaient pas ( $p < 0,001$ ). **Conclusion.** Ces résultats nous montrent que l'appartenance à un groupe de soutien est un facteur majeur de bonnes connaissances, attitudes et pratiques pour les parents d'enfants drépanocytaires en ce qui concerne la maladie. Ils rejoignent également la stratégie de l'Organisation Mondiale de la Santé et encouragent à l'établissement effectif de ce programme de lutte dans notre pays.

**Mots-clés.** Drépanocytose - groupes de soutien - impact - parents

**OXIDIZED PALM OIL IMPAIRS REPRODUCTIVE FUNCTIONS AND ARCHITECTURES IN FEMALE RATS.**

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**ABSTRACT**

Numerous nutrition-related behaviours are well-known to be major risk factors of many diseases such as female infertility. The objective of this study was to evaluate the effects of three oxidized palm oil diets (OPD) on female rat reproductive function. Forty-four female Wistar rats presenting five consecutive and regular estrous cycles were divided into 4 groups. The rats were fed with: a standard diet, 70% of standard diet+30% oxidized palm oil diet (OPD1), OPD1+5 g of boiled yolk egg (OPD2) and OPD1+10% sucrose (OPD3) for 125 days, respectively. During the feeding period, morphometric, estrous cycle, sexual behavior, gestation, biochemical and histomorphometric parameters were evaluated. All OPDs significantly increased abdominal circumference, body mass index and Lee index coupled to an irregularity and lengthening of the estrous cycle. They significantly decreased appetite and consumption behaviours, quantic pregnancy index, fertility rate, implantation sites and index, serum progesterone and high-density lipoprotein levels, increased pre-implantation losses, antiimplantation activities, serum estradiol, triglycerides, total and low-density lipoprotein cholesterol levels, and impaired brain and ovaries oxidative status. Histomorphometric examinations revealed increases in the number of atresic and primary follicles and decreases in secondary, tertiary, Degraaf, total and corpus luteum follicles in ovaries coupled to a neurodegeneration of hypothalamic anteroventral periventricular neurons in the OPD groups compared to the standard diet group. The three OPDs induce obesity and impair the female reproductive function, especially OPD2 and OPD3. These findings contribute to a better understanding of the adverse effects of palm oil bleaching on the reproductive function in female rats, which could be useful in the management of women with obesity-related sexual dysfunction.

**Keywords:** Bleaching palm oil, reproductive function, female rat, anteroventral periventricular neuron.

**METABOLIC PROFILES ASSOCIATED WITH TOXOPLASMA GONDII INFESTATION IN GOATS AND SHEEP IN CAMEROON**

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**Abstract**

**Background and objective:** Toxoplasmosis has important implications for animal productivity and health, as well as for human health and welfare. The present study was to identify the metabolic factors associated with *Toxoplasma gondii* infestation in sheep and goats in Cameroon. **Method:** A cross-sectional study was conducted in 200 small ruminant farms during a period from April to October 2021. A total of 1061 small ruminants were sampled and the serums obtained were analyzed first with the indirect multi-species ELISA for toxoplasmosis and then once the groups were formed, some metabolic parameters (Total Cholesterol, Albumin, Glucose, Creatinine, AST, ALT and Progesterone) were analyzed in both the control and the *T. gondii* infested animals' groups in order to highlight the parameters associated with toxoplasmic infestation. **Result:** 329 animals tested positive for *T. gondii* with an individual prevalence of 31.01% (95% CI: 28.23 - 33.79). A significant correlation was observed between the prevalence of toxoplasmosis and region ( $p=0.0001$ ), species ( $p=0.0001$ ), sex ( $p=0.0002$ ), age ( $p=0.0002$ ) and breed ( $p=0.01$ ), production targets ( $p=0.04$ ) and hygiene level ( $p=0.04$ ). A positive and significant association was obtained between the prevalence of toxoplasmosis and variations in albumin ( $p=0.015$ ), ALT ( $p=0.001$ ) and progesterone ( $p=0.03$ ). Infestation of sheep and goats with *T. gondii* promotes severe increase in albumin and alanine aminotransferase, and significant hypoprogesteronemia that can lead to abortion. Several physiological factors were associated with significant ( $p<0.05$ ) variation in albumin, ALT and progesterone in *Toxoplasma gondii* infested small ruminants, including age and gestation. **Conclusion:** Understanding the factors associated with this infestation is essential for the implementation of effective control programs to reduce its impact on small ruminant farms.

**Keywords:** Metabolic profiles, *Toxoplasma gondii*, goats, sheep, Cameroon.

**CONTRIBUTION DES AGROFORETS CACAOYERS ET CAFEIERS DES SAVANES HUMIDES CAMEROUNAISES DANS LA REGULATION DU CLIMAT.**

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**Résumé**

Dans les savanes humides de l'Ouest-Cameroun, les agroforêts à base de cacaoyers et de caféiers occupent une place importante du paysage agricole, mais leur potentiel d'atténuation et d'adaptation au changement climatique est encore peu reconnu. Pourtant, la REDD++ reconnaît l'agroforesterie comme une pratique agricole intelligente face au climat, fournissant des produits et services écosystémiques pour la réduction de la pauvreté. Il était donc nécessaire de quantifier la contribution de ces agrosystèmes à l'atténuation du changement climatique en estimant leur potentiel de séquestration du carbone. La méthode non destructive d'estimation de la biomasse par les équations allométriques a été utilisée dans 82 placettes (60\*40 m) réparties dans trois types d'agroforêts (cacaoyères, caféières et mixtes) et trois altitudes (400-800 m, 800-1200 m et 1200-1600 m) pour estimer les stocks de carbone des arbres vivants, des bois morts et du sol. Les analyses multivariées ont été faites en utilisant le test de Tukey au seuil de 5 % pour séparer les moyennes. Les stocks de carbone ont varié entre 177,57±35,71 tC/ha dans les SAFs cacaoyers et 182,96±53,51 tC/ha dans les systèmes agroforestiers mixtes. Les valeurs écologiques variaient dans le même sens entre les systèmes agroforestiers à base de cacaoyers (1938072,80±389768,59 FCFA/ha) et les systèmes agroforestiers mixtes (1996953,36±584065,02 FCFA/ha), représentant les bénéfices carbonés de ces agroforêts. Les agroforêts mixtes se sont révélées plus aptes à séquestrer le carbone, ce qui prouve que l'introduction du cacaoyer dans ces régions est une grande opportunité de séquestration de carbone et devrait être fortement encouragé. Les études similaires devraient s'étendre aux autres agroforêts des savanes humides d'Afrique centrale pour rendre fidèlement compte de la contribution de ces écosystèmes dans la régulation du climat.

**Mots clés :** Allométrie, Biomasse, Changement climatique, REDD++, Valeur écologique.

## NON-COFFEE PLANTS SPECIES BIODIVERSITY AND THEIR ECOLOGICAL STATUS IN ROBUSTA COFFEE AGROSYSTEMS IN NOUN DIVISION (WESTERN CAMEROON)

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### Abstract

**Background:** knowledges related to species biodiversity are useful for multiple ecological services and/or environmental conservation. The goal of this study was to assess the biodiversity and ecological status of non-coffee plants species in contrasting locations. **Methodology:** Transverse study was carried out in December 2022 within 17 Robusta coffee plantations, 7 villages and 3 sub-divisions of Noun Division. Non-coffee plants were identified using Botanist expert's and relevant dichotomous keys whereas their circumference and recovery rate were estimated via a decameter and Braun-Blanquet method respectively. Biodiversity of plants was estimated using the specific richness and/or diversity indexes while their ecological status was determined via Dajoz (1982) modified method. **Results:** In total, 48 plant species distributed in 38 genera and 17 families were inventoried. *Elaeis guineensis* revealed as most frequent species with 30.85% of occurrences whereas the following taxa: *Albizia adianthifolia*, *A. glaberrima*, *Antidesma laciniatum*, *Citrus medica*, *C. sinensis*, *Erythrophleum suaveolens*, *Ficus mucoso*, *F. polita*, *F. umbellata*, *Macaranga* sp., *Mangifera foetida*, *Piptadeniastrum africana*, *Pterocarpus erinaceus*, *P. milbraedii*, *Pycnanthus angolensis*, *Sarcocephalus diderrichii*, *Sterculia tragacantha*, *Trilepisium madagascariense* and *Voacanga africana*, with 0.25% of the total occurrence were found as least frequent. Non-coffee plants diameter and recovery rate varied significantly ( $p < 5\%$ ) between the studied plots, values ranged from  $64.75 \pm 3.17$  to  $181.86 \pm 43.81$  cm and 15% to 100% respectively. Plants abundance and specific richness/diversity also varied between plots, villages and sub-division, with respective values of 2 to 44 individuals (plots level), 28 to 117 (villages level) and 91 to 177 (sub-division level) versus 0.00 to 3.34 (plots level), 0.57 to 5.04 (villages level) and 0.58 to 3.18 (sub-division level). 66.66% of inventoried plants were abundant and 33.34% were extremely rare. **Conclusion:** Our findings revealed the need to take appropriate measures to preserve endangered species for sustainability environmental conservation of the studied agrosystems.

**Keywords:** Specific richness/diversity, associated plants, Robusta Coffee Agrosystems, environmental conservation

VARIATIONS DES STADES PREIMAGINAUX DES *CULICIDAE* DANS UNE ZONE MARECAGEUSE DE LA VILLE DE YAOUNDE (CAMEROUN).

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**Résumé**

**Introduction** Encore appelés moustiques, Les *Culicidae* sont des vecteurs de plusieurs maladies humaines et animales telles que les arboviroses, les filarioses, le paludisme qui demeure l'une des plus dangereuses (Gérard, 1993) et est la première cause de morbidité et de mortalité dans les pays intertropicaux (Walter Reed Biosystematics Unit, 2001). il a été procédé au cours de la présente étude à une caractérisation physico-chimique et biologique de l'eau du marécages de la zone d'étude ( Tongolo) , plus précisément a une étude de la diversité, du développement et des variations spatio-temporelles des stades preimaginaux du peuplement culicidien (Abagli et al, 2014) . **Méthodologie** Les larves ont été récoltées à un rythme bi saisonnier grâce à la technique de "Dipping" (Service, 1976). Les paramètres physicochimiques de l'eau du gîte ont été mesurée à l'aide d'un multi paramètre et par volumétrie selon les méthodes décrites par Rodier (1996). **Résultat** Durant l'étude un total de 1530 larves et 750 nymphes de moustique a été récolté avec les genres *Culex* (73%) et *Aedes* (23%) représentés et quatre espèces observées (*Culex pipiens*, *Culex quiquefasciatus*, *Aedes metallicus* et *Aedes albopictus*). L'abondance des stades preimaginaux a été plus fortes en grande saison sèche (présence de tous les stades preimaginaux) qu'en petite saison de pluie. **Conclusion** Les différences notées entre les deux saisons seraient liées aux différences de conditions physico-chimiques du milieu, de la végétation, de l'ensoleillement et du niveau d'urbanisation. **Impact de l'étude** : Contribuer à la lutte anti vectorielle à travers une optimisation du contrôle des stades preimaginaux des moustiques dans leur biotope naturel.

**Mots-clés:** Abondance, biodiversité, Culicidae, stades preimaginaux, variations saisonnières, Yaoundé.

**CHARACTERISTICS AND PEASANT PERCEPTIONS OF CLIMATE CHANGE IN AN EQUATORIAL CLIMATE WITH BIMODAL RAINFALL: THE CASE OF LEKIÉ (CENTER-CAMEROON)**

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**Abstract :**

Climate change is a major concern for the entire international community. This article analyzes farmers' characteristics and perceptions of climate change (rainfall and temperature) in an equatorial environment with bimodal rainfall in Cameroon, particularly in the Lekie division, centre region. The methodological approach of this work is a mixed one, combining quantitative and qualitative techniques. The first, based on climatic information and direct surveys of farmers, enabled us to evaluate the evolution of these two climatic parameters from 1981 to 2021 and to obtain descriptive statistics on the population studied. The second was used to decipher farmers' perceptions of climate change in this locality. This approach led to the conclusion that the region's climate has indeed changed over time. Indeed, rainfall trends are marked by strong inter-annual variability between rainy and dry periods, with a Standardized Precipitation Index varying between 2.38 and -1.99. In addition, the Lekie department experienced an average 2% decrease in rainfall over the study period. Temperatures, meanwhile, rose by an average of 1.2°C per decade. Faced with changes in certain quantifiable climate parameters, farmers' perceptions are divided between divine causality and human activity, on this phenomenon they describe "climate theater".

## DIVERSITE GENETIQUE DES ABEILLES SANS DARD DU GENRE *MELIPONULA* SUR LES HAUTS PLATEAUX DE L'OUEST ET LA ZONE FORESTIERE A PLUVIOMETRIE BIMODALE DU CAMEROUN

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### Résumé

**Introduction** : La diversité floristique les hauts plateaux de l'Ouest et la zone forestière à pluviométrie bimodale du Cameroun font de ces zones des sites favorables à l'évolution des abeilles sans dard parmi lesquelles les espèces du genre *Meliponula*. Elles sont caractérisées par leur grande taille, leur impact dans la pollinisation et sont les plus grands producteurs de miel d'abeilles sans dard africain très appréciée en pour leurs propriétés médicinales. Par ailleurs, les informations concernant la diversité de cette population d'abeille sont peu disponibles. **Objectif** : Ainsi, cette étude a été initiée dans le but de contribuer à une meilleure connaissance de la diversité de ces abeilles du genre *Meliponula* en vue de leur valorisation et leur conservation.

**Méthodologie** : De ce fait, 725 ouvrières dont 395 abeilles *Meliponula ferruginae*, 90 abeilles de l'espèce *Meliponula bocandei* et 240 de l'espèce *Meliponula (Apostrigona) nebulata* ont été collectées dans 7 départements notamment dans les Bamboutos ; Hauts-plateaux ; Menoua ; Ndé ; Koung-Khi ; Haut-Nyong et Lom-et-Djerem. Ensuite les échantillons ont été conservés dans l'éthanol 70° à -20° jusqu'à la période de prise des mensurations. Un total de 16 paramètres biométriques a été prise grâce au stéréo microscope Zeiss muni d'un logiciel de mensuration Zen (Stermi 2000-C) avec une précision de 0,05mm. Les données obtenues ont été analysées grâce aux logiciels statistiques XLSTAT 2014 et SPSS 2010. **Résultats** : Ainsi, pour  $P < 0.05$ , les différents résultats obtenus montrent que toutes les mensurations de *Meliponula ferruginea* ont été influencées par les localités et les abeilles du Lom-et-Djérem ont les plus grandes mensurations comparer à celles du Ndé qui ont les plus petites mensurations. Par ailleurs pour l'espèce *Meliponula bocandei* la longueur de l'antenne, longueur de la tête, distance oculaire ocello dorsale, longueur du fémur, longueur et largeur du tibia, largeur du métatarse n'étaient pas influencée par les localités. Concernant *Meliponula nebulata* la moyennes des mensurations étaient statistiquement comparable pour chaque localité. De plus, l'analyse en composante principale a permis de monter que les populations d'abeilles de chaque espèce sont constituées de trois morphotypes. **Conclusion** : Ainsi, les résultats obtenus de cette étude biométrique sont nécessaires pour évaluer le degré d'homogénéité au sein de ces populations d'abeilles et qui seront utilisés durant le processus de domestication de ces abeilles notamment lors de la sélection des colonies pour la multiplication.

**Mots clés** : Biométrie ; abeilles sans dard ; Morphotypes ; *Meliponula ferruginea* ; *Meliponula bocandei* ; *Meliponula nebulata*

**DIVERSITE GENETIQUE DES ABEILLES SANS DARD DU GENRE DACTYLURINA DANS LES ZONES AGRO-ECOLOGIQUES DES HAUTES TERRES DE L'OUEST ET LA ZONE FORESTIERE A PLUVIOMETRIE BIMODALE DE L'EST CAMEROUN.**

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**Résumé**

**Introduction** : *Dactylurina staudingeri* est une abeille sans dard largement répandue en Afrique de l'Ouest et Centrale. Elle fournit d'importants services de pollinisation et son miel est appréciée pour ces propriétés médicinales. Cependant, la diversité des populations est peu étudiée. **Objectif** : L'objectif de cette recherche est de contribuer à une meilleure connaissance de la diversité de *Dactylurina staudingeri* au Cameroun en vue de son exploitation durable **Méthodologie** : Et pour y parvenir, Un total de 797 abeilles ouvrières a été collecté sur qui 16 mensurations biométriques ont été réalisées sur chacune d'elles grâce aux méthodes traditionnelles de biométries. Les données obtenues ont été soumises à l'analyse de la variance. **Résultats** : Les résultats obtenus ont montré que les abeilles du Nde et du Lom-et-Djerem sont moins significatives ( $P < 0.05$ ) pour la plupart des mensurations par rapport aux abeilles des autres localités. La présente étude a dévoilé la présence de 3 morphotypes au sein de la population de *Dactylurina staudingeri* grâce à l'analyse en composante principale. **Conclusion** : cette diversité pourra être exploitée de façon durable et contribuera fortement à la sécurité alimentaire.

**Mots clés** : Biométrie, abeilles sans dard, *Dactylurina staudingeri*, Ouest Cameroun.

## IMPACT OF ALTITUDE ON SPRING MACROINVERTEBRATES AND WATER QUALITY IN SOUTH WEST REGION OF CAMEROON

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### Abstract

**Background and justification:** Climate change, along with the related increase in global temperature, has been reported to have diverse impacts on the physiology, fecundity, growth and biodiversity of animals. Species replacement patterns can be observed in response to climate change reflecting a latitudinal and altitudinal thermal gradient. A powerful approach to predict how global warming will affect species distribution and abundance consists in studying their distribution along an altitudinal gradient. **Purpose statement:** In tropical freshwaters, especially in Africa, the consequences of temperature change along elevation gradient still remain unclear. **Methodology:** The impact of altitude on the biodiversity and water quality of 13 springs located from 82 to 1,189m a.s.l was evaluated along Mount Cameroon. Water was directly collected at each site in 1,000 mL polyethylene bottles, without producing bubbles and were measured according to standard methods. The organisms were collected by passive direct filtration using a sieve (150 µm mesh size, 5 to 8 cm diameter) for one to two hours and the spring water was later filtered at the source. The samples containing organisms were directly fixed in 96° ethanol. **Results:** The analysis of the physicochemical variables showed low temperature levels ( $19.50 \pm 2.09$  °C), high turbidity ( $13.0 \pm 7.17$  FTU), and an acceptable mineralisation level ( $324.95 \pm 260.0$  µS/cm), with high amounts of phosphates ( $0.83 \pm 0.47$  mg/L). A total of 10,265 organisms, distributed into 56 families, were collected. They mostly included insects (47.8%), closely followed by Arachnida (34.8%). Only two stygobite taxa were recorded, namely Darwinulidae and Stenasellidae. Total diversity slightly decreased with altitude, especially during the dry season. **Conclusion:** The springs of Mount Cameroon are of good chemical and ecological quality, whatever the altitude. African species appear to be well adapted to warm and poorly oxygenated water compared to species in other parts of the world.

**Keywords:** Biodiversity, elevation gradient; macroinvertebrate; temperature.

**IMPACT DES EFFLUENTS DE LA SOCIÉTÉ DE DÉVELOPPEMENT DU COTON (SODECOTON) ET DES ABATTOIRS SUR LA STRUCTURE DES DIATOMÉES ET DES MACROINVERTEBRÉS D'UN COURS D'EAU TEMPORAIRE SAHÉLIEN (EXTRÊME-NORD, CAMEROUN)**

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**Introduction:** L'occupation des terres et leur exploitation pour diverses activités anthropiques sont susceptibles de perturber l'intégrité écologique des cours d'eau. Le but de ce travail était d'examiner l'impact des effluents de la SODECOTON et des abattoirs sur la qualité des eaux et la structure des diatomées et des macroinvertébrés du Mayo Tsanaga. **Méthodologie :** Ces organismes et l'eau ont été collectés toutes les 2 semaines, d'août à octobre 2021, au niveau de 7 stations localisées le long du cours d'eau (source et aval de la décharge des effluents) et analysés suivant les techniques standardisées. **Résultats :** La physico-chimie de l'eau a révélé un gradient de pollution de l'amont vers l'aval du Mayo Tsanaga. Les stations recevant les effluents industriels non traités ont affiché des eaux eutrophes, alcalines, fortement chargées en matières organiques, en nutriments et en sels dissous alors que celle située dans le crénon a présenté des eaux oligo-mésotrophes, moins polluées avec des valeurs faibles des variables évaluées. La composition taxonomique et la structure des assemblages de diatomées et des macroinvertébrés ont varié d'un site à l'autre selon la nature et le niveau de pollution. 238 espèces et variétés de diatomées réparties dans 34 genres, 25 familles, 15 ordres et 3 classes ont été recensées. 1369 macroinvertébrés distribués dans 32 familles, 11 ordres et 3 classes ont été dénombrés. Les sites recevant les effluents sont caractérisés par la prolifération des taxa polluo-tolérants de diatomées et des macroinvertébrés et les faibles valeurs des métriques de diversité, traduisant une simplification de la structure de ces communautés. A l'opposé, la source est dominée par les taxa polluo-sensibles et plus diversifiée. **Conclusion :** Les effluents industriels dégradent la qualité de l'eau et modifient la structure et l'architecture des peuplements de diatomées et des macroinvertébrés. **Impact de l'étude:** Cette étude est utile pour le biosuivi de l'intégrité écologique des cours d'eau sahéliens et renforcer la législation pour exploiter durablement ces systèmes aquatiques.

**Mots clés:** pollution industrielle, macroinvertébrés, diatomées, qualité de l'eau, Mayo Tsanaga, Extrême-Nord.

## DESCRIPTION DES MACROINVERTEBRES BENTHIQUES DES COURS D'EAUX SUPERIEURS DU DEPARTEMENT DE LA MVILA (SUD-CAMEROUN)

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### Résumé

**Introduction:** Ce travail a été réalisé dans le but de catégoriser la polluosensibilité des macrofaunes benthiques en fonction du degré d'urbanisation dans les zones crénales du bassin versant du Sud-Cameroun. En effet, cette région est considérée comme l'une des rares zones à faible risque écologique et par conséquent ce doit d'être conservé. Les résultats environnementaux et biologiques ont été obtenus suivant des méthodologies particulières. **Méthodologie:** ce travail a été effectué dans trois stations (une forestière, une périurbaine et une urbaine) durant 5 mois. Les paramètres physico-chimiques ont été mesurés suivant les recommandations d'APHA et Rodier, tandis que l'échantillonnage des macroinvertébrés benthiques a été effectué selon l'approche multihabitat suivant une fréquence mensuelle. **Résultats:** Les analyses physicochimiques ont révélé que la conductivité électrique ( $25,38 \pm 5,76 \mu\text{s/cm}$ ), la couleur ( $96,33 \pm 73,95 \text{ pt/co}$ ), l'orthophosphate ( $1,00 \pm 0,76 \text{ mg/l}$ ) et le nitrite ( $0,021 \pm 0,029 \text{ mg/l}$ ) ont été plus faibles dans la zone forestière tandis que la conductivité électrique ( $53,21 \pm 6,60 \mu\text{s/cm}$ ), l'orthophosphate ( $1,40 \pm 1,04 \text{ mg/l}$ ) ont été plus élevés dans la zone urbaine. De ce travail, 662 organismes ont été capturés repartis en : 36,5% de décapodes ; 28,5% d'odonates ; 24,26% d'hétéroptères ; 6,3% de coléoptères ; 2,4% de mollusques ; 0,65% d'éphéméroptère ; 0,48% de diptère et d'oligochète et enfin 0,3% de turbellarié. La fréquence d'occurrence et l'abondance ont montré que : les *Macrobranchium* sp de la famille des *paleomonidae* ordre des décapodes ont caractérisé la station forestière. Dans la station périurbaine, l'indice de Shannon a relevé une équipartition poussée des espèces ce qui caractérise une cohabitation (hétéroptères, odonates, décapodes) et l'espèce *Tholymis tillarga* de la famille des *libellulidae* ordre des odonates.

**Conclusion :** Ces résultats montrent que le degré d'urbanisation influence sur la physicochimie et sur la structure des communautés zoobenthiques. Selon la classification de polluosensibilité : les décapodes sont plus polluosensibles que les odonates. **Impact de l'étude:** les affluents étudiés se déversent sur le fleuve Ntem qui est un site reconnu Ramsar. Ces données sont des socles sur lesquels pourront s'appuyer les futures recherches.

**Mots clés:** Macroinvertébrés benthiques, polluosensibilité, diversité, Qualité des eaux, Mvila.

## DISTRIBUTION SPATIO-TEMPORELLE DU ZOOPLANCTON DE QUELQUES COURS D'EAU DANS LA ZONE AGRICOLE D'AWAE (CENTRE-CAMEROUN)

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### Résumé

**Introduction** : Dans l'optique de préserver le zooplancton des milieux hydro-agricoles, une étude saisonnière a été entreprise de juillet 2021 à mai 2022 dans quelques cours d'eau d'awae.

**Méthodologie** : Pour ce faire, 12 stations d'échantillonnage ont été retenues. Les prélèvements ont été effectués deux fois par saison suivant une fréquence mensuelle. Les variables physico-chimiques des eaux ont été déterminées suivant les méthodes standards tandis que le zooplancton récolté a été identifié grâce aux ouvrages appropriés. **Résultat** : Les analyses physico-chimiques montrent que les eaux sont acides, faiblement minéralisées, moyennement oxygénées, colorées et sujettes à une forte pollution organique. Quant au zooplancton, 70 taxons ont été récoltés et regroupés en 22 familles et 44 genres. La famille des Chydoridae est la plus diversifiée. La plupart des autres familles sont mono-spécifiques (Rotifères et Ostracodes particulièrement). *Alonella* sp. est la seule espèce omniprésente alors que *Acroperus* sp1., *Acroperus* sp2., *Chydorus* sp2. et *Kurzia* sp. sont les seules espèces régulières. Malgré la faible richesse spécifique obtenue pendant les grandes saisons, la grande saison sèche se démarque par l'augmentation de la diversité des espèces également bien réparties dans le milieu. Les corrélations entre variables biologiques et physico-chimiques montrent que la température, la conductivité électrique et les matières organiques influencent fortement l'abondance et la diversité spécifique. **Conclusion** : Les variations spatio-temporelles du zooplancton dépendent des caractéristiques hydrologiques et physico-chimiques du milieu. Cette étude confirme davantage l'impact négatif des activités anthropiques sur les milieux aquatiques et leurs ressources.

**Mots clés** : Zooplancton, distribution, agricole, awae.

**COMMUNAUTE DES MACROINVERTEBRES BENTHIQUES ET QUALITE DES EAUX DU COURS D'EAU WAMIE A KRIBI DANS LA REGION DU SUD CAMEROUN**

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**Résumé**

Une étude visant à déterminer le peuplement des macroinvertébrés benthiques du cours d'eau Wamie à Kribi dans la région du Sud Cameroun en vue d'évaluer son état de santé a été menée de Mai en octobre 2020. Les prélèvements ont été réalisés suivant une fréquence mensuelle. Les variables physicochimiques ont été analysés suivant les recommandations d'APHA et Rodier. L'échantillonnage des macroinvertébrés benthiques a été effectué selon l'approche multihabitat. Les résultats des analyses hydrologiques indiquent que la pente et la vitesse des eaux varient d'une station à une autre et que la largeur du lit augmente de l'amont vers l'aval. Les analyses physicochimiques révèlent une très bonne oxygénation des eaux, une légère acidité ( $6,12 \pm 0,19$  UC) avec une température très peu variable d'un mois à l'autre ( $26,69 \pm 0,35$  °C). Ces eaux sont également pauvres en matières organiques oxydables et en composés azotés. Les très faibles valeurs de l'indice de pollution organique (IPO) enregistrées, témoignent de la faible anthropisation du milieu, montrant ainsi que les eaux du cours d'eau Wamie sont peu perturbées et donc de bonne qualité écologique. Un total de 643 individus appartenant à 4 embranchements, 5 classes, 10 ordres, 21 familles et 26 genres et espèces a été enregistré. L'embranchement des Arthropodes domine avec 98,72% d'abondance relative, suivi. La classe des Malacostracés est la plus abondante avec 46,19% d'abondance relative bien que comprenant un seul ordre, celui des Décapodes. La richesse spécifique couplée aux indices de diversité de Shannon et Weaver ( $H'$ ) et d'équitabilité ( $J$ ) de Piélou montre que la station W3 est la plus diversifiée, dominée par les taxons polluosensibles *Macrobrachium niloticus* et *Melanoides angolensis* qui indiquent une bonne qualité écologique des eaux.

**Mots clés :** Peuplement, Macroinvertébrés benthiques, Qualité de l'eau, Physicochimie, Wamie (Kribi)

## OCBS-EQCC12

### CROISSANCE STATURO-PONDERALE ET DEVELOPPEMENT PSYCHOMOTEUR DES NOUVEAUX NES PREMATURES SUIVIS SOUS METHODE MERE-KANGOUROU A L'HOPITAL DE DISTRICT DE BONASSAMA A DOUALA.

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#### Résumé

**Introduction** : La méthode mère-kangourou est une alternative sûre dans la prise en charge des nouveaux nés prématurés. Elle favorise l'allaitement fréquent et exclusif, ainsi que l'attachement entre la mère et son nourrisson. L'objectif de notre étude était de déterminer le profil de croissance staturo-pondérale et le développement psychomoteur des nouveaux nés prématurés suivis sous la méthode mère- kangourou à l'Hôpital de district de Bonassama à Douala. **Matériels et méthode** : Nous avons effectué une étude de cohorte prospective du 1er janvier 2019 au 1er janvier 2021. Les données ont été recueillies sur les informations sociodémographiques et obstétricales des mères. Les paramètres anthropométriques des nouveaux nés prématurés ont été colligés respectivement à la naissance, 40 semaines, 3 mois, 6 mois, 9 mois, 12 mois, 18 mois et 24 mois. Le développement psychomoteur a été évalué à 24 mois selon le score de DENVER II. **Résultats** : Au total parmi les 185 nouveau nés prématurés suivis pendant la période d'étude, 136 ont été retenus pour cette étude. 83,8% des mères avait un âge compris entre 20 et 35 ans [13 - 39 ans]. 45,6% étaient originaires du Nord-ouest. Parmi ces mères, 85,3% étaient célibataires, et 52,9% avaient un niveau d'études secondaires. Le terme moyen à la naissance était de 34,0672 ( $\pm 1,7492$ ) SA avec un poids moyen de 1966,4706  $\pm 339,0274$  grammes. Tous les nouveaux nés prématurés étaient exclusivement allaités au lait de mère. Les garçons avaient un gain de poids et de taille supérieur aux filles. Le rattrapage du poids était observé chez les filles et chez les garçons à 3 mois et 9 mois d'âge corrigé respectivement. Le rattrapage de la taille était observé à 6 mois d'âge corrigé dans les deux sexes. Les nouveaux nés prématurés de sexe féminin avaient trois fois plus de risque d'avoir une petite taille que les garçons. Le score le DENVER II a été évaluer chez 68 enfants, donc 93,85% avaient un développement psychomoteur global normal. Le poids de naissance compris entre [1000-1499] grammes et la convulsion étaient associés conjointement à un retard des acquisitions de la motricité fine. La présence seule de la convulsion était associée à un retard psychomoteur global. **Conclusion** : Les nouveaux nés prématurés suivis sous méthode mère kangourou ont une croissance staturo-pondérale à 24 mois d'âge corrigé conforme aux standards de l'OMS, avec un bon développement psychomoteur.

**Mots clés** : Croissance, méthode mère Kangourou, Prématurés

**MICROBIOLOGICAL QUALITY OF COMMERCIAL FLAVORED SOY-CHEESE (TOFU) SKEWER IN THE WEST REGION OF CAMEROON AND CRITICAL CONTROL POINTS (CCPS) DURING THE PRODUCTION PROCESS;**

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**Abstract**

Flavored soy-cheese skewer is a street food becoming very common in several cities in Cameroon. The absence of regulations of its production and sale is considered as a public health problem. The rate of its consumption is increasing thereby encouraging its production locally, often without respecting hygiene measures. The objective of this work is to evaluate the production process used for this product and determine the microbiological quality of commercialized products in the street. The methodology used consisted firstly in collecting samples from vendors and then collecting samples at different steps of production, including slurry (S), soymilk (SM), fresh soy-cheese (FSC), seasoned soy-cheese (SSC) and soy-cheese skewer (SCS) to determine their microbiological quality which also helped in the determination of critical steps. Samples were analyzed for Total flora (TMAF), Staphylococcus, coliforms, salmonella and yeast and mold counts. Results revealed that TMAF varied from 4.87 - 7.79 Log CFU/g and in 86% of the samples above the norms. Yeast and mold counts ranged from 4.84 - 7.91LogCFU/g and were present in all the samples. Staphylococci and coliforms ranged from 0 to 7.17 Log CFU/g and (0-2.37 LogCFU/g) and were present in 59% and 72% of samples, respectively. *Salmonella* were absent in all samples. Regarding the process, the steps highly charged were S and SM. The least loaded were FSC and SSC. SCS also had significantly high charges compared to FSC and SSC. Therefore, the critical steps were steaming and packaging on sticks. These results demonstrate the hygienic conditions in which this food is produced and stored, constituting a risk to the health of consumers. It is therefore important to implement and respect good hygiene measures, good manufacturing practices in order to avoid contamination as much as possible.

**Key word:** flavored soy-cheese skewer, critical points, microbiological quality.

## EVALUATION OF THE EFFICACY OF DIFFERENT LARVICIDES ON VARIOUS MOSQUITO BREEDING SITES IN THE CITY OF YAOUNDÉ, CAMEROON

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### Abstract

Mosquito control faces a number of challenges, including insecticide resistance, which hamper the effectiveness of LLINs. This situation makes it urgent to deploy complementary control strategies such as larval control. The aim of this study was to evaluate the efficacy of three families of larvicides: Vectomax® G, spinosad (NatularG30 and NatularDT) and the growth regulator Aldoside P35 on mosquito larvae under natural conditions in the city of Yaoundé. The study was conducted from July 2022 to February 2023 in three neighbourhoods. In each neighbourhood, larval surveys were carried out, after which eight semi-permanent breeding sites were selected for the study, four of which were treated and four were controls. Each site was georeferenced and characterised. Preliminary data were collected over two months, during which mosquito abundance and diversity were assessed. Mosquito larvae were collected, reared and identified in the laboratory at OCEAC. Treatments were applied to the sites to be treated, following the manufacturer's recommendations for each larvicide. During the treatments, culicidae abundance and diversity were measured weekly in all sites to assess the effect of the treatments. We noticed a significant decrease ( $p=0.0001$ ) in the number of larvae in the sites treated with the larvicides VectoMax® G (treated = 8.6, control = 23.6), Natular G30 (treated = 3.41, control = 16.15) and Natular DT (treated = 6.84, control = 11.84) compared with the control sites. No significant reduction was observed ( $P=0.07$ ) in the growth regulator group. A significant reduction in the number of larvae reaching the adult stages was observed. Culicidae diversity was not affected. Four species were identified: *Culex quinquefasciatus*, *Culex duttoni*, *Anopheles gambiae* s.l and *Lutzia tigripex*. Vectomax G and Natulars are therefore good candidates for the control of larvae.

**Key words:** vectors, Culicidae, larval control

**ALTITUDINAL BASELINE AND STRESS-INDUCED GLUCOSE CHANGE IN WESTERN MOUNTAIN GREENBUL (*ARIZELOCICHLA TEPHROLAEMA*) AND AFRICAN THRUSH (*TURDUS PELIOS*) IN A TROPICAL ENVIRONMENT**

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**Abstract**

Biodiversity conservation is crucial for the survival of all species because species depend on each other to survive, and the extinction of one species could result in the extinction of all the others. Unfortunately, the rate of biodiversity loss is rapidly rising nowadays. In fact, there are several causes for the massive mass extinction of biodiversity that the planet is currently going through, including intense agriculture, habitat loss, pollution, and climate change. In tropical regions, afropasserine extinction is increasing dramatically, and little is known about their physiological adjustments to climatic variation, particularly for species that live in forests and experience extreme temperatures in their habitat. Western Mountain Greenbul and African Thrush are resident passerines of sub-Saharan Africa found in Mt. Cameroon over a 2km altitudinal gradient. The present study examined basal and stress-induced change in glucose levels in relation to altitude, body mass, and sex in both species. Birds were captured in Mt. Cameroon at low (350 m) and high (2300 m) altitudes during the dry season in seven consecutive years (2013-2019). After capture, blood glucose was measured immediately (G0) and after stressing the bird for 30 minutes (G30). The variation between G0 and G30 was considered as the stress-induced change (G30-G0). To prevent resampling, the bird was then sexed, weighted, and ringed before being released. The findings showed that G0 is higher in African Thrushes that live at low altitudes than at high altitudes. In Western Mountain Greenbul, we noticed that individuals living at high altitudes were heavier than those living at low altitudes. Additionally, body mass was negatively correlated with G0 in the same bird. Finally, there was a significant positive correlation between G0 and G30-0 in the Western Mountain Greenbul. These results demonstrated that altitudinal variations in blood glucose levels in Afrotropical passerines is species-dependent.

**Keys words:** baseline glycaemia, stress-induced change in glucose, Altitude, *Arizelocichla tephrolaema* and *Turdus pelios*

## OCCUPATIONAL USE OF AGROCHEMICALS RESULTED IN ALTERED HAEMATOLOGICAL AND HEPATIC PARAMETERS AMONG FARMERS IN FAKO DIVISION, CAMEROON

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### Abstract

Despite benefits of using agrochemicals as growth regulators, pesticides, and soil fertilizers, insults of these agrochemicals on non-target organisms including humans remain a global public health distress. Agrochemicals have been shown to alter hematological parameters, key metabolic and excretory organs, reproductive function, etc., though this has not been well elucidated among farmers in Fako division in Cameroon. The impact of unsafe use of agrochemicals on blood cells, liver and kidney function was investigated in 165 farmers who applied agrochemicals on their crops and a reference population of 75 non-farmers not involved with usage of agrochemicals. Participants were interviewed on type of agrochemicals used, practices involved and related health symptoms. Afterwards, serum cholinesterase (acetylcholinesterase and butyrylcholinesterase) activities were measured as biomarkers of pesticide exposure. Complete blood count, and serum levels of Interleukin-6 (IL-6) were determined to assess differentiation of haematopoietic cells. Biomarkers for liver (alanine aminotransferase and aspartate aminotransferase) and kidney function (creatinine and urea levels) were also measured in serum. There was frequent use of insecticides, fungicides, herbicides and fertilizers by the farmers, with neglect of personal protective equipment. This was consistent with symptoms of exposure to agrochemicals reported by the farmers and corroborated with decrease in cholinesterase activities ( $P < 0.05$ ). Use of agrochemicals resulted into decrease in erythrocyte count and red cell distribution width, alongside increased mean cell volume and lymphocyte count. Moreover, the farmers showed increased ALT activity and levels of the pro-inflammatory cytokine IL-6, suggesting hepatotoxicity and anemia and inflammation following pesticide use. Overall, these results insinuated that usage of agrochemicals negatively affected haematological parameters and impaired liver function in farmers. The findings call for adoption of appropriate safety practices to reduce exposure to agrochemicals and minimize the resulting toxicity in farmers.

**Key words:** Agrochemicals, farmer, occupational exposure, haematological parameters, liver function.

**EFFECT OF COMMERCIAL AND FARM-MADE FEEDS ON WATER QUALITY OF TANK-RAISED *CLARIAS GARIEPINUS* (BURCHELL, 1822)**

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**Abstract**

**Introduction:** Water quality determines not only how well fish will grow in an aquaculture operation, but whether or not they survive. The present study was carried out to evaluate the effect of foreign and local feeds on tank-raised African catfish (*Clarias gariepinus*, Burchell, 1822). **Methodology:** Nine hundred juveniles (15.15± 3.48 g; 128.37± 9.67 mm) were stocked in 09 IBC tanks (1m<sup>3</sup>) at a density of 100 fish/tank and fed with imported extruded (Le), locally pelleted (Lpe) and locally extruded (Lex) feeds thrice a day for 16 weeks. Water quality parameters (water temperature, suspended particles, turbidity, color, total dissolved solids, electrical conductivity, pH, dissolved oxygen, nitrates, nitrites, ammonia and phosphates) were measured every fortnightly using standard methods. **Results:** The study also revealed that all the parameters were within acceptable or desirable ranges for fish farming except for dissolved oxygen and ammonia which were below and above optimal recommended ranges respectively. During this study, fish were briefly exposed to holding water as an exchange of water was carried out every day and a complete exchange every fortnightly with well-oxygenated water. This significantly contributed to reducing the abnormal contents of dissolved oxygen and ammonia. **Conclusion** This implies that if best management practices are respected, the studied feeds will not deteriorate holding tank waters and thus affect fish productivity. **Interest of study:** This study was carried out to inform opinions on the effect of different feeds on water quality in intensive culture of tank-raised *C. gariepinus*, a practice becoming popular in urban towns of Cameroon

**Keywords:** Haematology, serum, fish feed, *Clarias gariepinus*, IBC tanks

## REDUCTION DE LA CHARGE ORGANIQUE DES EFFLUENTS D'HUILERIES DE PALME PAR COMBINAISON D'UN FILTRE A SABLE ET LIT BACTERIEN.

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### Résumé

Les petites industries d'huilerie de palme artisanales, produisent des effluents particuliers très concentrés en matières organiques lipidiques appelés *Palm Oil Mill Effluent* (POME). Le rejet de ces POME dans l'environnement sans aucun traitement entraîne un risque indésirable pour l'homme et l'environnement en raison de la grande quantité de toxines, organiques et inorganiques qu'ils contiennent. L'objectif de la présente étude est d'évaluer les capacités épuratoires d'un biofiltre élaboré à partir des bactéries lipolytiques et d'étudier l'effet de la combinaison de ces bactéries sur la biodégradation des POME dans le filtre. Le dispositif expérimental mis sur pied est constitué d'un filtre à sable suivi d'un lit bactérien. L'efficacité du traitement est jugée par la mesure du taux d'abattement de quelques paramètres de pollution après le traitement. Les résultats montrent que les effluents testés ont un pH très acide (3,56) et sont très chargés en Matières en suspension (MES) ( $16730 \pm 30$  mg/L), en Demande chimique en oxygène (DCO) ( $5260 \pm 40$  mg/L), en Demande biochimique en oxygène (DBO) ( $980 \pm 30$  mg/L) et en huiles/grasses (H/G) ( $800 \pm 10$  mg/L). Le dispositif expérimental mis sur pied avec nos isolats épurateurs a permis une élimination significative des composés phytotoxiques et organiques, en particulier MES (97,19% avec *Bacillus cereus*=D17), DBO (77,55% avec *Serratia marcescens*=D22), DCO (81,55% avec *Serratia marcescens*), HG (88,75% avec *Bacillus cereus*). Pour un traitement optimal, le traitement T4 (D17+D22, puis D23=*Pseudomonas cepacia*) a permis d'obtenir de meilleurs taux d'abattement de la MES, DBO, DCO et H/G respectifs de 99,30 %; 80,14 %; 88,24 %; et 91,20 %. Ces résultats confortent donc l'utilisation de ce dispositif pour l'épuration de ces effluents d'huileries de palme brutes.

**Mots clés :** POME, filtre à sable, lit bactérien, paramètres de pollution

## VARIABILITE PHENOTYPIQUE DES POPULATIONS DE *Clarias jaensis* AU CAMEROUN

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### Résumé

**Introduction** : En Afrique, l'aquaculture des poissons chats est en pleine essor en raison de leurs caractéristiques avantageuses. Leur résistance, leur capacité respiratoire, leur croissance rapide et leur valeur économique en font des candidats prometteurs pour l'élevage. **Objectif** : Cette étude avait pour objectif de contribuer à une meilleure connaissance de la diversité phénotypique des populations naturelles de *Clarias jaensis* au Cameroun en vue de leur exploitation et de leur préservation. **Méthodologie** : Un total de 269 poissons-chats (*Clarias jaensis*), dont 139 mâles et 130 femelles, ont été échantillonnés dans 6 plans d'eau du Cameroun. Chaque poisson a été pesé immédiatement après sexage. Les caractères phénotypiques tels que les caractéristiques phanéroptiques et méristiques, ont été évalués à l'aide de procédures standard. **Résultats** : Les caractéristiques phanéroptiques montrent qu'il existe trois motifs colorés (brun, noir et marbré) de la région dorsale et des flancs chez *Clarias jaensis*, avec une prédominance des motifs bruns (81,04) et noirs (11,52). Certaines caractéristiques, telles que le nombre de rayons présents au niveau des nageoires anale et pectorale ont varié significativement avec les plans d'eau ( $p < 0,05$ ). Le nombre de rayons à la nageoire anale a été significativement plus élevé chez les individus de la rivière Mfourri ( $61,57 \pm 2,11$ ) qu'à ceux des individus du fleuve Nkam ( $58,82 \pm 3,62$ ). Les différents caractères méristiques étudiés sont restés comparables d'un sexe à l'autre ( $p > 0,05$ ). Le nombre de rayons à la nageoire dorsale et anale a été faiblement et négativement corrélé avec le poids total ( $p > 0,05$ ) tant dis que le nombre de rayons à la nageoire pectorale a été faiblement et négativement corrélé avec le poids total ( $r = 0,13$ ). **Conclusion** : La biodiversité observée suggère que, *Clarias jaensis* de la zone d'étude constitue une ressource génétique naturelle disposant la variabilité nécessaire pour son exploitation.

**Mots clés** : *Clarias jaensis*, phanéroptiques, phénotypique, Cameroun.

**DIVERSITÉ DES INSECTES FLORICOLES ET SON IMPACT SUR LES RENDEMENTS FRUITIERS ET GRAINIERS DE *ARACHIS HYPOGAEA* LINNAEUS 1753 VARIÉTÉ 28 - 206 (FABACEAE) À NDOGBONG (DOUALA, CAMEROUN)**

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**Résumé**

A Ndogbong (Douala, Cameroun), du 18 mars au 16 mai 2023, les fleurs de *Arachis hypogaea* (Fabaceae) ont été observées en vue d'étudier l'activité des insectes floricoles et d'évaluer l'impact de celle-ci sur les rendements en gousses et en graines. Les investigations ont porté sur deux traitements différenciés par la présence ou l'absence de la protection des fleurs vis-à-vis des insectes. Le comportement de butinage des insectes, leur activité pollinisatrice, le taux de fructification, le nombre de graines par gousse et le pourcentage de graines normales (bien développées) ont été évalués. Les résultats montrent que *A. hypogaea* a un régime de reproduction mixte allogame - autogame, avec prédominance de l'autogamie. Sur neuf espèces d'insectes recensées sur les fleurs de cette Fabaceae, *Lasioglossum* sp. 2 vient en première position avec 34,68 % de 643 visites. Au niveau des fleurs, les insectes récoltent exclusivement le pollen. Le nombre moyen d'individus simultanément en activité sur 1000 fleurs varie de 70,28 chez *Apis mellifera* à 666,67 chez *Lasioglossum* sp. 2. La durée moyenne d'une visite par fleur varie de 18,67sec chez *Lasioglossum* sp. 2 à 68,37 sec chez *Lasioglossum* sp. 1. La vitesse moyenne de butinage varie de 1,99 fleurs / min chez *Lasioglossum* sp. 1 à 5,15 fleurs / min chez *A. mellifera*. En comparant le rendement des fleurs laissées en libre pollinisation à celui des fleurs protégées des insectes, il apparaît une augmentation significative du taux de fructification de 15,09 %, du nombre de graines par gousse de 3,94 % et du pourcentage de graines normales de 24,81 % due aux insectes floricoles. Afin d'améliorer les rendements en gousses et en graines de *A. hypogaea*, il est conseillé d'aménager les sites de nidification pour les Halictidae dans ou à proximité des champs de cette Fabaceae.

**Mots clés :** *Arachis hypogaea*, insecte floricole, fleur, pollen, Ndogbong.

**BUTINAGE DES FLEURS DE *SOLANUM LYCOPERSICUM* (SOLANACEAE) PAR *XYLOCOPA OLIVACEAE* (HYMENOPTERA : APIDAE) ET SON IMPACT SUR LA PRODUCTION FRUITIÈRE À NDOGBONG (DOUALA, CAMEROUN)**

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**Résumé**

A Ndogbong (Douala, Cameroun), du 22 avril au 18 mai 2023, les fleurs de *Solanum lycopersicum* ont été observées en vue d'étudier l'activité de *Xylocopa olivacea* et d'évaluer l'impact de celle-ci sur les rendements en fruits et en graines de cette essence. Les résultats montrent que *S. lycopersicum* a un mode de production mixte allogame - autogame, avec prédominance de l'autogamie. Sur quatre espèces d'insectes recensées sur les fleurs de *S. lycopersicum*, *X. olivacea* occupe la deuxième place avec 22,11 % de visites. Cette abeille butine les fleurs de la tomate toute la journée, avec un pic d'activité situé entre 8 h et 9 h. Sur des fleurs de cette plante, les butineurs de *X. olivacea* récoltent fortement le pollen et faiblement le nectar. Le plus grand nombre moyen d'individus simultanément en activité est de un par fleur et de 144,94 par 1000 fleurs. La durée moyenne d'une visite par fleur est de 1,35 sec pour le prélèvement du pollen et de 2,79 pour la récolte du nectar. La vitesse moyenne de butinage est de 21,50 fleurs par minute. Les butineurs de *X. olivacea* sont fidèles aux fleurs de *S. lycopersicum* lors des voyages de butinage. En comparant le rendement des fleurs laissées en libre pollinisation à celui des fleurs protégées des insectes, il apparaît une augmentation du pourcentage du nombre moyen de graines par fruit de 50,08 % et du pourcentage de graines normales de 29,81 % dus aux insecte pollinisateurs dont *X. olivacea*. Via son efficacité pollinisatrice, *X. olivacea* a provoqué un accroissement significatif du taux de fructification de 17,93 %, du pourcentage du nombre de graines par fruits de 38,07 % et du pourcentage de graines normales de 12,92 %. La conservation des nids de *X. olivacea* autour des plantations de *S. lycopersicum* est conseillée pour améliorer les rendements fruitiers et grainiers de cette Solanacée.

**Mots clés :** *Xylocopa olivacea*, *Solanum lycopersicum*, fleur, pollen, pollinisation, rendement, Ndogbong.

**ACTIVITÉS DE BUTINAGE ET DE POLLINISATION DE *APIS MELLIFERA* ET *XYLOCOPA OLIVACEA* (HYMENOPTERA: APIDAE) SUR LES FLEURS DE *SESAMUM INDICUM* (PEDALIACEAE) ET *VIGNA UNGUICULATA* (FABACEAE) À BILONE (OBALA, CAMEROUN)**

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**Résumé**

A Bilone (Obala, Cameroun), en 2016 et 2017, les activités de butinage et de pollinisation de *Apis mellifera* et *Xylocopa olivacea* (Hymenoptera : Apidae) ont été étudiées sur les fleurs de *Sesamum indicum* (Pedaliaceae) et de *Vigna unguiculata* (Fabaceae). Chacune des deux espèces végétales a été étudiée pendant deux périodes de floraison. Pour chaque espèce végétale et chacune de ces périodes, trois traitements ont été déterminés à partir du marquage de fleurs réparties respectivement sur six sous-parcelles pour *Sesamum indicum* et sur neuf sous-parcelles pour *Vigna unguiculata*. Deux traitements étaient différenciés par la présence ou l'absence de protection des fleurs vis-à-vis de la visite des insectes. Le troisième traitement était constitué par des boutons floraux protégés, puis ouverts exclusivement à *Apis mellifera* ou *Xylocopa olivacea* lorsque les fleurs étaient épanouies. L'activité de butinage et de pollinisation de *Apis mellifera* et *Xylocopa olivacea* a été enregistrée et la valeur apicole des deux plantes a été estimée. Pour chacune des deux espèces végétales et chacun des traitements, le taux de fructification, le nombre de graines par fruit et le pourcentage de graines normales (bien développées) ont été évalués. Sur 16 espèces d'insectes recensées sur les fleurs de *S. indicum*, *A. mellifera* (44,07 % de 1182 visites) et *X. olivacea* (8,04 %) occupaient les 1<sup>er</sup> et 4<sup>ème</sup> rang respectivement. Ces abeilles récoltaient le nectar et le pollen. Le plus grand nombre d'individus simultanément en activité sur 1000 fleurs était de 281 pour *A. mellifera* et 67 pour *X. olivacea*. La durée moyenne d'une visite de fleur était de 3,19 sec et 3,02 sec, respectivement pour *A. mellifera* et *X. olivacea*. Sur 13 espèces d'insectes recensées sur les fleurs de *V. unguiculata*, *A. mellifera* et *X. olivacea* occupaient les 1<sup>er</sup> et 2<sup>ème</sup> rang avec respectivement 35,52 % et 22,28 % de 929 visites. Chacune de ces abeilles récoltait intensément le nectar. Le prélèvement du pollen était moins fréquent. Le plus grand nombre d'individus de *A. mellifera* et *X. olivacea* simultanément en activité sur 1000 fleurs était de 132 et 55 respectivement. La durée moyenne d'une visite de fleur était de 4,70 sec pour *A. mellifera* et 4,83 sec pour *X. olivacea* pour la récolte du nectar, puis de 1,93 sec pour la récolte du pollen chez *A. mellifera*. Sur chacune des deux plantes, l'activité de *A. mellifera* et *X. olivacea* s'étendait sur toute la journée. Les ouvrières de *A. mellifera* étaient fidèles aux fleurs de chacune des essences lors des voyages de butinage. Les données obtenues permettent de classer *S. indicum* et *V. unguiculata* parmi les plantes apicoles fortement nectarifères et faiblement pollinifères. Via son efficacité pollinisatrice sur *S. indicum* : a) *Apis mellifera* a augmenté significativement le taux de fructification de 9,99 % et 11,42 %, le nombre de graines par gousse de 14,54 % et 8,77 % et le pourcentage de graines normales de 9,84 % et 7,70 %, respectivement en 2016 et 2017 ; b) *Xylocopa olivacea* a augmenté significativement le taux de fructification de 8,80 % et 3,89 %, le nombre de graines par gousse de 7,84 % et 3,70 % et le pourcentage de graines normales de 7,22 % et 4,68 %, respectivement en 2016 et 2017. Par le biais de son efficacité pollinisatrice sur *V. unguiculata* : a) *Apis mellifera* a augmenté significativement le taux de fructification de 15,15 % et 13,04 %, le nombre de graines par gousse de 2,34 % et 18,89 % et le pourcentage de graines normales de 0,28 % et 0,17 %, respectivement en 2016 et 2017 ; b) *Xylocopa olivacea* a augmenté significativement le taux de fructification de 20,62 % et 18,17 %, le nombre de graines par gousse de 12,70 % et 27,98 % et le pourcentage de graines normales de 4,31 % et 1,74 %, respectivement en 2016 et 2017. *Sesamum indicum* et *Vigna unguiculata* peuvent être cultivées et protégées pour accroître la production du miel. Ces essences peuvent permettre le maintien des colonies de *A. mellifera* pendant la saison pluvieuse. L'installation et la préservation des colonies de *A. mellifera* ainsi que des nids de *X. olivacea* à proximité des plantations de *S. indicum* et *V. unguiculata* sont encouragées pour accroître leurs rendements en fruits et en graines dans la Région.

**Mots clés :** *Apis mellifera*, *Xylocopa olivacea*, *Sesamum indicum*, *Vigna unguiculata*, fleurs, nectar, pollen, valeur apicole, pollinisation, rendement, Bilone.

## CARACTERISATION DES SYSTEMES D'ELEVAGE DE L'ABEILLE *APIS MELLIFERA* (HYMENOPTERA : APIDAE) DANS LES MONTS MANDARA (EXTREME-NORD, CAMEROUN)

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### Résumé

L'apiculture est une activité séculaire dont les pratiques dépendent du climat, des usages et coutumes du pratiquant. A notre connaissance, la zone des Monts Mandara n'a pas été explorée pour une telle étude d'où l'objet de ce travail basé sur la caractérisation des systèmes d'élevage apicole dans cette zone. Les enquêtes ont été effectuées du 01 mai au 31 décembre 2022 auprès de 30 apiculteurs dans les arrondissements de Mora et de Mokolo. L'échantillonnage a été conduit par le biais d'un questionnaire semi-structuré en utilisant la méthode de boule de neige. Le questionnaire a porté sur le profil des apiculteurs, les connaissances sur les pratiques apicoles, les contraintes de production et la rentabilité. Les résultats montrent que l'apiculture dans les Monts Mandara est pratiquée par des hommes (83%) d'ethnies Matal et Mafa, sans formation de base (83,3%) et majoritairement agriculteurs (63,33%). Les ruches de modèle kenyane (93,33%) et à cadre (6,67%) sont installées dans les vallées et les collines sur des supports en fer et en pierre de juin à juillet puis colonisées par les essaims naturels (83,33%). L'entretien s'effectue mensuellement (80%). Les fortes températures sont atténuées par des couvre-toits en feuilles de secco ou en pailles (56,67%). Les récoltes se font de mai à juin (22,8%) et de novembre à décembre (30,8%). L'extraction de miel se fait par pressage (90%). La production moyenne par ruche est de 9,54 L avec un prix moyen de 6200,13 FCFA par litre. Les contraintes de production sont entre autres l'insuffisance de la flore apicole et des essaims naturellement présents, les fortes températures et une faible organisation de la chaîne de production. La multiplication des essaims, la plantation des essences apicoles et l'amélioration des conditions des ruchers pourraient être recommandé pour booster la production apicole dans les Monts Mandara.

**Mots clés :** Apiculture, miel, Monts mandara, système de production, flore apicole.

## RELATION BETWEEN QUANTITATIVE DESCRIPTIVE ANALYSIS AND TEXTURAL ANALYSIS OF BOILED PLANTAIN

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### Abstract

Inadequate consideration of textural quality in conventional breeding pipelines of plantains (from breeders to end-users) resulted in limited impact. Knowledge of the textural quality characteristics of boiled plantain, as preferred by end-users, could help improve the adoption of new clones when these traits are selected for breeding. This study aimed at evaluating the relationship between instrumental and sensory texture attributes of boiled plantain genotypes. Consumer testing (Just About Right and Check All That Apply tests), sensory Quantitative Descriptive Analysis (QDA) instrumental Texture Profile Analysis (TPA) and penetrometry were conducted with nine accessions: three landraces and six plantain-like bred hybrids. Landraces were considered *just-about-right* by more than 45% of people for all the sensory attributes (humidity, sweetness, color and firmness), described by characteristics such as *smooth on sight*, *attractive*, *mealy*, *firm*, *plantain taste*, and *yellow*. Color and firmness were the most highly scored attributes by panelists for the landraces. Penetrometry discriminated among genotypes better than TPA. Hardness, gumminess, resilience and chewiness were the most discriminatory attributes for TPA, while hardness and area under the curve were the most discriminatory attributes for penetrometry. No correlation was found between penetrometry and sensory texture of boiled plantain. For TPA, negative correlations were found between sensory humidity and hardness, and between sensory firmness and resilience, while a positive correlation was found between resilience and sensory humidity. Combining QDA and texture measurements can make selection of plantain hybrids more effective and improve the adoption of new varieties.

**Keywords:** Consumer testing, Texture Profile Analysis, Penetrometry, Efficient breeding, Variety adoption

**THE EFFECT OF NJANSAN (*RICINODENDRON HEUDELOTII* BAIL) OIL AND SARDINE OIL (*SARDINA PILCHARDUS*) FROM MAGA ON SOME METABOLIC MARKERS OF OBESE MALE WISTAR RATS**

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**Abstract**

Obesity has become one of the most common metabolic disorders in the world, characterized by the accumulation of excess fat in the body. Research for natural compounds to improve obesity has become increasingly important. This study aims to explore the effects of two different sources of oil for the management of obesity. An animal source (*Sardina pilchardus*) extracted by cooking and a plant source (*Ricinodendron heudelotii*) extracted by cold pressing. To evaluate the anti-obesity effect of these oils, 6 groups of 6 male Wistar rats were fed with different diets: C0 group received a normal diet; HFD was fed with a high-fat diet; N1, N2, F1, F2 followed by a high-fat diet supplemented with *njansan* and sardine oils at two proportions of 1 g/kg body weight/day and 2 g/kg body weight/day, respectively. The results showed that there was an increase in body weight, relative abdominal fat, and liver weight in the HFD group compared to the control group. There was also a decrease in anthropometric parameters such as body weight and Lee index of the HFD group treated with *njansan* and fish oils regardless of the concentration. The hyperlipidemic state in the HFD-fed rats was then normalized after treatment with both oils as well as hyperglycemia compared to the control group. Besides, fish and *njansan* oils attenuated HFD-induced oxidative stress, as indicated by a significant increase in serum antioxidant capacity (CA, SOD). This study demonstrated that *njansan* and sardine fish oils can be helpful in for managing obesity and also reduce the risk of developing coronary heart diseases.

**Keywords:** obesity, high-fat diet, *njansan* oil, sardine oil, metaboli

## FORMULATION ET QUALITE NUTRITIONNELLE DE QUELQUES FARINES INFANTILES (TYPE OMS) A BASE D'INGREDIENTS LOCAUX

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### Abstract

**Background and Justification:** Malnutrition is responsible for 35% of death in children of less than 5 years in Sub-Saharan africa. In Cameroon, about 33% of children of this age suffer from chronic malnutrition and 45000 die each year. **Purpose statement:** The goal of this research was to formulate some infant porridges from local ingredients and following the WHO/FAO recommendations. **Methodologies:** In order to achieve the goal, we used locally accessible resources such as cereals, legumes, fruits and other foodstuffs, to which were applied appropriate processing techniques to improve their nutritional and health value. **Results:** Two tested formulae took our attention; the first was made of maize, soya, baobab, rice, datte, smoked fish; and the second contained soya, sorgho, baobab, rice, smoked fish and voandzou. The two formulae are void of pathogenic microorganisms, the protein content and energy density (15, 37 and 17, 07 g/100g) and (444, 27 and 443, 08 kcal/100g) follows the WHO norms. They present a good acceptability rate with their prices challenging any competition. The first formula may also have anti-diarrhoeal properties. **Conclusion:** The composition and properties of the selected formulae makes them eligible for the prevention and handling of protein energy malnutrition in children of 6 months to 5 years.

**Keywords:** local ingredients, infant porridges, WHO norms.

## CONNAISSANCES DES FEMMES ENCEINTES SUR LA BONNE PRATIQUE ALIMENTAIRE PENDANT LA GROSSESSE A L'HOPITAL REGIONAL DE BAFOUSSAM

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### Introduction:

La grossesse est un état physiologique au cours duquel les besoins nutritionnels augmentent. Une alimentation adéquate pendant la grossesse a un impact positif sur son évolution. L'objectif de l'étude était de déterminer les connaissances des femmes enceintes sur la bonne pratique alimentaire pendant la grossesse. **Matériels et méthode :** Nous avons mené une étude transversale prospective sur une période d'un mois allant du 15 juillet au 15 août 2023 à l'Hôpital Régional de Bafoussam. Un questionnaire préétabli a été administré à des gestantes selon un échantillonnage non probabiliste. Il comportait les données cliniques, le profil de consommation alimentaire selon le score de diversité alimentaire individuel de l'OMS établi à l'aide d'un rappel de 24h et les connaissances sur la bonne pratique alimentaire des femmes enceintes venues en consultation prénatale. **Résultats :** Au total, 79 gestantes ont participé à l'étude. Il ressort que 13 (16,5%) avaient un état de nutrition normal, 41 (51,9%) étaient en surpoids et 25 (31,6%) étaient obèses. Douze virgule-cinq pour cent des femmes enceintes avaient une bonne diversification alimentaire. Les céréales constituaient le groupe d'aliments le plus consommé dans 97,7% des cas. La fréquence des repas en 24h était d'au moins trois repas dans 83,5% des cas. Par ailleurs, 87,4% des gestantes avaient une connaissance insuffisante voire mauvaise par rapport à la bonne pratique alimentaire. **Conclusion :** Un accompagnement considérable des femmes enceintes sur la bonne pratique alimentaire est un besoin nécessaire pour leur santé et celle de leurs bébés à naître. Il est donc essentiel de sensibiliser les personnels de santé quant au suivi des gestantes concernant leur alimentation.

**Mots clés :** connaissance, grossesse, nutrition, femme, Bafoussam

**AMINO ACIDS AND SENSORY PROFILES OF SOME CONTROLLED POLLINATED CAMEROONIAN COCOA (*THEOBROMA CACAO* L.) HYBRIDS**

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**Abstract**

Aroma is an important cocoa bean attribute that determines its quality and increases the added value of cocoa. The best cocoa aroma is usually produced from cacao beans having high levels of flavour precursors especially free amino acids. This study aims to provide each genotype's taste and flavor characteristics and assess the amino acids profile of some controlled pollinated Cameroonian cocoa hybrids. Seven clones from germplasm of the Cameroon Cocoa Development Corporation at the Mengang Station (Centre Cameroon) were used to create hybrids by hand pollination. After harvesting ripe cocoa pods, and pod storage (72 h), beans of 100 pods per hybrid were fermented in a 70 cm×70 cm×50 cm box for 120 h and then turned 48th. After fermentation, the beans were moved and sun dried during two weeks. Free amino acids were quantified using reversed-phase high-performance liquid chromatography (RP-HPLC) with absorbance detection by a diode array detector (DAD). Cocoa paste was prepared by manually peeling 500 g of beans to separate the cotyledons from the shell. Then, the cotyledons were roasted at 120° C for 12 min, crushed, and mashed with a grinder for 15 min. Three trained panelists carried out sensory analysis using the flavor test standards. The results showed that amino acid content was genotype-dependent and varied from 11.07 mg.g<sup>-1</sup> for ♀SCA12×UPA134♂ to 12.76 mg.g<sup>-1</sup> for ♀SCA12×SNK413♂. Ratio of hydrophobic amino acids / acidic amino acids, was greater than 2 in all genotypes except ♀SNK13×ICS40♂. GABA was also found with a maximum of 3.09 mg.g<sup>-1</sup> for ♀SCA12×UPA134♂. Regarding the sensory profile, all hybrids are dominated by cocoa attribute. The bitterness is more pronounced in ♀SNK413×SCA12♂. Hybrids having SCA12 as female clone as well as ♀SNK13×T79/501♂ presented remarkable aromatic (floral, fruity, sweet) features.

**Keywords** : Amino-acids, Sensory profile, Hybrids, RP-HPLC-DAD

## Amino acids and sensory profiles of some controlled pollinated cameroonian cocoa (*Theobroma cacao* L.) hybrids

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### Abstract

Aroma is an important cocoa bean attribute that determines its quality and increases the added value of cocoa. The best cocoa aroma is usually produced from cacao beans having high levels of flavour precursors especially free amino acids. This study aims to provide each genotype's taste and flavor characteristics and assess the amino acids profile of some controlled pollinated Cameroonian cocoa hybrids. Seven clones from germplasm of the Cameroon Cocoa Development Corporation at the Mengang Station (Centre Cameroon) were used to create hybrids by hand pollination. After harvesting ripe cocoa pods, pod storage (72 h), and beans spreading (24h), a monoclonal fermentation was performed in a 70 cm×70 cm×50 cm box for 96h. After fermentation, the beans were sun-dried during two weeks. Free amino acids were quantified using reversed-phase high-performance liquid chromatography (RP-HPLC) with absorbance detection by a diode array detector (DAD). Cocoa paste was prepared by manually peeling 500 g of beans to separate the cotyledons from the shell. Then, the cotyledons were roasted at 120° C for 12 min, crushed, and mashed with a grinder for 10 min. Five trained panelists carried out sensory analysis using the flavor test standards. The results showed that amino acid content was genotype-dependent and varied from 11.17 mg.g<sup>-1</sup> for ♀SCA12×UPA134♂ to 14.04 mg.g<sup>-1</sup> for ♀ SNK413×T79/501♂. Hydrophobic/acidic amino acids ratio was greater than 2 in all hybrids except ♀SNK13×ICS40♂ (1.97). Gamma aminobutyric acid was also found with a maximum of 3.09 mg.g<sup>-1</sup> for ♀SCA12×UPA134♂. Regarding the sensory profile, ♀ICS40×SCA12♂ recorded the highest score for fruity smell. Hybrids having SCA12 as mother-clone, and ♀SNK13×T79/501♂ displayed the highest score for sweetness and flowery notes.

**Keywords** : Amino-acids, Sensory profile, Hybrids, RP-HPLC-DAD

**COMPORTEMENT DE PONTE DES MOUCHES DES FRUITS (DIPTERA : TEPHRITIDAE) SUR LES FRUITS DE CUCURBITACEES A NGAOUNDERE (ADAMAOUA, CAMEROUN).**

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**Résumé**

Dans la région de l'Adamawa (Cameroun), le secteur horticole avec la production de fruits et légumes offre d'énormes opportunités d'affaires aux agriculteurs. Malheureusement, cette production est soumise à l'action prédatrice d'insectes phytophages, dont les mouches des fruits (Diptera : Tephritidae), qui rendent les produits agricoles impropres à la consommation et à la commercialisation. Cependant, la gestion durable de ces ravageurs nécessite la connaissance du comportement d'oviposition, en relation avec les paramètres environnementaux. C'est dans ce contexte que la présente étude a été réalisée à manwi, du 28 mai au 6 novembre 2019 sur les fruits de quatre plantes de la famille des cucurbitacées (*Cucurbita moschata*, *Cucurbita maxima*, *Cucurmis sativus* and *Lagenaria siceraria*). Ainsi, des données ont été collectées par le biais d'observations *in situ* du comportement d'oviposition de trois mouches des fruits de la famille des Tephritidae (*Dacus bivittatus*, *Dacus punctatifrons* et *Zeugodacus cucurbitae*). Les activités de ponte de ces trois mouches des fruits n'étaient pas synchronisées, mais fortement corrélées ( $R^2=0,98$  ;  $p < 0,0001$ ) à l'augmentation de la température avec une plus grande fréquence de visites des femelles dans l'après-midi. Les occurrences de mouches des fruits dans les cultures seraient donc liées à l'activité de ponte. La ponte dans l'après-midi peut être bénéfique pour les femelles car les conditions environnementales (température et humidité relative) sont favorables et augmentent la probabilité qu'elles pondent un maximum d'œufs. Les données ainsi collectées peuvent servir de base lors de la mise en place de stratégies de lutte contre les ravageurs des cultures et les mouches des fruits en particulier.

**Mots clés :** Ponte, Tephritidae, Cucurbitacées, température et humidité

**DIVERSITY OF ENDOMYCORRHIZAL FUNGI IN NORTHERN CAMEROON SOIL'S : IMPLICATIONS FOR GROWTH IMPROVEMENT AND THE SUCCESS OF SOILS RESTAURATION**

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**Abstract**

Growers from Northern Cameroon use chemical fertilizers to improve soil fertility. However, the using of chemical fertilizers exhibits an immediate solution to declining of soil fertility problem, but its exclusive use causes an increase of soil degradation. Arbuscular mycorrhizal fungi (AMF) are root symbionts that increase plant resistance to biotic and abiotic stresses and ameliorate soil quality. The exploration of these symbiotic fungi is the starting point for the selection and production of high-performance organisms adapted to the pedoclimatic conditions. A crucial step in the successful application of arbuscular mycorrhizal fungi (AMF) is the selection of effective and suitable fungal strains. Study was conducted on diversity of endogenous mycorrhizal fungi from Sudano-Sahelian savannahs of Cameroon on cotton plant. Arbuscular Mycorrhizal Fungi diversity and density were assessed according to suitable methods. Results shown that the density of AMF spores/g of soil is higher in the Department of Bénoué (134). Overall, the diversity consists of fifteen species identified on the basis of morphological criteria. The Department of Mayo-Rey ( $14.00 \pm 1.52$ ) has the highest specific richness. The genus *Glomus* is the most represented with five species and a frequency of 100%. By domesticating and applying endogenous mycorrhizal fungi from Northern Cameroon for plant growth, we contribute to increase productivity and to limit the using of chemical inputs, as well as to ensure sustainable agriculture.

**Key words:** Endogenous mycorrhizal fungi, density, diversity, sustainable agriculture.

## SYSTEME D'IRRIGATION GOUTTE A GOUTTE ET DE FERTILISATION AGROCHIMIQUE DES TOMATES DANS LES SOLS LEGERS DE CHATAIGNIERS DE LA REGION DE LA BASSE VOLGA

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### Abstract

La consommation d'eau des tomates irriguées au goutte-à-goutte a ses propres particularités, dont la principale consiste en la localisation de l'humectation de la zone irriguée. Ce qui explique que la majeure partie de la consommation d'eau provienne de la zone d'humectation. Dans cet article, il est question de montrer l'importance de l'irrigation goutte à goutte sur la productivité de la tomate (*Solanum lycopersicum* L.) en zone aride. L'étude qui a été réalisée sur 3 ans en basse Volga au sud de la Fédération de Russie montre que la consommation d'eau par cette plante dépend des variétés, des engrais biochimiques appliqués ainsi que des variations du climat. Plus les pluies sont rares plus les plantes ont besoins d'être irriguées et il a été observé que les traitements foliaires avec les intrants agrochimiques étudiés dans l'expérience contribuent à la réduction des indicateurs du coefficient de consommation d'eau. Chez les hybrides Heinz 3402 F1, Sister F1, et Cobra 26 F1, la plus grande consommation d'eau moyenne par année d'étude a été observée chez les variantes témoins 57,3 m<sup>3</sup>/t, 52,5 m<sup>3</sup>/t, 46,6m<sup>3</sup>/t respectivement. La variété Rio Grande s'est caractérisée par les valeurs de coefficient de consommation d'eau les plus élevées pendant toutes les années de l'étude. En 3 ans le coefficient de consommation d'eau sur le témoin était en moyenne de 71,9 m<sup>3</sup>/t. Il a été également observé que toutes les variantes de traitements agrochimiques ont contribué à une réduction importante des indicateurs de coefficient de consommation d'eau sur toutes les variétés étudiées.

**Mots clés :** Tomate, Irrigation goutte à goutte, Fertilisants biochimiques, Productivité.

## DIVERSITY AND DENDROLOGY OF COCOA TREES IN AN AGROFOREST IN THE HUMID DENSE FOREST

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### Abstract

**Background and justification** : The challenge of stakeholders in the cocoa sector in Cameroon is to find strategies to increase the production of mature and ripe cocoa pods from the cocoa-based agroforestry systems (cAFS) in order to better meet the high global demand of cocoa beans. **The objective** of this study is to characterize the diversity and evaluate the dendrology of cocoa trees variants identified in a cAFS in the humid dense forest zone of East Cameroon. **Methodology**: A forest management inventory was carried out from September 2<sup>nd</sup> to October 25, 2020 in order to collect data on the cocoa trees of the BETTI Agricultural Exploitation (EAB). **Results**: 3597 stems of cocoa trees were counted, representing an average density of 309.1 stems/ha with an average basal area of 6.81m<sup>2</sup>/ha. The floristic characterization of cocoa trees made according to morphological criteria of cocoa pods made it possible to identify 18 different variants of cocoa trees, five of which : BoLiAl, BoPrOv, VePrOv, VbPrAl, BoPrAl have high efficiency indices, meaning that, they have a high production in terms of the number of pods and a good resistance of these pods to pests and diseases. **Conclusion**: The monitoring of each of these five variants in plots under different shading treatments would be interesting to define a model of cAFS that better combine high quantity and quality cocoa production and conservation of high level of biodiversity in forest environment.

**Keywords**: Cocoa based Agroforestry Systems (cAFS), Cocoa tree variants, Production of cocoa tree variants, Cocoa variant efficiency index, cAFS model.

**IMPACT OF HYMENOPTERA ON *ABELMOSCHUS ESCULENTUS* (L.)MOENCH, 1794 (MALVACEAE) SEED YIELDS AT BILONE (OBALA, CAMEROON)**

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**Abstract**

In Bilone (Obala, Cameroon), during the mild raining season (March-June) in 2019 and 2020, the flowers of *Abelmoschus esculentus* (Malvaceae) were observed for the study of the activities of Hymenoptera and the determination of the impact of these insects on the yields seedlings of this Malvaceae. Treatments included unlimited floral access by all visitors and bagged flowers to avoid all insect pollinators. The results show that on flowers of *A. esculentus*, 9 species of insects were recorded. The Hymenoptera occupied the first rank with 84.76 % of the visits. These bees prey on the flowers in the morning and evening, with a peak between 09 - 10 am. His visits correspond to a very good harvest of the nectar and a weak harvest of the pollen. Comparing the yields of free flowers to those of isolated insects, there is an increase in the number of seeds per pod of 20.59 % in 2019 and 20.87 in 2020 and the percentage of normal seeds of 02.38 % in 2019 and 5.28% in 2020 due to Hymenoptera. This improvement in yields is justified by the positive action of these arthropods on the pollination of the flowers they visit. Therefore, conservation of nests and colonies of Hymenoptera close to *A. esculentus* crop fields should be recommended to improve pod and seed production in the locality.

**Key words:** Hymenoptera, *Abelmoschus esculentus*, flower, pollen, pollination, yield

## ASSESSING THE EFFICACY OF UPLAND RICE/BEANS BASED INTERCROPPING SYSTEM AT DIFFERENT PLANT POPULATION DENSITIES BAMBILI.

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### Abstract

Plant spacing of the associate crop directly affect intra-specific competition and crop yield in intercropping system. The study was designed to determine the most appropriate plant spacing for the component plant in a rice-beans intercropping system. A field experiment was conducted with treatments Sole rice (T1), Sole beans (T2), rice 35%/beans 65% (T3) rice 40%/beans 60% (T4) rice 45%/beans 55% (T5) and rice 50%/beans 50% (T6) in a Randomized Complete Block Design with four (4) replicates. Data were collected from vegetative, yield parameters and disease incidence and the yield parameters were used to compute competitive indices and subjected to ANOVA to separate the treatments. Means were separated using LSD. The results from this study showed that intercropping rice and beans at different plant population had an effect on plant height, number of grains per panicle, percentage filled grains, disease incidence and competitive indices. The combined yield advantages in terms of net income were greatest in rice 45%/beans 55% (T5) (12,140cfa). The best intercrop indices measured; Land Equivalent Ratio (LER) (1.55), Area Time Equivalent Ratio (ATER) (1.81), Land utilization Efficiency (LUE) (167), Effective Monetary Advantage Index (EMAI) (0.4), competitive Ratio (CR) (0.25) and Income Equivalent Ratio (IER) (1.06) showed the best values that indicate yield advantage in T5 (rice 45%/beans 55%), followed by T4 (rice 40%/beans 60%) and T6 (rice 50%/beans 50%). This is to say that, T5 (rice 45%/beans 55%) intercropping system gave the highest net income, LER, ATER, LUE, EMAI and IER.

### Recommendation

Based on the results, upland rice farmers are advised to intercrop rice and beans at 30x30cm and 25x25cm respectively for optimum productivity and sustainability.

**Keywords:** Rice, beans, intercropping, plant population, Bambili.

**EFFECT OF GINGER (*ZINGIBER OFFICINALE*) AND BLACK PEPPER (*PIPER NIGRUM*) SPICES ON NUTRITIONAL CONTENT, STORAGE STABILITY AND SENSORY QUALITY OF SMOKED *CHRYSICHTHYS NIGRODIGITATUS* FROM NKAM-WOURI RIVER IN CAMEROON**

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**Abstract**

Fisheries products are perishable and are susceptible to spoilage as a result of contamination from pathogenic micro-organisms and chemical oxidation of proteins and fats. The aim of this study was to assess the effect of natural spices on the nutritional content, storage stability and organoleptic quality of smoked fish. Fresh *Chrysichthys nigrodigitatus* was collected from Nkam-Wouri River in Cameroon and then, washed using limes and salt to remove external dirt's and mucus, eviscerated and divided into four treatments. After removing mucus, the samole was soaked in the marinade made only with black pepper (BP), ginger (G) or their combination (M), using the solution without spice as control. Then, products were smoked-dried in a smokehouse during 10 hours at temperature varying from 30 °C to 85 °C in the three phases of process. For the storage, the smoked fish was packaged into cartoon and polyethylene paper or not and expose to the ambient temperature. Daily or weekly, samples were subjected to some physicochemical, microbial and organoleptic load analyses for a period of 1 month to see the different changes. The nutritional content of smoked fishes was conducted using AOAC methods. Their hygienic quality was evaluated by a microbiological enumeration on the specific culture medium. The organoleptic testing was determined for the smoked samples with questionnaires structured using the 9-point hedonic scale. As result, the highest protein content was detected in the fish samples smoked with ginger alone (G) and the combination of ginger-black pepper (M) with respective values of 47.55 and 47.47 %dm. Lipids and energy (25.27 %dm ; 500.97 kcal/100gdm) were high in the sample smoked with the combination of spices. In the storage condition, the weight of exposed samples increases while that of packaged samples remain constant. The best value of pH was ranged from 4.5 to 6 from day 1 to 28, in the packaged (P) smoked fish with G, BP and M spices. Microbiological analysis results exhibited a Total Aerobic Mesophilic Flora charge greater than 10<sup>6</sup> UFC/g. Yeast and molds values in packaged smoked fish samples were all less to the standard limits 10<sup>2</sup> UFC/g and *Salmonella* were absent during the 28 days of storage. Based on the sensory analysis, the acceptability was ranging from 6.83 to 7.57 in the hedonic scale, with the best value from fishes smoked with black pepper spices. In conclusion, the local spices made of ginger and black pepper can be used as storage and additive agents to increase organoleptic value of smoked *Chrysichthys nigrodigitatus* and decrease the proliferation of microbial pathogens.

**Key words:** Smoked fish, *Chrysichthys nigrodigitatus*, natural spices, nutritional content, storage conditions.

Prototyping of a digital microscope adapted for low-income countries

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**Abstract**

A digital microscope is a variation of a traditional optical microscope that uses optics and a digital camera to output an image to a monitor, sometimes by means of software running on a computer. In this paper, a prototype of a digital microscope is developed. The design of this microscope has been performed using Comsol Multiphysics V4.3b software. The digital system comprises of a raspberry pi which is the main processing unit, a digital camera which converts optical light into electrical impulses, a fan and a heat sink that maintains atmospheric temperature in the system. An important part of this device is the software part where the images obtained from the camera are processed using digital filters such as mean filter, laplacien filter, Gaussian smoothing, frequency filters, conservative smoothing, unsharp filter through the raspberry pi. Finally. Tests were carried out on a biological sample from the laboratory and all the organisms were well identified.

**Keywords:** Digital microscope, Data acquisition, image processing, Comsol Multiphysics V4.3b software

## Evaluation de l'efficacite d'un pool de plasma humain en vue d'une utilisation comme materiel de contrôle qualite interne en biologie clinique

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### RESUME

**Introduction :** Les matériaux de contrôle qualité comme le sérum contrôle jouent un rôle essentiel dans le programme d'évaluation de la qualité interne et externe d'un laboratoire. Cependant, les pays en développement comme le Cameroun sont confrontés à l'indisponibilité et au coût élevé du matériel de contrôle commercial. Par conséquent, l'idée d'une préparation d'un sérum contrôle à base de matériel local peut être une solution ce problème. **Objectif :** Cette étude avait pour objectif d'évaluer l'efficacité d'un pool de plasma humain pour son éventuelle utilisation comme matériel de contrôle qualité interne au laboratoire. **Méthodologie :** Le pool de plasma a été préparé à partir de prélèvements de sang chez des volontaires. Les échantillons ont été testés négatif pour le VIH, le VHC et le VHB, les limites initiales calculées partir d'une série de 50 dosages de quatre paramètres. Le pool de plasma formé a été conservés sous différentes formes (lyophilisée et liquide) et températures différentes (2-8 C et -6 -12 C). Leur stabilité a été étudiée, une comparaison entre les différents groupes a par la suite été faite. Enfin, le groupe ayant gardé la stabilité sur la plus longue période a été comparé à un sérum humain lyophilisé disponible dans le commerce. Les différences ont été considérées comme significatives  $p < 0,05$ . **Résultats :** Le temps de conservation maximale était d'une semaine pour les groupes de plasmas non lyophilisés et ceux lyophilisés et reconstitués. Il était d'au-moins quatre mois pour la forme lyophilisée et non reconstituée. La forme garantissant la meilleure conservation du pool de plasma était celle lyophilisée et non reconstituée. La comparaison de cette forme un contrôle commercial connu a montré une différence non significative entre leurs coefficients de variation et une distribution homogène de données autour des moyennes de leurs paramètres biochimiques. **Conclusion :** Nous avons donc conclu que le plasma humain pourrait être utilisé comme matériel de contrôle qualité interne.

**Mots clés :** Pool de plasma, contrôle commercial, lyophilisation, efficacité, stabilité.

Production d'un tensioactif non ionique par transesterification de la stearine et application en cosmétique

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### Résumé

Un tensioactif ou agent de surface est un composé qui modifie la tension superficielle entre deux surfaces. Les composés tensioactifs sont des molécules amphiphiles, c'est-à-dire qu'elles présentent deux parties de polarité différente, l'une lipophile (miscible dans l'huile) et apolaire, l'autre hydrophile (miscible dans l'eau) et polaire, ils sont utilisés en pharmacie, en alimentation et aussi en cosmétique. Compte tenu de la forte demande en surfactant, et par moment de leur indisponibilité, nous nous sommes tournés vers les ressources naturels comme substitut dans la synthèse. C'est dans cette optique que le présent travail voit le jour avec pour objectif général la production d'un tensioactif par transesterification de la stéarine. Pour atteindre ce but une optimisation a été effectuée utilisant un plan composite centré de 17 expériences. Les facteurs étudiés étaient le temps, la température ainsi que le rapport molaire glycerol/stearine et les réponses suivies étaient l'indice de crémage, le pouvoir moussant ainsi que la concentration micellaire critique. Par la suite les propriétés émulsifiantes de ce tensioactif obtenu dans les conditions optimales ont été évaluées par son incorporation dans une émulsion en cosmétique. Pour ce faire une optimisation a été réalisée mettant en œuvre la méthodologie des surfaces de réponses et les paramètres rhéologiques ainsi que la stabilité (vieillesse accéléré) de cette émulsion ont été étudiés. Il ressort de notre analyse que les propriétés obtenues des conditions optimales de notre tensioactif sont respectivement 16,20%, 28,80cm<sup>3</sup>, 0,556 mmol/l pour le crémage, le moussant, et la cmc. D'autre part, les valeurs optimales de l'émulsion sont 2972, 71mpa.s, 1811, 34g.cm/s et 34,67μm respectivement pour le la viscosité, l'étalement et la granulométrie. Dans cette étude, une valorisation de la stéarine en synthèse d'agent actif de surface est possible à l'échelle pilote.

**Mots clés :** tensioactif, transesterification, stéarine, émulsion, cosmétique.

**Creuset de lean innovation numerique en afrique centrale (clinac) : plateforme de formation en ligne conciliant science et entrepreneuriat**

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**Résumé :**

CLINAC est un projet de l'appel d'offre PRICNAC (promotion de la recherche, de l'innovation et de la culture numérique en Afrique centrale), porté par un consortium qui comprend l'AUF, Obreal. C'est un Programme Recherche et Innovation de l'OEACP, mis en œuvre par l'OEACP et financé par l'union européenne. Le projet CLINAC est une plateforme numérique qui vise la promotion de l'innovation et l'entrepreneuriat agricole et agroindustriel, elle est un point de rencontre de tous les acteurs de l'écosystème agricole et agroindustriel. Nos cibles principales sont les étudiants qui souhaitent non seulement trouver une nouveauté scientifique, mais aussi une nouveauté de produit commercial. Notre démarche fait donc de l'étudiant un sciencepreneur. Nous ciblons aussi les chercheurs qui souhaitent changer leur démarche non plus seulement pour inventer et publier, mais aussi pour impacter leur environnement, les inscrivant ainsi dans la démarche recherche innovation. Les PME sont également ciblées pour améliorer leurs compétitivités. Le projet se résume donc en un espace numérique avec 10 modules, organisés en 7 étapes chacune sanctionnée par un certificat. Le dernier certificat LEANSciencepreneur a une reconnaissance nationale et internationale qui permet au titulaire de pouvoir créer aisément son entreprise, mais aussi d'accompagner toute entreprise pour améliorer ses performances. La démarche utilisée dans CLINAC repose sur le principe Leansciencepreneur. Le lean encourage la recherche de solutions efficaces à moindre coût. Le sciencepreneur est l'intersection entre la science et l'entrepreneuriat. Cette démarche démarre par une maîtrise de la désirabilité du produit ou du procédé à développer. Puis elle s'enchaîne par une étude de faisabilité qui constitue la recherche documentaire et/ou en laboratoire, on y ressort avec un prototype qui répond au cahier de charge des besoins de la cible identifiée pendant la désirabilité. Enfin il s'en suit l'étape de viabilité pendant laquelle les circuits de commercialisation, le business modèle de l'entreprise sont développés. C'est une démarche qui priorise /conduit systématiquement au succès vers l'objectif de création d'entreprise, de publication d'article scientifiques et de brevet, contrairement à notre démarche habituelle qui encourage d'abord la recherche de publications scientifiques.

**Mots clés :** projet CLINAC ; Plateforme de formation numerique ; brevet ; Leansciencepreneur ; Recherche scientifique ; entrepreneuriat.

**Production de la bacteriocine par la souche *Lactococcus lactis* subsp. *Lactis* 2MT dans un milieu formulé à base de sous produit de transformation du poisson et optimisation**

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**Résumé**

Les milieux de culture conventionnels utilisés pour la croissance des bactéries lactiques sont très coûteux et parfois indisponibles dans les pays en développement. D'où la nécessité de mettre sur pied un milieu de culture de faible coût et facilement accessible. Le but de ce travail était de formuler un milieu de culture moins coûteux que les milieux de culture synthétiques afin d'optimiser la production des bactériocines. Des milieux de culture SP1, SP2 et SP3 ont été formulés à partir des sous-produits obtenus du poisson tilapia du nil (*Oreochromis niloticus*). Une souche de bactérie lactique *Lactococcus lactis* subsp. *Lactis* a été inoculée dans ces milieux, et dans les milieux conventionnels MRS et M17, puis incubé à 30°C pendant 24h. La croissance de cette souche a été observée, l'activité antimicrobienne de ces surnageants a été évaluée par la méthode de diffusion en puits et les diamètres d'inhibition ont été mesurés. Les résultats ont montré que les surnageants de culture obtenus à partir du milieu sp1+M montraient plus d'activités suivi de SP3+S, SP1+O et en fin SP1+A de diamètre respectifs 11, 9,5, 9 et 9 mm. Ce qui nous a permis de choisir le milieu SP1+M comme milieu de culture d'intérêt. L'analyse physicochimique du milieu d'intérêt a montrée qu'il est constitué de Protéine (29,5 %), de lipide (5,89 %), de glucide (38,31), de calcium (205mg/l) , de magnésium (395mg/l) , de potassium ( 2895mg/l ) , de sodium ( 405mg/l ) , de phosphore (4584,5% ) et une teneur en eau (99,56% ). La méthode de surface de réponse utilisée par le plan de doehlert nous a permis d'obtenir un diamètre optimal de 13,5 mm pour une teneur en sucre de 42,7, une température d'incubation de 28°C et un temps d'incubation de 17 h.

**Mots clés :** Bactériocine, optimisation, milieu de culture, *Lactococcus lactis* subsp. *Lactis*

**Archived hiv-1 antiretroviral resistance mutations in the cellular reservoirs of vertically infected adolescents in the central region of Cameroon**

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**Background:** The long-term persistence of HIV in latent reservoirs represents a major challenge to the eradication of HIV infection. Indeed, antiretroviral therapy does not prevent the integration of HIV-1 proviral DNA into the genome. The aim of our work was to characterize the resistance mutations archived in the cellular reservoirs of adolescents vertically infected with HIV in the Centre Region of Cameroon. **Methods:** We conducted a cross-sectional and analytical study, at the *Centre International de Reference* Chantal Biya (CIRCB) from April 2022 to May 2023, on adolescent samples collected from three HIV treatment centers in the Center Region. Identification of resistance mutations archived in the reservoirs was performed using amplification refractory mutation system - polymerase chain reaction (ARMS-PCR), followed by evaluation of the immunological and virological responses of these adolescents to antiretroviral treatment. Statistical analyses were performed using Graphpad prism; Pearson's Chi-Square test was used to assess association between categorical variables, and Spearman's Chi-Square test was used for correlations; p-values<0.05 were considered statistically significant. **Results:** The study population consisted of 40 adolescents, predominantly male (55%), with a median age of 15.5 [12-15.5] years. The median CD4 count was 639 [375-942] cells/mm<sup>3</sup> and the median viral load was 40 copies/ml. Among the 39/40 (97.5%) patients with effective genotyping, we obtained at least one major resistance mutation in different group, the K103N mutation was present in 28/40 (70%) and the M184V mutation in 11/40 (27.5%), mutations that create resistance to non-nucleoside reverse transcriptase inhibitors (NNRTIs) and nucleoside reverse transcriptase inhibitors (NRTIs) respectively. We observed a significant association (p=0,0001) between viremia and archived mutations in the reservoirs (proviral DNA). **Conclusion:** This study demonstrated that there is a high proportion of archived mutations in vertically HIV infected adolescents in the Center Region, even in the context of virological and immunological success. These archived mutations predominantly create NNRTI resistance, hence the need for a rapid transition to combination therapies excluding NNRTIs, coupled with optimal therapeutic adherence for better management of vertically HIV infected adolescents.

**Keywords :** Adolescents, ARMS PCR, HIV, mutations, reservoirs

## Prevalence of multi-drug resistant and extended spectrum $\beta$ -lactamase producing *enterobacterales* isolated from wound patients having diabetes mellitus in western region in Cameroon

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### Abstract

**Background and Objectives:** Extended-Spectrum  $\beta$ -Lactamase-producing *Enterobacterales* (ESBL-E) represent a major global public health problem. The 2017 WHO report lists them as pathogens of critical interest requiring research and development of new antibiotics. They are frequently responsible for community and nosocomial infections especially among immunocompromised patients as well as diabetic patients. The aim of this study was to investigate the prevalence, phenotypic and genotypic prevalence of ESBL-producing *Enterobacterales* isolated from wound patients having diabetes mellitus in Western region in Cameroon. **Methods:** This study took place in two health care settings namely Regional Hospital of Bafoussam and the Cliniques Universitaires des Montagnes. During five-month periods from 01st February to 30th June, 2022. The clinical samples analyzed were collected from diabetic patients. *Enterobacterales* was identified using 'RapID™ ONE'. The Antimicrobial Susceptibility Test was performed using the Kurby-Baueur disk diffusion method plated on Muller Hinton agar medium. The screening of ESBL-E was done using ESBL ChromAgar medium combined with the detection of a champagne cork. Polymerase chain reactions (PCRs) were performed to ascertain the presence of *bla*<sub>CTX-M</sub>, *bla*<sub>TEM</sub>, *bla*<sub>SHV</sub> genes involved in the production of extended-spectrum  $\beta$ -lactamases. The data analysis was done by Excel and Epi Info 16.0. **Results:** Overall, 82.35% (42/51) of the included diabetic patients were colonized with *Enterobacterales* and the prevalence of wound carriage of MDR *Enterobacterales* among them was 97.61% (41/42). Among MDR-E isolates, the most prevalent species were *E. coli* (24.39%; 10/41), *K. oxytoca* (14.63%; 6/41) and *P. mirabilis* (14.63%; 6/41). High rates of resistance to amoxicillin-clavulanic acid (100%; 42/42), cefixime (95.24%; 40/42) and cefepime (90.48%; 38/42) were observed. The resistance mechanisms detected among these isolates were ESBL (47.61%; 20/42), *bla*<sub>CTX-M</sub>, *bla*<sub>TEM</sub>, *bla*<sub>SHV</sub> genes being identified at 95.23% (40/41) for each of them and *bla*<sub>CTX-M</sub> at 41.46% (17/41). **Conclusion:** Our findings confirm the high-prevalence of MDR as well as ESBL-E isolated in wound of diabetic patients, and suggest that strong infection control strategies must be implemented in hospital settings of the country.

**Keywords:** MDR, diabetes, ESBL, *Enterobacterales*, Cameroon.

## Haptoglobin gene polymorphism and iron profile in sickle cell disease patients with inflammation in Yaounde, Cameroon

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### Abstract

**Background:** The sickle cell patients are subjected to several factors causing inflammation and the genetic identification of each individual allows to focus the possibility of allelic variations influence of a specific gene and then the polymorphism. This study aims at determining the distribution of *HP* gene (OMIM#140100) and their involvement on hematological parameters and the iron profile in the sickle cell patients presenting an inflammation condition during Major Sickle Cell Syndromes in Cameroun. **Methods:** A case-control analytical study has been conducted over a period of 06 months. Cases consisting of sickle cell patients in a situation of inflammation and control of non-inflamed sickle cell patients. The patients presenting major sickle cell syndromes, interned and/or followed at the Hematology Department of the Regional Hospital of Bafoussam and the Central Hospital of Yaoundé have been recruited. *HP* genotyping was carried out at the Laboratory for Public Health Research Biotechnologies (LAPHER-Biotech) in Yaoundé using allele specific PCR. Also, inflammatory, hematological parameters and martial assessment were explored by standard methods. Statistical analysis of the data was performed using the statistical tool R version 4.1.1. **Results:** We analysed the samples of 149 patients. The *HP* polymorphism describes a significant frequency of the '1F' allele (69.8%) followed by the '2' allele (46.31%). In addition, 80 patients (53.69%), 48 (32.21%) and 21 (14.09%) presented the genotype *HP* 1-1, *HP* 2-1, *HP* 2-2 respectively. And eighty-one percent (81%) patients with genotype *HP* 2-2 showed a significant higher relative frequency of thrombocytosis compared to the genotype *HP* 1-1 and *HP* 2-1 respectively (51.2% and 68.8%,  $p=0.087$ ). The proportion of inflammation in the *HP* 2-2 group was higher (57.1%) compared to the other groups (respectively 42.5% and 35.4% in the *HP* 1-1 and *HP* 2-1 groups). Furthermore, the median CRP was significantly higher in the *HP* 2-2 group compared to the other groups ( $p=0.039$ ). Moreover, the entire population of the *HP* 2-2 group showed an elevation of ferritin and IL6 unlike the *HP* 1-1 and *HP* 2-1 groups.

**Conclusion:** This study demonstrates a higher frequency of genotype *HP* 1-1 followed by the *HP* 2-2 genotype in patients with Major Sickle Cell Syndromes. However, a larger proportion of patients with genotype *HP* 2-2 are associated with hematological profile disorders, inflammation, and dysregulation of iron metabolism. Then, the haptoglobin polymorphism contributes to the severity of Major Sickle Cell Syndromes.

**Keywords:** haptoglobin polymorphism, Major sickle cell syndrome, inflammation, serum iron, hematological profile.

**Effect of ammonium nitrate and ammonium sulfate concentration on regulatory factors for cellular reprogramming during somatic embryogenesis in *Theobroma cacao* L.**

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**Abstracts**

**Introduction:** Auto incompatibility, makes it difficult to stably conserve agronomical traits challenging the amelioration of many allogamous plants in general and *Theobroma cacao* in particular. Fortunately, somatic embryogenesis appears to be an effective method of clonal multiplication. **Methodology:** Somatic embryo induction was initiated on DKW culture medium using ammonium nitrate and ammonium sulphate as the sole sources of ammonium at different concentrations. The experiment was conducted on the Scavina 6 genotype. Molecular analyses were carried out by RT-qPCR for a comparative measurement of the expression of key genes (AMT1.1, AMT1.3) on the embryogenic callus and the non-embryogenic callus. **Results:** The percentage of embryogenic callus as well as number of embryos was higher at 4.425 mM compared to 8.85, 17.7- and 35.5-mM ammonium nitrate, and decreased as the salt concentration increased. The AMT1.3 genes were more highly expressed in non-embryogenic calluses and embryogenic calluses in ammonium nitrate compared to those derived from ammonium sulphate. **Conclusion:** Overall, these results show the influence of ammonium nitrate and ammonium sulphate concentrations on the differential expression of AMT1.1, AMT1.3 genes in embryogenic and non-embryogenic callus derived from these two ammonium sources and suggest that somatic embryo induction and abnormal root development in seedlings derived from somatic embryos is influenced by ammonium levels and other epigenetic factors. **Impact of this study:** This study provides insight into embryo induction, the genetic and epigenetic mechanisms that control embryo formation in order to increase the efficiency of somatic embryogenesis in *Theobroma cacao*, offering prospect to scale-up seedling production.

**Keywords:** somatic embryogenesis, Ammonium, gene expression, epigenetic factors

## Genetic diversity and origin of Ngaoundere Gudali Cattle revealed by Mtdna D-Loop sequence variation

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### Abstract

In animal genetic studies, mitochondrial DNA (mtDNA) analysis offers a way to detect changes in populations over time along with their maternal origin and migration routes. To determine these patterns in Ngaoundere Gudali cattle breeds of Cameroon, analyses of 33 sequences of a 350 base pair fragment of the mtDNA D-loop region were conducted in conjunction with previously published sequences from African, European and Chinese subjects. It appears that all individuals in the study were found to be members of haplogroup I1. This suggested that the Ngaoundere Gudali cattle breed originated most probably from the Indus Valley. A relatively high nucleotide diversity ( $\pi$ ) was found in Ngaoundere Gudali ( $0.62748 \pm 0.02046$ ). The high genetic diversity observed in Ngaoundere Gudali cattle breed reflects an introgression from hybridization. This study provides new information regarding the haplogroup of the Ngaoundere Gudali Cattle. To facilitate the preservation and the conservation of the Ngaoundere Gudali cattle breed in Cameroon, it is therefore important to adopt effective breeding management practices.

**Keywords:** diversity; haplogroup; mitochondrial DNA; Ngaoundere Gudali; Cameroon.

The expression of *SSSOS1* and *SSHKT* in *Solanum scabrum* is important for salt stress tolerance by limiting Na uptake and translocation under moderate and high salinity.

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### Abstract

Salinity is a multi-trait factor and requires extensive search of all interacting systems involved in protecting plants against the stress. It is in this light that the current study sought to assess the contribution of two genes [salt overly sensitive 1 (*SOS1*) and high affinity K<sup>+</sup> transporter (*HKT*)] that regulate Na<sup>+</sup> uptake and translocation to the leaves, in salt stress adaptation of huckleberry. To accomplish this, 3-week old seedlings of huckleberry were subjected to moderate (60 Mm NaCl) and high (120 mM NaCl) salinity in a hydroponic medium for 10 days. Then the fresh and dry weights of the plants and Na<sup>+</sup> and K<sup>+</sup> were measured followed by *SsSOS1* isolation and functional characterization, and the analysis of *SsSOS1* and *SsHKT* expression in leaf, stem and root. The results showed that both levels of salinity did not negatively affect the FW of leaves and roots but significantly reduced stem FW under high salinity. Root DW increased under moderate (22%) and high (77%) salinity, whereas the DW of leaves and stems remained unaltered. The highest Na<sup>+</sup> concentration was recorded in the stem, being 1.9 and 7 folds that in root and leaf, respectively under moderate salinity. Under higher salinity stem Na<sup>+</sup> concentration being 46% and 5.7 folds that in root and leaf, respectively. The Na<sup>+</sup>/K<sup>+</sup> ratio in the root and stem was 5.2 and 3.8 fold more than that in the leaf, respectively while under moderate salinity the ratio was 6.5 and 5.7 folds higher than that in the leaf. *SsHKT* expression in leaf (2.5-fold) and stem (5-fold) was same for both stress levels, whereas it was more significantly induced in the root under moderate (~18fold) and high (30-fold) salinity. However, *SsSOS1* expression markedly increased in the leaf and root (~4 and 24-fold, respectively). These results suggest that both genes are important for salt stress tolerance and that *SsSOS1*'s role depends on stress intensity

## POSTERS

### TRACK 1: MEDICINAL PLANTS, NATURAL SUBSTANCES AND BIOACTIVITY

#### PCBS-MNSB01

##### EFFETS DE L'EXTRAIT AQUEUX DES FEUILLES DE *SOLANUM TORVUM* SW (SOLANACEAE) SUR QUELQUES ALTERATIONS DES FONCTIONS HEPATIQUE ET RENALE INDUITE PAR LA GENTAMYCINE

Mewoli Bekono E M<sup>1\*</sup>; Foutse Yimta W<sup>1</sup>; Ngueguim F<sup>2</sup>; Djientcheu J-P<sup>2</sup>; Nguimatsia F<sup>1</sup>; Dimo T<sup>1,2</sup>.

#### PCBS-MNSB02

##### CYTOTOXIC AND ANTI-INFLAMMATORY ACTIVITIES OF EXTRACTS AND COMPOUNDS FROM *LAVIGERIA MACROCARPA* OLIV. (ICACINACEAE)

Kenmoe T.F.W<sup>\*</sup>, Sinda K.P.V, Dzoyem J.P, Ponou K.B, Famuyide M.I, Teponno R.B, McGaw L.J, Barboni L, Tapondjou A. L.

#### PCBS-MNSB03

##### ANTI-DIABETIC EFFECTS OF *ANGYLOCALYX OLIGOPHYLLUS* AQUEOUS EXTRACT IN DIABETIC PREGNANT RAT: FETO-MATERNAL REPERCUSSION

Tenezogang Takoukam Christian<sup>1</sup>., Tchamadeu Marie-Claire<sup>1</sup>., Selakong Kzekuie Quelim<sup>1</sup>., Bogning Zanguieu.Calvin<sup>1</sup>., Hassimatou A<sup>1</sup>., Kuinze.Augustine<sup>1</sup>., Pechi Fotso. Armel<sup>1</sup>., Nde Zacharie<sup>1</sup>., Belle Ebanda Phillippe<sup>1</sup>., Massoma Lembe Dieudonné<sup>1</sup>

#### PCBS-MNSB04

##### BIOGUIDED FRACTIONATION OF TWO EDIBLES MUSHROOMS FROM AFRICA: *LAETIPORUS BAUDONII* AND *TERMITOMYCES CLYPEATUS*

Kuete N.J.R, Tsakem B, Teponno R.B, Barboni L, Tapondjou 'A.L.

#### PCBS-MNSB05

##### EVALUATION OF THE ACUTE AND SUB-CHRONIC TOXICOLOGICAL PROFILE OF THE AQUEOUS EXTRACT OF *ARTABOTRYS THOMSONII* OLIV (ANNONACEAE) LEAVES IN RATS.

Pechi Fotso Kevin-Armel<sup>1</sup>, Tchamadeu Marie Claire<sup>1</sup>, Bogning Zankeu Calvin<sup>1</sup>, Emambo Patience<sup>1</sup>, Hatho Towo Dominique<sup>1</sup>, Tenezogang Takoukam Christian<sup>1</sup>, Longo Frida<sup>2</sup>, Dongmo Alain Bertrand<sup>1</sup>.

#### PCBS-MNSB06

##### ANTILEISHMANIAL POTENTIAL AND *IN SILICO* PREDICTION OF PHARMACOKINETIC PROPERTIES OF SOME SYNTHETIC PHENOLIC COMPOUNDS

Wendji Monkam, Diana Sandra; Ngansop Njanpa, Cyrille Armel; Kemzeu, Raoul; Safeh, Claire; Tsouh, Patrick valere; Fekam Boyom, Fabrice.

#### PCBS-MNSB07

##### EFFET DE L'EXTRAIT AQUEUX DES FEUILLES DE *TITHONIA DIVERSIFOLIA* (ASTERACEAE) SUR LES INSECTES RAVAGEURS ET LE RENDEMENT DU NIEBE A BERTOUA

Barry B.R.<sup>1\*</sup>, Ndouyang C.<sup>1</sup>, Yamgouet A.J.<sup>1</sup>, Kalefack F.P.<sup>1</sup>, Donfack M.N.<sup>1</sup>, Ngakou A.<sup>2</sup>, Nukenine E. N.<sup>2</sup>

#### PCBS-MNSB08

##### TRADITIONAL KNOWLEDGES ON THE USES OF *PHRAGMANTHERA CAPITATA* (LORANTHACEAE) IN FIFINDA AND KRIBI LOCALITIES (SOUTH CAMEROON)

Doumbe Makembe Léa Clémence<sup>1</sup>, Tapsou Yang-Wang Valery<sup>1</sup>, Ndjib Rosette Christelle<sup>2</sup>, Mvogo Ottou

Patrice Brice<sup>1</sup>, Ngotta Biyon Jacques Buno<sup>1\*</sup>

#### PCBS-MNSB09

##### CHEMICAL CONSTITUENTS AND BIOLOGICAL ACTIVITY FROM RHIZOMES OF *CYATHEA MANNIANA* (CYATHEACEAE)

Matchide T. Marie Germaine<sup>1, 2\*</sup>, Nguekeu M. Yves Martial<sup>1</sup>, Claudelle Sybilline Anensong Djadock<sup>3</sup>, Tchuenmogne T. Marthe Aimée<sup>1,4</sup>, Takeshi Kodama<sup>2</sup>, Kiep Do Minh<sup>2</sup>, Yuan-E Lee<sup>2</sup>, Tene Mathieu<sup>1</sup>, Ngouela Silvère Augustin<sup>1</sup>, Wim Dehaen<sup>4</sup>, Hiroyuki Morita<sup>2</sup>, Awouafack Maurice Ducret<sup>1</sup>

#### PCBS-MNSB10

##### EFFETS ANTI-AMNESIQUES ET NEUROTROPHIQUES DE L'EXTRAIT AQUEUX DES ECORCES DE *PARKIA BIGLOBOSA* (JACQ.) R. BR (FABACEAE) SUR UN MODELE DE TROUBLES DE MEMOIRES INDUITS PAR LA SCOPOLAMINE CHEZ LE RAT WISTAR

Corneille Tongoue<sup>1\*</sup>, Antoine K. Kandeda<sup>2</sup>, F. Yimta<sup>1</sup>, Jean P. Djientcheu<sup>2</sup>, Ferdinand Meuladje<sup>2</sup>, Bougem Cynthia<sup>2</sup>, Théophile Dimo<sup>2</sup>.

#### PCBS-MNSB11

##### NEUROPROTECTIVE POTENTIAL OF THE HYDROETHANOLIC EXTRACT OF *LANNEA MICROCARPA*'S FRUIT ON OXIDATIVE STRESS INDUCED ALZHEIMER'S DISEASE RAT MODEL

Geradin Joel Tagne Tueguem<sup>1</sup>, Hermine Tsafack Doungue<sup>1</sup>, Dahlia Yemeli Piankeu<sup>3</sup>, Michel Pegui Kemtsop<sup>1</sup>, Anne Pascale Nouemsi Kengne<sup>1,2</sup>, Donatien Gatsing<sup>3</sup>

#### PCBS-MNSB12

##### ENQUETE ETHNOPHARMACOLOGIQUE ET EVALUATION DES PLANTES UTILISEES DANS LA PRISE EN CHARGE DE LA DREPANOCYTOSE DANS LE DEPARTEMENT DU NDE (CAMEROUN)

Ngo Soundjock Alvine<sup>1</sup>, Foutse Yimta wandji<sup>1</sup>, Josué simo Louokdom<sup>2</sup>, François Nguimatsia<sup>1</sup>, Denis Wouessidjewe<sup>3</sup>.

#### PCBS-MNSB13

##### FORMULATION D'UN GEL BUCCAL A ACTIVITÉ ANTIFONGIQUE À BASE D'EXTRAIT HYDRO ÉTHANOLIQUE DE PLANTE ENTIÈRE DE *ASPILIA AFRICANA* (ASTÉRACÉES) ET ESSAI D'ACTIVITÉ *IN VITRO*

Iden Emilie Pouket<sup>1</sup>, Yimta Foutse wandji<sup>1</sup>, Ernest Djoko<sup>1</sup>, Denis Wouessidjewe<sup>3</sup>.

#### PCBS-MNSB14

##### POTENTIEL ANTIHYPERLIPIDEMIANANT DE L'HUILE DE LA PULPE DU FRUIT DE *CANARIUM SCHWEINFURTHII ENGL.* CHEZ LES RATS DE SOUCHE WISTAR

Archelle Arnellie Abaoabo Foudjin<sup>1</sup>, Anne Pascale Nouemsi Kengne<sup>1</sup>, Hermine Tsafack Doungue<sup>1</sup>, Ronice Zokou<sup>1</sup>, Stéphane Tambo Tene<sup>1</sup>, Florian Amel Tekou<sup>1</sup>, Michel Péguy Kemtsop<sup>1</sup>, Gérardin Joël Tueguem Tagne<sup>1</sup>, Hilaire Macaire Women<sup>1</sup>

#### PCBS-MNSB15

##### IMPACT OF PREPARATION AND COOKING METHODS ON THE QUALITY OF TRADITIONAL CAMEROONIAN LEAFY VEGETABLES: 03 MORPHOTYPES *SOLANUM NIGRUM*

Tedong L., Agbor M. A. Chuisseu P.N., Chiveu J., Simo J. and Pawelzik.

#### PCBS-MNSB16

##### ANTIMICROBIAL PROPERTIES AND UV PHOTOSTABILITY OF NEW AROMATIC COMPOUNDS BASED ON EUGENOL, IBUPROFEN AND BENZALDEHYDE

Pascaline M. Deussom<sup>1</sup>, Monique B. Ewonkem<sup>1\*</sup>, Michel A. Mbock<sup>2</sup>, Alfred F. A. Toze<sup>1</sup>, Duplex J. Wansi

**PCBS-MNSB17**

**SYNTHESIS, CHARACTERIZATION AND PHOTOSTABILITY OF CURCUMINATE FATTY ACID ESTERS**

Lele Murielle<sup>1</sup>, Ewonkem B. Monique<sup>1\*</sup>, Toze A. Flavien<sup>1</sup>, Wansi J. Duplex<sup>1</sup>

**PCBS-MNSB18**

**BREAST CANCER CELL GROWTH ARREST AND CHEMOPREVENTIVE EFFECTS OF PASSIFLORA EDULIS SIMS (PASSIFE LORACEAE) ETHANOLIC LEAVES EXTRACT ON A RAT MODEL OF MAMMARY CARCINOMA.**

Fotsing Sorelle ines, Ngo Pambe, Silihe Kamga Kevine, Yembeau Lena, Choupo Arnaud, Njamen Dieudonné, Pieme Constant Anatole , Zingue Stephane.

**PCBS-MNSB19**

**L'USAGE DU MIEL DANS LE PROCESSUS DE CICATRISATION DES PLAIES : UNE MINI REVUE DE LA LITTERATURE AFRICAINE SUBSAHARIENNE RECENTE**

Ngadjeu Tchana F.<sup>1</sup>, Fotchin Petnga O.<sup>1</sup>, Dikongue Dikongue F.<sup>2</sup> Kohpe Kapseu S.<sup>3</sup>, Ngaroua<sup>4</sup>

**PCBS-MNSB20**

**MODIFICATIONS OF SOME NATURAL AROMATIC COMPOUNDS CAN ENSURE UV SKIN PROTECTION OF ALBINOS.**

BASSOMO Monique épse EWONKEM

**PCBS-MNSB21**

**SALICYLATE FATTY ACID ESTERS: PROMISING BIOACTIVE AGENTS FOR SKIN?**

Monique B. Ewonkem<sup>1\*</sup> Pascaline M. Deussom<sup>1</sup>, Michel A. Mbock<sup>2</sup>, Eunice N. Tiakouang, Alfred F. A. Toze<sup>1</sup>, Duplex J. Wansi<sup>1</sup>

**PCBS-MNSB22**

**NUTRITIONAL, PHYTOCHEMICAL, ANTIOXIDANT PROPERTIES AND A-AMYLASIC ACTIVITY OF PULP AND WHOLE FRUIT OF THREE VARIETIES OF CHRISTOPHINE FRUITS (*SECHIUM EDULE*, *CURCUBITACEAE*)''**

kenfack justine odelonne<sup>1\*</sup>; dangang bossi donald severin<sup>1</sup>; teboukeu boungo gires<sup>3</sup>; foko kouam edith marius<sup>2</sup>; tsopbeng tsopzong alex blairio<sup>1</sup>; klang julie mathilde<sup>1\*</sup>; zambou ngoufack français<sup>1</sup>.

**PCBS-MNSB23**

**HEPATIC AND ANTIOXIDANT EFFECTS OF *TETRALEURA TETRAPTERA* FRUITS (FABACEAE) AGAINST INDOMETHACIN-INDUCED LIVER FAILURE IN WISTAR RATS**

**PCBS-MNSB24**

**ARIDANIN AND OLEANANE-3- O-B-D-GLUCOSIDE-2'-ACETAMIDE OBTAINED FROM *TETRALEURA TETRAPTERA* (SCHUMACH. & THONN) TAUB. (FABACEAE) INDUCES POTENT APOPTOTIC ACTIVITY IN HUMAN PROSTATE CANCER CELLS**

Michael Hermann Kengne Kamdem<sup>1,2</sup>, Stéphane Zingue<sup>1,3,4,\*</sup>, Timothy Grein<sup>5</sup>, Sebastian Maxeiner<sup>5</sup>, Jochen Rutz<sup>5</sup>, Edwin Mpho Mmutlane<sup>1,2</sup>, Dieudonné Njamen<sup>6</sup>, Roman A Blaheta<sup>5,#</sup>, Derek Tantoh Ndinteh<sup>1,2,\*,#</sup>

**PCBS-MNSB25**

**CONSERVATION OF THE IMMUNE FUNCTION OF KEY PLAYERS IN THE MOLECULAR RESPONSE TO *PHYTOPHTHORA MEGAKARYA* INFECTION IN *THEOBROMA CACAO.L* AND THE EFFECT OF MGSO4 SUPPLEMENTATION ON THE EXPRESSION LEVEL OF TARGET RESISTANCE GENES.**

Foundikou Paul Crépin <sup>1</sup>, Francis Othon Liken <sup>1</sup>, Epiphanie Douanla Ndjoutse<sup>1</sup>, Emile Minyaka <sup>1</sup>, Nicolas Niemenak <sup>2</sup> Alexandre Mboene Noah <sup>1\*</sup>

#### PCBS-MNSB26

**INSECTICIDAL EFFECT OF *CALOTROPIS PROCERA*, *EUCALYPTUS CAMALDULENSIS* AND *TITHONIA DIVERSIFOLIA* POWDERS ON THE FORAGING ACTIVITY OF *APIS MELLIFERA* ON *VIGNA UNGUICULATA* FLOWERS IN DANG (NGAOUNDÉRE - CAMEROON).**

Adamou Moïse<sup>2, 3</sup>, Mohammadou Moukhtar<sup>1\*</sup>, Taïmanga<sup>1</sup>, Youssoufa Ousmana<sup>1</sup>, Fouelifack-Nintidem Boris<sup>1</sup>, Abraham Tchoubou-Sale Abraham<sup>2</sup>, Yomon Abdel Kayoum<sup>1</sup>, Odette Dabole Massah<sup>2</sup> & Kenne Martin<sup>1</sup>

#### PCBS-MNSB27

**TWO PHENOLIC COMPOUNDS (BISCOUMARIN AND BIFLAVONOID) FROM *ORMOCARPUM KIRKII* S. MOORE (FABACEAE) EXHIBIT ANTICANCER PROPERTIES AGAINST HUMAN PROSTATE CANCER CELLS**

Eutrophe Le Doux Kamto<sup>1,2</sup>, Stéphane Zingue<sup>3,4,\*</sup>, Timothy Grein<sup>5</sup>, Boniface Pone Kamdem<sup>6</sup>, Sebastian Maxeiner<sup>5</sup>, Jochen Rutz<sup>5</sup>, Joséphine Ngo Mbing<sup>1</sup>, Dieudonné Emmanuel Pegnyemb<sup>1</sup>, Dieudonné Njamen<sup>7</sup>, Roman A. Blaheta<sup>5,#</sup>, Gilda Guimarães Leitão<sup>2,\*,#</sup>

#### PCBS-MNSB28

**PHYTOCHEMICAL SCREENING, *IN SILICO* MOLECULAR DOCKING OF AN ISOFLAVONE, *IN VITRO* ANTIOXYDANT/ANTIINFLAMMATORY ACTIVITIES AND *IN VIVO* PHARMACOLOGICAL POTENTIALS FROM *PTEROCARPUS SOYAUXII* (FABACEAE) TAUB HEARTWOOD AQUEOUS EXTRACT MACERATE AGAINST NEUROLOGICALS DISORDERS LINKED TO POSTMENOPAUSE IN A RAT MODEL**

Owona Pascal Emmanuel<sup>1</sup>, Mengue Ngadena Yolande Sandrine<sup>1,2</sup>, Bilanda Danielle Claude<sup>1</sup>, Bidingha A Goufani Ronald<sup>1</sup>, Ngoungouré Madeleine Chantal<sup>1</sup>, Mbolang Nguegan Lohik<sup>1</sup>, Rivaldo Bernes Kahou Tadah<sup>1</sup>, Tcheutchoua Yannick Carlos<sup>1</sup>, Dzeufiet Djomeni Paul Désiré<sup>1</sup>, Kamtchouing Pierre<sup>1</sup>

#### PCBS-MNSB29

**COMPARATIVE ANTIPLASMODIAL AND CYTOTOXIC ACTIVITIES OF *COFFEA ARABICA* AND *COFFEA CANEPHORA* ALKALOIDS EXTRACTS**

Romuald Dieudonne Noah Zibi<sup>1</sup> , Viviane Raïssa Sipowo Tala<sup>1</sup>, Patrick Yamen Mbopi<sup>1</sup> , Narcisse Herve Bayaga<sup>2</sup> , Georges Mathurin Ngassa Tcheuffa<sup>2</sup>, Joseph Ngoupayo<sup>2\*</sup>

**PCBS-HZEC30**

**FIRST INDOOR RESIDUAL SPRAYING IN CAMEROON HIGHLIGHTS A GREAT POTENTIAL OF FLUDORA FUSION (MIXTURE OF DELTAMETHRIN AND CLOTHIANIDIN) TO BETTER CONTROL THE WILD PYRETHROID-RESISTANT MALARIA VECTORS *ANOPHELES FUNESTUS* AND *AN. GAMBIAE*.**

Riccado F. Thiomela<sup>1,2,\*</sup>, Magellan Tchouakui<sup>1</sup>, Benjamin D. Menze<sup>1</sup>, Elysee Nchoutpouen<sup>1</sup>, Leon J. Mugenzi<sup>2</sup>, Raymond J. Mahob<sup>2</sup>, Abraham Fomena<sup>2</sup> and Charles S. Wondji<sup>1,3,4</sup>

**PCBS-HZEC31**

**BIOFILM FORMATION ABILITY, VIRULENCE FACTORS ANALYSIS AND ANTIBIOTIC RESISTANCE PROFILE OF THREE *STAPHYLOCOCCUS SPP.* ISOLATES FROM URINE AND SYNERGISTIC EFFECTS OF COMBINATION OF BIOACTIVE NATURAL PRODUCTS WITH CURRENTS ANTIBIOTICS.**

Ulrich Joël Tsopmene<sup>1</sup>, Jean Paul Dzoyem<sup>1\*</sup>

**PCBS-HZEC32**

**ART RESTORES PROGESTERONE AND TESTOSTERONE IMBALANCES IN WOMEN OF CHILDBEARING AGE IN CAMEROON.**

Livo F. Esemu<sup>1,2,3\*</sup>, Romeo Djounda<sup>1,2,4\*</sup>, Honore. Awanakam<sup>1,2,4</sup>, Hillary Tene<sup>1,2,4</sup>, Michael Besong<sup>1</sup>, Eleanor Ngounou<sup>3</sup>, Rose Leke<sup>1, 2</sup>, Gabriel L. Ekali<sup>1</sup>, Jude Bigoga<sup>1,4</sup>, Caroline Tiemessen<sup>5</sup>, Lishomwa C. Ndhlovu<sup>6</sup>

**PCBS-HZEC33**

**EFFECT OF RESTRAINT-INDUCED PSYCHOGENIC STRESS ON SOME PARAMETERS OF *EX COPULA* EJACULATION IN THE RAT**

Sontia Kenfack Zidane Bartèze<sup>1</sup>, Wankeu-Nya Modeste<sup>1\*</sup>, Bonsou Fozin Geoges, Momo Tetsatsi Aimé Césaire<sup>2</sup>, Hatho Towo Dominique Hyacinthe<sup>1</sup>, Soh Fonesseng Francklin<sup>1</sup>, Awouafack Maurice Ducret<sup>3</sup>, Moundipa Fewou Paul<sup>4</sup>, Dzeufiet Paul Désiré<sup>5</sup>, Watcho Pierre<sup>3</sup>

**PCBS-HZEC34**

**TRANSMISSION OF SOIL-TRANSMITTED HELMINTHIASIS (STH) IN THE ADAMAWA REGION, CAMEROON, ALMOST INTERRUPTED AFTER SEVENTEEN YEARS OF UNINTERRUPTED PREVENTIVE CHEMOTHERAPY: WAY FORWARD**

Diana Vanessa Tcheunko Domdji<sup>1,2\*</sup>, Laurentine Sumo<sup>1,3</sup>, Hugues C Nana Djeunga<sup>1</sup>, André Domche<sup>1,2</sup>, Narcisse Nzune Toche<sup>1</sup>, Guy Roger Njitchoang<sup>1</sup>, Aubin Balog<sup>1</sup>, Flobert Njiokou<sup>2</sup>, Joseph Kamgno<sup>1,4</sup>

**PCBS-HZEC35**

**SENSITIVITY PROFILE OF FUNGAL PATHOGENS ISOLATED FROM RESPIRATORY SAMPLES IN YAOUNDE.**

Killa Claris<sup>1</sup>, Ngando Laure<sup>2</sup>, Nguimbous Leopold<sup>3</sup>, Chiago Sonia<sup>4</sup>, Same Ekobo<sup>1</sup>, Gonsu Hortense<sup>1</sup>

**PCBS-HZEC36**

**CONTRIBUTION OF THE INTENSIVE AGRICULTURE TO THE CONSTANT MALARIA TRANSMISSION IN THE MANJO DISTRICTS, LITTORAL REGION, CAMEROON**

Wakam Noubou Rolyne Sorelle<sup>1</sup>, Ghariegam Ornella Carolle<sup>1</sup>, Mbida Mbida Jean Arthur<sup>1</sup>, Awono Ambene Parfait<sup>2</sup>, Akono Ntonga Patrick<sup>1</sup>

#### PCBS-HZEC37

##### ETUDE EPIDEMIOLOGIQUE, CLINIQUE ET THERAPEUTIQUE DES INFLAMMATIONS OCULAIRES ET ANNEXIELLES NON TRAUMATIQUES A YAOUNDE - CAMEROUN

Domngang Noche C1 , Tatsinkou M 1, Kagmeni G2

#### PCBS-HZEC38

##### RESTRAINT STRESS INDUCES ANXIETY, ESTROUS CYCLE AND OVARIAN HORMONES DISORDERS IN FEMALE RAT: THE INVOLVEMENT OF THE CA1, CA3 REGIONS OF THE HIPPOCAMPUS

Hatho Towo Dominique Hyacinthe 1 Wankeu-Nya M1, Tchamadeu MC1, Massoma LD1, Ateba SB1, Djeumeni NO1, Kengne TI1, Soh FNF1, Tenezogang C1, Ndé Z1, Dongmo AB1, Moundipa P2 , Watcho P3.

#### PCBS-HZEC38

##### IRON PROFILE, INFLAMMATION IN SICKLE CELL PATIENTS IN 02 HOSPITALS IN CAMEROON:

Romarc Tuono De Manfou <sup>1,2</sup>, Josué Simo Louokdom <sup>2</sup>, Bernard Claude Chetcha<sup>3</sup>, Prosper Cabral Biapa Nya<sup>4</sup>, Claude Tayou Tagny <sup>3</sup>, Constant Anatole Pieme<sup>5\*</sup>

#### PCBS-HZEC39

##### MULTIDRUG-RESISTANT (MDR) AND EXTENDED-SPECTRUM B-LACTAMASE PRODUCING *ESCHERICHIA COLI* ISOLATED FROM SLAUGHTERED PIGS AND SLAUGHTERHOUSE WORKERS IN CAMEROON: A ONE HEALTH PERSPECTIVE.

Moise Matakone<sup>1</sup>; Raspail Carrel Founou<sup>1,2</sup>; Brice Davy Dimani<sup>2</sup>; Patrice Landry Koudoum<sup>1</sup>, Leslie Luria Founou<sup>3,4</sup>; Michel Noubom<sup>1,2</sup>.

#### PCBS-HZEC40

##### RISK FACTORS ASSOCIATED WITH THE SPATIAL DISTRIBUTION OF PRIORITY ZOOSES INCAMEROON FROM 2012 TO 2021 IN ANIMAL HEALTH

Alvine Aurelle Foudjin Amawota<sup>1,2</sup>, Jean-Marc Kameni Feussom<sup>2,3</sup>, Mohamed Moctar Mouliom Mouiche<sup>1,2</sup>, Abdoulmoumini Mamoudou<sup>1</sup>, Arouna Ngapagna Njyou<sup>1,2</sup>, Wilfried Délé Oyetola<sup>4</sup>, Rianatou Bada Alambedji<sup>4</sup>, Justin Ayayi Akakpo<sup>4</sup>.

#### PCBS-HZEC41

##### RELATION BETWEEN HAPTOGLOBIN POLYMORPHISM AND OXIDATIVE STRESS STATUS, LIPID PROFILE AND CARDIOVASCULAR RISK IN SICKLE CELL ANAEMIA PATIENTS

Christian Bernard Kengne Fotsing<sup>1,2\*</sup>, Constant Anatole Pieme<sup>3</sup>, Prosper Biapa Nya<sup>2</sup>, Jean Paul Chedjou<sup>4</sup>, Solange Dabou<sup>1</sup>, Carine Nguemeni<sup>6</sup>, Georges Teto<sup>5</sup>, Wilfred Fon Mbacham<sup>4</sup> And Donatien Gatsing<sup>1</sup>

#### PCBS-HZEC42

##### DOLUTEGRAVIR BASED REGIMEN ENSURES GOOD VIROLOGICAL AND IMMUNOLOGICAL RESPONSES OF HIV-1 INFECTED ADOLESCENTS IN CAMEROON

Kevin Njomo<sup>1,4</sup>, Nelson Sonela<sup>1</sup>, Georgia Ambada<sup>1,2</sup>Michelle Tsoptio<sup>1,3</sup>, Leslie Kenou<sup>1,4</sup>, Gabriela Takedoh<sup>1</sup>, Jelove Lontsi<sup>1</sup>, Bertrand Sagnia<sup>1</sup>, Aubin Nanfack<sup>1</sup>

### TRACK 3: ENVIRONMENTAL QUALITY OF LIFE AND CLIMATE CHANGE

#### PCBS-EQCC43

##### DISTRIBUTION DES INVERTEBRES DANS LE LAC CARRIERE DE NGOA-EKELE : IMPORTANCES DES VARIABLES ABIOTIQUES

Ajeagah Gidéon Aghaindum ; Pateuck Djeumo Derik

#### PCBS-EQCC44

##### EVALUATION DES TERRES POUR LA CULTURE DE LA PISTACHE AFRICAINE (*Citrullus mucospermus*) DANS L'ARRONDISSEMENT DE BAFIA CENTRE-CAMEROUN.

Dzokou Kontchou Joel Jordan\*, Boukong Alexis, Enang Kogge Roger, Mboua Etienne, Meyou Ghomsi Lionelle

#### PCBS-EQCC45

##### QUALITE PHYSICO-CHIMIQUE ET DYNAMIQUE DES INVERTEBRES DANS L'ETANG D'ODZA A YAOUNDE

Yannick Nzombi Azonfack 1\*, Quiggle Atud Asi<sup>1</sup>, Gideon Ajeagah Aghaidum

#### PCBS-EQCC46

##### CARACTERISATION PAR LES MACROINVERTEBRES BENTHIQUES D'UN COURS D'EAU DE LA REGION DU LITTORAL CAMEROUN (NDOG BISSOLO)

Ndurwe Far Bolivar\*, Foto Menbohan Samuel, Zebaze Togouet Serge Hubert, Betsi Wilfried Christiane, Edioh Pem Frédéric, Harissou.

#### PCBS-EQCC47

##### IMPACT DES VIDANGES DES FOSSES SEPTIQUES SUR LA DIVERSITE DES FORMES ENVIRONNEMENTALES DES PARASITES INTESTINAUX DANS LE COURS D'EAU AVO'O (NOMAYOS-YAOUNDE)

Mvoe Stéphanie Nadège<sup>1</sup>, Ajeagah Gidéon Aghaindum<sup>1</sup>, Fotseu Kouam Arnold<sup>1</sup>, Tsomene Namekong Pierre<sup>2</sup>, Mbouombouo Mama<sup>2</sup>, Asi Quiggle Atud<sup>2</sup>, Messoé William Aurélien<sup>2</sup>, Yongui Atchoukeu Danielle<sup>2</sup>

#### PCBS-EQCC48

##### DISTRIBUTION SPATIO-TEMPORELLE DU ZOOPLANCTON DU LAC DE BARRAGE DE MEKIN : INFLUENCE DES VARIABLES ABIOTIQUES.

Brillant Nonga Tang 1\* ; Cécile Rita Boudem Tsane<sup>1</sup> ; Serge Hubert Zébazé Togouet<sup>1</sup>

#### PCBS-EQCC49

##### DISTRIBUTION SPATIO-TEMPORELLE DU ZOOPLANCTON DU LAC DE BARRAGE DE MEKIN : INFLUENCE DE QUELQUES VARIABLES ABIOTIQUES.

Brillant Nonga Tang \* ; Cécile Rita Boudem Tsane ; Marcelle-Blanche Mbassi Mbida ; Nsangou Moundignigni Hénock Yves ; Serge Hubert Zébazé Togouet\*.

#### PCBS-EQCC50

##### DISTRIBUTION SPATIO-TEMPORELLE DU ZOOPLANCTON DE QUELQUES COURS D'EAU DANS LA ZONE AGRICOLE D'AWAE (CENTRE-CAMEROUN)

Nsangou Moundignigni Hénock Yves <sup>1</sup>, Nonga Tang Brillant<sup>1</sup>, Sob Nangou Paul Bertrand<sup>1</sup> Zébazé Togouet Serge Hubert <sup>1\*</sup>

**PCBS-EQCC51**

**DYNAMIQUE DE L'OCCUPATION DE SOL DANS LES ARRONDISSEMENTS DE DOUALA III ET V DE 1975 A 2020**

Nganmo Ivant Stevy<sup>1</sup>, Tchameni Franck Eric<sup>2</sup>, Nsame Bill Ophman<sup>1,3</sup>, Fongnzonssie Fedoung Evariste<sup>4</sup> Et Priso Richard Jules<sup>1</sup>.

**PCBS-EQCC52**

**POTENTIEL D'ADAPTABILITE DES ACCESSIONS LOCALES DE RICIN (RICINUS COMMUNIS L.) EN ZONE DES HAUTES SAVANES GUINEENNES DU CAMEROUN**

Tchuenteu Tatchum Lucien\*, Megueni Clautilde, Mandassia Félicité

**PCBS-EQCC53**

**ETUDE ETHNOBOTANIQUE, CARACTERISATION ET GEOLOCALISATION DES ACCESSIONS LOCALES DE RICIN (*RICINUS COMMUNIS* L.) EN ZONES DES HAUTES SVANES GUINEENNES DU CAMEROUN**

Tchuenteu Tatchum Lucien\*, Awal Mohamed, Megueni Clautilde

**PCBS-EQCC54**

**EFFET DE LA VACCINATION SUR LA QUALITE DE VIE DES PERSONNELS DE SANTE DE 7 FORMATIONS SANITAIRES DE LA REGION DE L'OUEST.**

<sup>1</sup>Neguem Towa Michel Yves, <sup>2</sup>Bekolo Cavin Epie, <sup>3</sup>Signe Mawout Cyrielle, <sup>4</sup>deube ngako christian, <sup>5</sup>yotat michele lolita, <sup>6</sup>chimy tchouchui herna stella, <sup>7</sup>Kouanfack Charles.

**PCBS-EQCC55**

**QUALITÉ PHYSICO-CHIMIQUE, DYNAMIQUE ET DIVERSITÉ DES MACROINVERTEBRÉS BENTHIQUES ET DU ZOOPLANCTON DU COURS D'EAU MEKONO**

Edioh Pem Frederic, Zebaze Togouet Serge, Ndourwe Far Bolivar, Dzepand Thierry, Owona Francois

#### TRACK 4: AGRO-ECOSYSTEM AND FOOD

##### PCBS-AGEFC56

**EFFECTS OF SUBSTRATE AND MYCORRHIZAL INOCULUM ON STEM SEGMENT CUTTINGS OF *PTEROCARPUS ERINACEUS* POIR. (FABACEAE) IN THE GUINEAN SAVANNAH HIGHLANDS OF CAMEROON.**

\*<sup>1,3</sup>Abdoulaye Herbert, Oumarou H. Z.<sup>2,3</sup>, Essouman E.P.F.<sup>1</sup>, Abubakar A.S.<sup>1</sup>, Wangbitching J.D.<sup>3</sup>, Binwe J-B.<sup>3</sup>, Fawa G.<sup>3</sup>, Megueni C.<sup>3</sup> & Mapongmetsem P. M.<sup>3</sup>

##### PCBS-AGEFC57

**NUTRIENTS AND SECONDARY METABOLITES CONTENTS OF TOMATO FRUIT (*LYCOPERSICON ESCULENTUM* MILL.) SPRAYED WITH *CALLISTEMON CITRINUS* AND MANCOZEB**

Ndonkeu M.G<sup>1</sup>, Foueiefack F.R<sup>2</sup>, Dongmo L.J.B<sup>1</sup>, Nguepsi J.C<sup>1</sup> And Nguiefack J<sup>1</sup>

##### PCBS-AGEFC58

**IMPACT OF CHRONIC CONSUMPTION OF OXIDIZED PALM OIL DIET ON SOME REPRODUCTIVE PARAMETERS IN RATS.**

Nguémo TJ<sup>\*</sup>, Wankeu-Nya M<sup>1</sup>, Massoma LD<sup>1</sup>, Ateba S<sup>1</sup>, Joyce-Patrick EDF<sup>1</sup>, Kengne TI<sup>1</sup>, Djeumeni NO<sup>1</sup>, Hatho THD<sup>1</sup>, Tenezogang TC<sup>1</sup>, Sélakong NQ<sup>1</sup>, Nde Z<sup>1</sup>

##### PCBS-AGEFC59

**METRIC ASSESSMENT OF DOMESTIC BEES (*APIS MELLIFERA ADANSONII*) IN THE FOREST LOW-ALTITUDE REGION OF CAMEROON**

Leonid Deffo \*, Meutchieye Félix

##### PCBS-AGEFC60

**SIXTY YEARS AFTER INDEPENDENCE AFRICA IS GOING NOWHERE: NEED TO CHANGE OUR MIND SET AND EMBRACE SCIENCES, TECHNOLOGIES AND INNOVATION IN AGRICULTURE**

Norber Mbahin

##### PCBS-AGEFC61

**INNOVATION SCIENTIFIQUE EN MATIERE DE FERTILISATION DES SOLS ACIDES ET DEGRADES AU CAMEROUN : LE GOMBO COMME PLANTE MODELE**

Uriel Prince Ngale Tchuengang<sup>1\*</sup> ; Libert Brice Tonfack<sup>1</sup> ; Victorine Lombeko Obe Tomo<sup>2</sup> ; Carine Nono Temegne<sup>1</sup> ; Nkombo Laure<sup>3</sup> ; Ngonkeu Mangaptche Eddy Léonard<sup>1</sup>.

##### PCBS-AGEFC62

**MALACOLOGICAL AND PARASITOLOGICAL DESCRIPTIONS OF SOME AQUATIC ECOSYSTEMS IN THE DISTRICT OF NDIKINIMEKI, CENTRAL-CAMEROON REGION**

Balifeli Bienvenu <sup>1,2</sup>, Djieukap Laurelle <sup>1,2</sup>, Awono Ambene Parfait <sup>1</sup>, Tombi Jeannette <sup>2</sup>

##### PCBS-AGEFC63

**TECHNIQUES DE PRODUCTION ET CONDITIONS DE CONSERVATION DES FARINES ISSUES DES FRUITS DE BANANIERS PLANTAINS**

<sup>1,3</sup>takam Ngouno Annie ; <sup>1,2</sup> Ngoh Newilah Gérard Bertin ; <sup>3</sup>douny Caroline ; <sup>1</sup>kuate Dieudonné

**PCBS-AGEFC64**

**INDUCTION OF THE DEFENSE SYSTEM OF TOMATO (*LYCOPERSICON ESCULENTUM* MILL.) AGAINST FUSARIUM WILT BASED ON *CALLISTEMON CITRINUS* AND *TITHONIA DIVERSIFOLIA***

Nguepsi J.C1, Dongmo L.J.B1, Azah U.R1, Ndonkeu M.G1, Foulefack F.R2 And Nguetack

**PCBS-AGEFC65**

**LEVEL OF CONTAMINATION OF MACKEREL (*SCOMBER SCOMBRUS*) AND TUNA (*THUNNUS SPP.*) WITH HISTAMINE AND MAIN ASSOCIATED CLINICAL SIGNS AMONG CONSUMERS IN YAOUNDÉ AND DOUALA - CAMEROON.**

Guemche S. Hugues-Davy; Kamwa Elis Bernard; Fotsac Dzousse Muller, Ilboudo André.

**PCBS-AGEFC66**

**DIVERSITY OF ENDOMYCORRHIZAL FUNGI IN NORTHERN CAMEROON SOIL'S: IMPLICATIONS FOR GROWTH IMPROVMENT AND THE SUCCESS OF SOILS RESTAURATION**

Koulagna Issa Honoré<sup>1\*</sup>, Ismael Ramza Haman<sup>2</sup>, Tchuenteu Tatchum Lucien<sup>3</sup>, Yaouba Aoudou<sup>1</sup>, Kosma Philippe<sup>4</sup>, Megueni Clautilde<sup>3</sup>.

**PCBS-AGEFC67**

**BASES NECESSAIRES À UNE CLASSIFICATION PLUS RATIONNELLE ET PRECISE DES ESPECES ET RE-ADEQUATION DE LA CLASSIFICATION DES CHIENS ET CHATS EN FONCTION DE LEURS REGIMES ALIMENTAIRES REELS**

KAMWA Elis Bernard

PCBS-MNSB01

**Effets de l'extrait aqueux des feuilles de *Solanum torvum* sw (Solanaceae) sur quelques altérations des fonctions hépatique et rénale induite par la gentamicine**

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**Résumé :**

**Introduction :** Les atteintes hépatiques et rénales sont des altérations des fonctions du foie et des reins. 50 % de ces altérations seraient d'origine médicamenteuse. Les traitements conventionnels de ces altérations présentent plusieurs limites. Ce qui motive la population à faire recours à la phytothérapie comme alternatif. **Objectif :** Cette étude avait pour but d'évaluer les effets de l'extrait aqueux des feuilles de *Solanum torvum* sur quelques altérations des fonctions hépatique et rénale induite par la gentamicine. **Méthodologie :** Pour l'installation des atteintes, soixante rats ont été utilisés. 45 rats ont reçu une dose quotidienne de gentamicine 100 mg/kg (*i.p*) pendant 10 jours et 15 rats recevaient par la même voie le NaCl (0,9 %). Le 11<sup>e</sup> jour, les rats étaient répartis en 07 groupes de 09 animaux chacun et traités pendant 10 jours à une dose quotidienne. Les groupes témoin normal et témoin négatif étaient traités à l'eau distillée (10 mL/kg, *p.o*), le témoin positif à la silymarine (150 mg/kg, *p.o*) et les groupes tests aux différentes doses de l'extrait (133, 265 et 530 mg/kg, *p.o*). **Résultats :** La gentamicine a provoqué au bout de 20 jours une baisse significative du poids corporel et une augmentation du poids des reins, ainsi qu'une augmentation de l'activité des transaminases, de la  $\gamma$ -GT et une baisse de l'activité de la PAL et du taux d'albumine. L'administration de l'extrait a significativement corrigé ( $p < 0,001$ ) les troubles de la fonction hépatique en restaurant l'activité des transaminases, de la  $\gamma$ -GT et de la PAL, en améliorant les désordres du profil de bilirubine et de l'albumine. Au niveau de la fonction rénale, l'extrait a prévenu et corrigé l'augmentation du taux d'acide urique et de créatinine dans le sang. Il a été observé une amélioration du statut oxydant des animaux accompagné d'une restauration de la microarchitecture des tissus hépatique et rénale comparable à ceux du témoin normal. **Conclusion** Les effets pharmacologiques de l'extrait seraient dus à l'activité des métabolites secondaires recensées lors du criblage phytochimique. L'extrait posséderait des propriétés hépatoprotectrices et néphroprotectrices qui pourrait nous pousser à envisager la mise sur pieds d'un MTA.

**Mots clés :** *Solanum torvum*, hépatotoxicité, néphrotoxicité.

**Cytotoxic and anti-inflammatory activities of extracts and compounds from *Lavigeria macrocarpa* Oliv. (Icacinaceae)**

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**Abstract:**

*Lavigeria macrocarpa* (Oliv.) is a plant of Icacinaceae family which is widely distributed in tropical and subtropical regions. *L. macrocarpa* is generally used in folk medicine for the treatment of rheumatism, asthma, and snake bite which have inflammatory phenomena in common. The present work deals with the study of chemical constituents of *L. macrocarpa* and the evaluation of their cytotoxic and anti-inflammatory activities. This work is inscribed in the frame of valorization of Cameroonian medicinal plant, as a source of new biologically active molecules, which can significantly respond to the health problems of populations. The chemical studies carried out on the ethanolic extract of this plant by chromatographic methods (on silica and sephadex gel), led to the isolation of twelve compounds. The interpretation of the spectroscopic (NMR 1D and 2D) and spectrometric data followed by comparison with those of the literature allowed us to elucidate their structures of these compounds. The isolated compounds are divided into six classes of metabolites, namely: four saponins : lavigemacrocarposide A (1), lavigemacrocarposide B (2), lavigemacrocarposide C (3),  $\beta$ -sitosterol 3-O-glucopyranoside (4); four diterpenes : humirianthone (5), acrenol (6), momilactone B (7), icacinalactone M (8); one alcaloid: icacine (9); one triterpene: lupeol (10); one carbohydrate: sucrose (11); and one monoglyceride: glyceryl-1-eicosanoate (12). The EtOH extract and some isolated compounds were evaluated for their anti-inflammatory and cytotoxic activities. Icacine (9) exhibited a significant cytotoxicity against both HeLa and MCF-7 cell lines with an IC<sub>50</sub> value of 0.78  $\mu$ g/mL. All the tested compounds showed more than 50% inhibition of NO production, except compounds 1 and 2. These results support the use of *L. macrocarpa* in traditional medicine for the treatment of various diseases.

**Keywords:** *Lavigeria macrocarpa*, Icacinaceae, cytotoxic and anti-inflammatory activities

**Anti-diabetic effects of *Angylocalyx oligophyllus* aqueous extract in diabetic pregnant rat:  
Feto-maternal repercussion**

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**Abstract**

*Angylocalyx oligophyllus* (*A. oligophyllus*) has been used in a wide variety of diseases, including diabetes mellitus and complications of pregnancy. This study focused on the effects of *A. oligophyllus* aqueous extract on blood glucose and the complications of diabetes in pregnancy and examined the impact of plant on reproduction in diabetic female rats. Diabetes was induced by streptozotocin (STZ, 35mg/kg) in virgin, adult, female rats. After diabetes induction, the rats were mated. The pregnant rats were distributed into six groups: normal control, diabetic control, and 3 diabetics groups treated of *A. oligophyllus* leaves aqueous extract at the doses of 50, 100 and 200 respectively. Oral aqueous extract of *A. oligophyllus* was administered to female rats in the treated groups during pregnancy from 1<sup>th</sup> to 19<sup>th</sup> day of gestational by gastric gavage. The body mass of pregnant rat was measured daily and blood glucose on days 1, 5, 10, 15 and 20. At term pregnancy, maternal reproductive outcomes, fetal parameters, and biochemical parameters were analyzed. At the 20<sup>th</sup> day of gestation the diabetic mothers presented increased hyperglycemia, altered glucose tolerance, increased total cholesterol, triglycerides, transaminases, creatinine, and urea. Moreover, the diabetic mothers presented increased reabsorptions and fetuses' losses after implantation, reduced corpora lutea number, implantation sites and live fetuses. Similarly, the offspring showed reduced fetal weight and placental dimensions. Administration of the extract at the three doses resulted in significant reduction in the levels of glycaemia, serum total cholesterol, triglyceride, LDL-cholesterol, transaminases, creatinine and urea, increased the HDL-cholesterol and total proteins. Furthermore, the extract presented significantly increased the sites of implantation number, the living fetuses' number by reducing post-implantation losses. These results suggested that *A. oligophyllus* supplementation during pregnancy is beneficial in preventing diabetic complications in pregnant rats.

**Key words:** *Angylocalyx oligophyllus*, Anti-diabetic, Pregnancy, Anti-hyperlipidaemia.

**Bioguided fractionation of two edibles mushrooms from Africa: *Laetiporus baudonii* and *Termitomyces clypeatus***

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**Abstract:**

Since multiple centuries, mushrooms were used for their nutritional and pharmacological uses. They contain most secondary metabolites like triterpenes, steroids or sesquiterpenoids with various activities such as anti-inflammatory, anti-oxidative, anti-tumor, immune-modulatory, antiangiogenic, anti-bacterial among others. This study aimed at isolating the active antibacterial secondary metabolites from the most active mushroom (either *Laetiporus baudonii* or *Termitomyces clypeatus*) against multidrug-resistant (MDR) and sensitive phenotypes. Compounds were isolated using various chromatographic techniques. Their chemical structures were elucidated mainly by extensive spectroscopic analysis (1D and 2D) and mass spectrometric (ESI-HR-MS) data. The ethanol extracts, EtOAc and n-BuOH fractions of both mushrooms as well as the isolated compounds were assessed for their antibacterial activities using broth microdilution method. The crude extract of *Laetiporus baudonii* showed significant activity against 30% of the bacteria tested, with a minimal inhibitory concentration (MIC) value of 64 µg/mL against *Escherichia coli*, *Pseudomonas aeruginosa* and methicillin-resistant *Staphylococcus aureus* while that of *Termitomyces clypeatus* showed moderate activity. The ethyl acetate fraction of *Laetiporus baudonii* was the most active botanical; and displayed the lowest MIC value of 64 µg/mL against 70% of the tested bacteria. The EtAcOH fraction led to isolation of ergosta-5,7,22-triene-3β-ol or ergosterol (**1**), and eburicoic acid (**2**). Compounds **1** and **2** showed moderate activities with the MIC values ranging from 64 to >256 µg/mL for **1** and from 16 to >256 µg/mL for **2**. In the presence of the efflux pumps inhibitor, phenylalanine arginine β-naphthylamide, the activity of compounds **1** and **2** significantly increased by up to 8-folds. The two investigated mushrooms as well as compounds **1** and **2** are antibacterial natural products which deserve further studies to develop novel drugs to combat bacterial infections, including the MDR phenotypes.

**Key words:** *Laetiporus baudonii*; *Termitomyces clypeatus*, ergosterol, eburicoic acid, antibacterial activity

**Evaluation of the acute and sub-chronic toxicological profile of the aqueous extract of *Artabotrys thomsonii* Oliv (Annonaceae) leaves in rats**

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**Abstract**

*Artabotrys thomsonii* is a medicinal plant used in the African pharmacopoeia for the treatment of many pathologies. Therefore, it was important to evaluate its potential risk on human and animal health. This study highlights the acute and sub-chronic effects of the toxicological profile of the aqueous extract of the leaves of *A. thomsonii*. The extract was prepared according to the method of the traditional healers and administered orally to Wistar rats at a single dose of 5000 mg/kg or 100, 200 and 400 mg/kg/day for 28 days for acute and sub-chronic tests, respectively. In acute toxicity, no behavioral disturbances were observed in treated animals compared to the control. The lethal dose 50 was estimated to be greater than 5000 mg/kg and the extract was scored as low toxicity. Similarly, no significant changes in body mass, relative organ mass, hematological and biochemical parameters were observed after 28 days of repeated administration of the extract. Furthermore, administration of the extract did not alter motor coordination or develop anxiety in sub-chronic treatment. Histopathological sections revealed that all doses tested did not induce any damage to the liver, kidney and heart compared to normal standards. These results indicate that the use of the aqueous extract of *Artabotrys thomsonii* leaves at the different doses tested would not be associated with any notable toxic effects.

**Key words:** *Artabotrys thomsonii*, aqueous extract, toxicity, rat.

**Antileishmanial potential and *in silico* prediction of pharmacokinetic properties of some synthetic phenolic compounds**

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**Abstract:**

Leishmaniasis is a Neglected Tropical Disease caused by flagellated protozoan parasites belonging to the *Leishmania* genus. The management of leishmaniasis relies on chemotherapy but the effectiveness of the current treatment is impeded by the toxicity, the development of resistance and the high cost, underlining the urgent need to search for new drugs alternatives. Synthetic phenolic compounds, due to their wide spectrum of biological activity as highlighted in the literature, might be promising alternative for the discovery of potential antileishmanial drug candidate. Briefly, 17 synthetic compounds were tested *in vitro* for antileishmanial activity and toxicity respectively on the extracellular promastigote and on mammal cells. Active and non-toxic compounds were further tested for antileishmanial assay on the intracellular amastigote form and cytotoxicity on VERO cells. Promising compounds were selected for inhibition kinetics studies and pharmacokinetics properties were predicted using the SwissADME and pKCSM predictor tools. Of the 17 compounds tested, five showed very good activity on the promastigote form with  $IC_{50}$ s values ranging from 0.16  $\mu\text{g/mL}$  to 5.88  $\mu\text{g/mL}$  and only 4-isobutylvinylether- $\beta$ -pyranonaphthoquinone (RNP11) and 4-phenyl- $\beta$ -pyranonaphthoquinone (RNP8) were selective on RAW cells. These 2 compounds showed very good activity on the intracellular amastigote form with  $IC_{50}$ s of 1.25 and 1.16  $\mu\text{g/mL}$  respectively and were selective toward VERO cells. Inhibition kinetics studies showed that these compounds inhibited the growth of the promastigote form of *Leishmania donovani* irreversibly within 4 hours and 24 hours respectively. The *in silico* analysis revealed that these compounds showed variable but promising pharmacokinetics properties with minimum toxicity.

**Keywords:** Antileishmanial, 4-isobutylvinylether $\beta$ -pyranonaphthoquinone, 4-phenyl- $\beta$ -pyranonaphthoquinone, Kinetics of mortality, Pharmacokinetics

**Effet de l'extrait aqueux des feuilles de *Tithonia diversifolia* (Asteraceae) sur les insectes ravageurs et le rendement du niébé à Bertoua (Est, Cameroun)**

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**Résumé**

**Introduction :** Dans la contribution à l'amélioration du rendement du niébé par l'utilisation des extraits de plantes contre les insectes ravageurs, l'efficacité de l'extrait aqueux des feuilles de *Tithonia diversifolia* a été évaluée à Bertoua (Est-Cameroun). **Matériel et Méthodes :** Le dispositif expérimental de ce travail était celui des blocs complètement randomisés à trois traitements (témoin négatif, insecticide de synthèse Pacha®, extrait de *T. diversifolia*) répétés trois fois. Les paramètres mesurés étaient le nombre d'insectes ravageurs par espèces répertoriées, la taille des plants, le nombre de feuilles, de ramifications et de gousses par plant, et le poids sec des graines.

**Résultats :** Deux espèces d'insectes ravageurs ont été répertoriées, les pucerons (*A. crassivora*) et les thrips (*M. sjostedi*). L'extrait aqueux des feuilles de *T. diversifolia* a significativement ( $p < 0,0001$ ) réduit la population des pucerons et des thrips de 65% et de 20% respectivement, mais est resté moins efficace que le Pacha® qui en a réduit de 75% et de 25%. Bien qu'ayant induit une significative ( $p < 0,0001$ ) amélioration de la croissance des plantes, inférieure à celle du Pacha®, l'extrait aqueux des feuilles de *T. diversifolia* a autant amélioré la production de feuilles, de ramifications et de rendement que le Pacha®. **Conclusion :** L'extrait aqueux des feuilles de *T. diversifolia* substituerait les insecticides de synthèse dans la gestion des insectes ravageurs du niébé permettant ainsi l'amélioration de son rendement. Cet extrait substituerait les insecticides de synthèse contribuant ainsi à la protection de l'environnement.

**Mots clés :** *Tithonia diversifolia*, Insecticides de synthèse, Insectes ravageurs, Rendement, Niébé

Traditional knowledges on the uses of *Phragmanthera capitata* (Loranthaceae) in Fifinda and Kribi localities (South Cameroon)

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**Abstract**

*Phragmanthera capitata* is an ubiquitous parasitic plant suitable for all ecological variations in Cameroon. It has been reported on several crop plants such as avocados, cocoa tree, citrus, plum tree and rubber tree. Despite damage to host plants, *P. capitata* is kept in orchards by local residents. On the other hand, very few studies mention ethnobotanical uses of this plant. The research aim was to enlighten traditional knowledges of the uses of *P. capitata*. The work took place in four rural and periurban localities of Ocean's division, in the southern region of Cameroon. The snowball sampling method was used, and the surveys were carried out according to the semi-structured interview model. The features such as personal information, known diseases, information on the uses of *P. capitata*, and the recipes to treat diseases were collected to 70 respondents of both sexes and of minimal age of 21 years old. As the results, 112 citations referred to 37 uses of *P. capitata*, and grouped into three categories, were obtained. Medicinal use was the most cited category of uses with 87 citations (77.68 %), and 32 diseases. Three parts of plant have been recorded, and leaves were the most cited part (92.87 %). Five methods of preparation have been identified, decoction was the most cited with 64 citations (57.14 %). For route administration, five types have been identified, among which oral and anal recorded most citations. Medicinal use consensus of *P. capitata* by respondents was positive and high (0.71), while cultural and magico-religious uses showed negative and low use consensus. The importance of *P. capitata* for local residents has proven. Thus, more research studies on the therapeutic virtues of *P. capitata* carried, to insure the sustainable management of this species.

**Key words:** coastal zone, ethnobotany, parasitic plants, usefulness

Chemical constituents and biological activity from rhizomes of *Cyathea manniana*  
(Cyatheaceae)

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**Abstract**

**Background:** *Cyathea manniana* is a shrub of 6-200 m in height, mostly found in Asia, America and Africa. Their rhizomes are used in African ethnomedicine for the treatment of several diseases such as heart palpitations, abdominal disorder and tapeworm. **Objectives:** This work was designed to investigate the chemical and biological (cytotoxic and antibacterial) studies of the constituents of the rhizomes *C. manniana*.: **Methods:** We described here the isolation of compounds. The antibacterial assays was performed using a microdilution method to determine their minimum inhibitory concentrations. Cell viability in the presence or absence of of the rhizomes *C. manniana* was determined using the standard WST-8 assay. **Results:** The chemical study led to the isolation of seven known compounds including, lupeol (1), oleanolic acid (2), 6-*B* -hydroxystigmast-4-en-3-one (3), monolaurin (4), genistein (5), *P*-coumaroyl-4-O- *B* -D-glucopyranoside (6) and osmundacetone (7). All the three extracts (ME, EA, nB), fractions (EAF<sub>B</sub> to EAF<sub>F</sub>), and the isolated compounds had no activity against all the three cancer cell lines (IC<sub>50</sub> > 100 µg/mL), respectively. The MeOH crude extract and EtOAc and *n*-BuOH extracts had moderate activities against *B. subtilis* with an MIC value of 150 µg/mL. The EtOAc and *n*-BuOH extracts also showed moderate activity against *E. coli* (MIC 150 µg/mL) while the EtOAc extract was moderately active against *S. aureus* (MIC 150 µg/mL). Among the main fractions obtained after CC, EAF<sub>F</sub> from the EtOAc extract had moderate activity against *B. subtilis* and *K. pneumoniae* with MIC value ranging from 150 to 375 µg/mL, while the EAF<sub>D</sub> of the extract also had moderate activity against *B. subtilis* with an MIC value of 150 µg/mL. The compounds isolated (1-7) showed moderate activity against all bacterial strains with an MIC to 75 µg/mL. **Conclusion:** Our results on the isolation of seven secondary metabolites including lupeol, oleanolic acid, 6-*B* -hydroxystigmast-4-en-3-one, monolaurin, genistein, *P*-coumaroyl-4-O- *B* -D-glucopyranoside and osmundacetone. The compounds isolated showed moderate activity against all bacterial strains with an MIC to 75 µg/mL.

**Keywords:** *Cyathea manniana*; Cyatheaceae; cytotoxic; Antibacterial

**Effets anti-amnésiques et neurotrophiques de l'extrait aqueux des écorces de *Parkia biglobosa* (Jacq.) R. BR (Fabaceae) sur un modèle de troubles de mémoires induits par la scopolamine chez le rat Wistar**

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**Abstract**

**Contexte:** L'amnésie est un trouble de la mémoire marquée par l'incapacité d'une personne à se rappeler ou à acquérir des informations. Les troubles mnésiques sont multifactoriels et se caractérisent entre autres par une atteinte des neurones cholinergiques. Les traitements médicamenteux présents sur le marché, possèdent une efficacité limitée d'où le recours à la médecine traditionnelle. **Objectif :** Cette étude avait pour objectif d'évaluer les effets anti-amnésiques et neurotrophiques de l'extrait aqueux des écorces de *Parkia biglobosa* (Fabaceae) sur un modèle de troubles de mémoires induits par la scopolamine chez le rat Wistar. **Méthodologie :** Pour cette étude, 42 rats mâles adultes ont été répartis en 6 groupes de 7 rats chacun et traités comme suit : un groupe témoin normal (eau distillée à 10 ml/kg, *p.o*), un groupe témoin négatif (eau distillée à 10 ml/kg, *p.o*), un groupe témoin positif (piracétam à 200 mg/kg, *p.o*), et 03 groupes test (extrait aqueux des écorces de *Parkia biglobosa* à 44, 88 et 176 mg/kg, *p.o*). L'administration de la scopolamine (0,5 mg/kg, *i.p*) a été effectuée tous les jours pendant 14 jours. Par la suite, les animaux ont été soumis aux tests comportementaux sur la mémoire à court terme (test de reconnaissance du nouvel objet, test au labyrinthe en T) et sur la mémoire à long terme (test au labyrinthe à bras radial) pendant 15 jours. Les dosages biochimiques de quelques neurotransmetteurs (ACh, AChE et GABA), du statut oxydant et de la neuroinflammation (TNF- $\alpha$ ) dans le cortex préfrontal, l'hippocampe et dans le sérum ont été effectués. Une analyse histologique (hippocampe et cortex préfrontal) a été également réalisé. L'effet *in vitro* de l'extrait (5, 10, 19, 40, 77, 153, 306, 615, 1225 et 2450 $\mu$ g/ml) a été évalué sur la viabilité des neurones corticales exposées au L-glutamate (0,1 mg/ml). **Résultats :** La scopolamine a induit des troubles de mémoires, augmenté le stress oxydant, la neuroinflammation et les pertes neuronales. L'extrait de *Parkia biglobosa* à la dose de 44 mg/kg a diminué ( $p < 0,001$ ) le nombre d'erreurs sur la mémoire (à court et à long terme). Il a également augmenté ( $p < 0,01$ ) la concentration des neurotransmetteurs (ACh et GABA), amélioré ( $p < 0,001$ ) le statut oxydant (MDA), diminué ( $p < 0,001$ ) la neuroinflammation et limité ( $p < 0,001$ ) la perte neuronale. A la dose de 2450 $\mu$ g/ml, l'extrait a induit une augmentation ( $p < 0,001$ ) du pourcentage de cellules viables. **Conclusion :** Ces résultats suggèrent que l'extrait aurait des effets sur l'amnésie et la neurogenèse. Ces effets seraient médiés par une activité neuromodulatrice, antioxydante et anti-inflammatoire. Ces résultats justifieraient en partie l'usage en médecine traditionnelle de cette plante contre les troubles de mémoires.

**Mots clés :** *Parkia biglobosa*, amnésie, neurogenèse, effets neurotrophiques, scopolamine

**Neuroprotective potential of the hydroethanolic extract of *Lannea microcarpa*'s fruit on oxidative stress induced Alzheimer's disease rat model**

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**Abstract**

Alzheimer's disease is the commonest neurodegenerative disease that affects about 44 million people worldwide, causing a huge economic loss, but with no efficient treatment so far. This work was aimed at evaluating the neuroprotective potential of *Lannea microcarpa*'s fruit on oxidative stress induced-Alzheimer's disease rat model. The fruit powder was macerated in ethanol/water (80/20) to obtain the extract. The fruit extract was used to determine total phenolic, flavonoid and tannins contents. Antioxidant activity was determined by DPPH scavenging and FRAP's tests. 28 female Wistar rats of 6 months were used. AlCl<sub>3</sub> at 10 mg/kg was administered intraperitoneally during 7 weeks. Morris water maze and radial maze tests were performed to assess behaviour. Total proteins, catalase activity, malondialdehyde, nitrite, reduced glutathione, and acetylcholinesterase activity were assessed. Brain histopathological examination was also performed. The extract showed TPC (40.961 ± 0.003 mg GAE/g extract), TFC (22.381 ± 0.003 mg CE/g extract) and TTC (10.64 ± 0.16 mg TAE/g extract). The capacity to scavenge DPPH and reduce ferric ion was 94.739±0.207 % and 0.894±0.036 nm respectively. The administration of *Lannea microcarpa*'s fruit extract led to a decrease in the escape latency and in the time to visit the maze's arms. It also increased total proteins, catalase activity; but lowered MDA, nitrite and acetylcholinesterase activity. The fruit's extract prevented the brain from lesions. The fruit's extract could be therefore investigated to discover novel molecules with interesting neuroprotective potential.

**Key words:** *Lannea microcarpa*, oxidative stress, Alzheimer's disease, antioxidant activity, neuroprotective potential

**Enquête ethnopharmacologique et évaluation des plantes utilisées dans la prise en charge de la drépanocytose dans le département du Ndé (Cameroun)**

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**Abstract**

Sickle cell anemia is a hereditary genetic disease characterized by an anomaly of hemoglobin, an essential component of red blood cells. For the WHO, it is the fourth public health priority in the world after cancer, AIDS, and malaria. Despite the progress of modern medicine which offers treatment, sickle cell disease remains a real public health problem. The objective of this study was to carry out an ethnobotanical survey of the plants used by traditional healers in the management of sickle cell disease and to evaluate the activity of a plant of interest. A total of 5 male traditional healers were interviewed using a questionnaire. At the end of this survey, the most cited plant made it possible to evaluate *in vitro* its anti-sickness activity. The results obtained during the survey made it possible to evaluate *in vitro* its antisickness activity. The results obtained during the survey made it possible to identify 31 plant species, all belonging to 24 families. The most represented families were Acanthaceae with 4 species followed by Asteraceae, Rubiaceae, Fabaceae, Euphorbiaceae each with 2 species. The other families are represented by a species. The most cited species was *Alchornea cordifolia*. Phytochemical screening of the aqueous extract of fresh leaves of *Alchornea cordifolia* revealed the presence of alkaloids, polyphenols, anthocyanins, flavonoids, tannins, saponosides and reducing sugars. The anti-sickling activity of fresh leaves of *Alchornea cordifolia* was tested using the Emmel test and showed a decrease in the level of sickle cell disease in the homozygous sickle cell patient SS at a dose of 5 mg/ml of extract compared to the control not treated with the extract. It appears from this study that the aqueous extract of fresh leaves of *Alchornea cordifolia* induces the reversibility of sickle red blood cells in hypoxic conditions and therefore would be a therapeutic alternative in the management of sickle cell disease.

**Key words:** Ethnobotanical survey, aqueous extract, anti-sickling activity, *Alchornea cordifolia*, Bangangté

**Formulation d'un gel buccal à activité antifongique à base d'extrait hydro éthanolique de plante entière de *Aspilia africana* (astéracées) et essai d'activité *in vitro***

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**Résumé**

L'augmentation des mycoses buccales causées par *Candida albicans* chez les immunodéprimés et les personnes âgées s'avèrent être un problème de santé publique. Les résistances aux antifongiques conventionnels ont permis la recherche de nouveaux médicaments à base de plantes naturelles telle que *Aspilia africana* utilisé pour traiter la toux, les blessures les maux de dents et le paludisme et dont l'activité antiinflammatoire, antimicrobiennes et antifongique ont été démontrés. La présente étude avait pour objectif, de caractériser l'extrait hydro-éthanolique de la plante entière de *Aspilia africana*, formuler le gel à base d'extrait hydro-éthanolique, et évaluer son activité *in vitro*. La plante a été récoltée, lavée, séchée au laboratoire puis, les extraits ont subi le criblage phytochimique qualitatif par des tests colorimétriques, quantitatif par dosage spectrophotométrique. La formulation a été faite à partir de plusieurs essais au laboratoire et l'évaluation de l'activité *in vitro* par la technique de dilution en milieu solide. Le rendement de l'extraction était de 10,26%, le criblage phytochimique a révélé la présence des alcaloïdes, flavonoïdes, terpenoïdes, tanins, et une quantité importante de polyphénols dans l'extrait. Trois formules d'hydrogel base ont été réalisées et la formulation retenue est constituée de 2% d'hydroxyéthylcellulose (HEC) contenant l'extrait hydro-éthanolique d'*A. africana*. En effet, cette formulation présentait les meilleures caractéristiques physiques et organoleptiques et les études de stabilité se sont avérées satisfaisantes. Pour l'essai d'activité *in vitro*, Nous avons effectué des tests d'activité sur les souches de *Candida albicans*, nous avons obtenu une CMI de 5.20mg/ml et une CMF de 20.81 mg/ml et dont le rapport démontre une activité fongicide du gel sur les candidoses buccales.

**Mots clés :** *Candida albicans* ; *Aspilia africana* ; extrait hydroéthanolique ; antifongique

**Potentiel antihyperlipidémiant de l'huile de la pulpe du fruit de *Canarium schweinfurthii*  
Engl. chez les rats de souche Wistar**

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**Résumé**

Les dyslipidémies sont des désordres métaboliques des lipoprotéines souvent causées par la mondialisation. Leur prévalence était de 70,2% en 2014 au Cameroun. Toutefois, une diétothérapie adéquate permet une prévention. Ce travail valorisait l'huile des pulpes de *Canarium schweinfurthii* dans la prévention des dyslipidémies. Pour cela, la qualité chimique, les activités antiradicalaires *in vitro*, antioxydante et antihyperlipidémiant de l'huile sur 36 rats groupés en six (3 mâles, 3 femelles) ont été évaluées. Simultanément, les concentrations de 1 et 2 mL/Kg de poids corporel d'huile et l'aliment hypercalorique ont été administrés. Après sacrifice, les paramètres sériques lipidiques et antioxydants ont été évalués. L'huile a présenté ces indices respectant tous les normes : iode (54,06±0,70 g I2/100g), peroxyde (4,02±0,21 meq O2/kg), acide thiobarbiturique (0,448±0,02 meq MDA/Kg), anisidine (1,33±0,00) et oxydation totale (9,37±0,43) avec une forte activité antiradicalaire de 11,81 µg/ml. Comparativement au groupe malade, la dose 2 mL/kg de poids corporel d'huile a abaissé significativement (P < 0,05) les taux de triacylglycérols (116,2±5,40 à 93,83±1,69; 100,43±2,80 à 75,44±4,57), cholestérol total (81,55±3,77 à 72,89±3,59; 77,28±8,77 à 62,69±6,24), *Low density lipoprotein* (40,97±2,88 à 15,52±5,72; 28,69±7,77 à 20,27±4,92), *very low density lipoprotein* (23,24±0,56 à 18,76±0,91; 22,08±2,03 à 15,08±1,08), lipides totaux (330,23±8,72 à 268,24±7,70; 304,85±18,37 à 251,78±18,95) et indice d'athérosclérose (3,65±0,24 à 1,88±0,17; 4,40±0,35 à 2,29±0,27) des mâles et femelles respectivement. L'augmentation significative (P < 0,05) du taux de *high density lipoprotein* (24,51±0,87 à 38,61±1,63; 18,5±1,28 à 27,33±3,28) a été relevée pour chacun des sexes. Quant à la propriété antioxydante en comparaison au groupe malade des deux sexes, l'huile a augmenté l'activité enzymatique de la superoxyde dismutase (55,00±4,22 à 91,66±5,77 ; 41,33±18,71 à 93,33±7,63) et de la catalase (4,71±2,91 à 10,97±0,45; 6,21±0,44 à 2,37±0,37). L'huile de *C. schweinfurthii* est de bonne qualité, a une forte activité antiradicalaire *in vitro*, améliore la défense antioxydante et l'activité antihyperlipidémiant *in vivo*.

**Mot clés :** Caractérisation chimique, activité antiradicalaire, activité antihyperlipidémiant, huile de la pulpe, *Canarium schweinfurthii*.

**Impact of preparation and cooking methods on the quality of traditional Cameroonian leafy vegetables: 03 morphotypes *Solanum nigrum***

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**Abstract**

***Introduction:*** *Solanum nigrum* L (Solanaceae) or *S. nigrum* leafy vegetables are rich sources of minerals and well-suited to growing in different regions of Cameroon. This study investigated the effect of processing minerals of Sn on 03 morphotype leafy vegetables (Big leaves or BL, Medium leaves or ML, and small leaves or SL) used differently in cultural zone of Cameroon. ***Materials and methods:*** Samples fresh leafy vegetables were harvested in the peri-urban farm in Yaoundé town, cut in pieces and sun-dried as Natural. The sun-dried vegetables were boiled for maximum 15 min each lot and process in two groups (Boiling Without drying or BWD, or Boiling and drying or BD) versus natural (N); then underwent were analysis procedure for total phenolics compared to gallic acid standards , total Ash, and 11 minerals (Calcium, bohr, copper, potassium, iron, magnesium, manganese, sodium, phosphorous, sulfurous, and zinc). ***Results:*** With the natural process, *Solanum nigrum* L small leaves had higher concentrations of functional minerals Ca (1783mg/100g), Fe (210mg/100g), K (5530mg/100g), Mg (623,8mg/100g), Na (22.13g/100g) and Zn (4.72mg/100g) compared to big leaves and medium leaves. Boiling and pressing the 03 morphotype leafy vegetables of Sn showed a low Ash after cooking, Crude fiber and TP, boiling boiling without drying produce the lowest losses, meanwhile boiling and drying lead to the greatest losses. ***Conclusion:*** Cooking without pressing retained more minerals and phytochemicals than cooking and pressing. Overall, these vegetables possess specially *Solanum nigrum* small leaves contained high concentrations of functional constituents that can make them be used to boost human nutrition.

**Keys words:** *Solanum nigrum*, leafy vegetables, minerals, boiling, cooking method

**Antimicrobial properties and UV photostability of new aromatic compounds based on eugenol, ibuprofen and benzaldehyde**

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**Abstract:**

In order to circumvent the multi-drug resistance of bacteria to the commercially available antimicrobial drugs and to prevent serious diseases like cancers, certain aromatic compounds have shown predispositions to be used as precursors. That is the case of eugenol, ibuprofen and cinnamic acid derived from benzaldehyde, which are drugs known as anesthetics, anti-inflammatory or antimicrobial drugs. Moreover, their benzene ring allows them to absorb the sun's harmful UV rays. Chemical modifications of such aromatics could lead to improve their biological activities and enhance their ability to better protect the human body. The main objective of this study is to find out suitable drugs that can both protect and treat the skin with good stability, less toxicity and better antimicrobial properties. In this work, new aromatic compounds based on eugenol, ibuprofen and benzaldehyde were designed and synthesized using esterification reactions. Their chemical structures were confirmed by analyses using common spectroscopic methods including FTIR, NMR and HRMS. *In vitro* antibacterial and antifungal tests against several strains of bacteria and fungi revealed that these compounds are bactericidal and fungicidal, with good and moderate activity. Their photostability study performed after a long sun exposure (9 am to 4 pm) showed that the new aromatic are photostable and capable of absorbing Ultraviolet B radiations.

**Key words:** eugenol - ibuprofen - benzaldehyde - antimicrobial activity - photostability

## Synthesis, characterization and photostability of curcumin fatty acid esters

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### Abstract

Health remains one of human's most important concern, with conditions like malaria, cancer and neurodegenerative diseases as main topics addressed by scientific research. Based on the ever-increasing rate of cancer deaths and the high cost of existing cancer treatments, our interest has been focused on a valuable Cameroonian plant of the Zingiberaceae family, *Curcuma longa*. Assuming that the phenolic compounds it contains, especially curcumin, possesses a wide range of biological activities that can help in fighting cancer development, we intended to synthesize new curcuminoid derivatives for both skin cancer prevention and therapy. As for the prevention, aromatic esters appeared to be good functional groups considering their lipophilic character. Thus, three esters were synthesized by esterifying isolated curcumin with three different fatty acids: lauric, palmitic and eleostearic acids. These were oily products, insoluble in water with good exploitable UVA (320-400 nm) and UVB absorptions. Characterization using FT-IR and <sup>1</sup>H - <sup>13</sup>C NMR methods, confirmed the obtention of curcumin esters, but also revealed traces of oils present in isolated curcumin as stated in literature. Exposure to sunlight of these compounds has showed that curcumin is photosensitive compared to its synthesized derivatives, as we observed a decrease in its UV absorption wavelength within time of exposure.

**Key words:** Skin cancer - curcuminoids - curcumin - aromatic esters - UV absorption

**Breast cancer cell growth arrest and chemopreventive effects of *Passiflora edulis* Sims (Passifloraceae) ethanolic leaves extract on a rat model of mammary carcinoma**

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**Abstract**

***Ethnopharmacological relevance:*** Despite various prevention and treatment measures, the incidence and mortality due to breast cancer has been increasing globally. *Passiflora edulis* Sims is a plant used for the treatment of various diseases in traditional medicine, including cancers. ***Aim of the study:*** To assess the anti-breast cancer activity of the ethanolic extract of *P. edulis* leaves *in vitro* and *in vivo*. ***Materials and methods:*** *In vitro*, the cell growth and proliferation were determined based on the MTT and BrdU assays. The flow cytometry was used to analyse the cell death mechanism while, cell migration, cell adhesion and chemotaxis were assayed for anti-metastatic potential. *In vivo*, 56 female Wistar rats aged 45-50 days (~75 g) were exposed to 7,12-dimethylbenz(a) anthracene-DMBA except the normal group. Negative control group (DMBA) received solvent dilution throughout the study; standards groups (tamoxifen - 3.3 mg/kg BW and letrozole - 1 mg/kg BW) as well as *P. edulis* leaves ethanolic extract groups (50, 100 and 200 mg/kg) treated for 20 weeks. Tumor incidence, tumor burden and volume, C A 15-3 serum' level, antioxidant, inflammatory status and histopathology were assessed. ***Results:*** *P. edulis* extract showed a significant and concentration-dependent inhibition of MCF-7 and MDA-MB 231 cells growth at 100 µg/mL. It inhibited cell proliferation and clones' formation and induced apoptosis in MDA-MB 231 cells. The migration of cell into the zone freed of cells and the number of invading cells after the 48 and 72 h were significantly diminished while, it increased their adherence to collagen and fibronectin extracellular matrix as does Doxorubicin. *In vivo*, all rats in the DMBA group exhibited a significant ( $p < 0.001$ ) increase in tumor volume, tumor burden and grade (adenocarcinoma of SBR III) and pro-inflammatory cytokine levels (TNF- $\alpha$ , INF- $\gamma$ , IL-6 and IL-12). *P. edulis* extract at all tested doses significantly inhibited the DMBA-induced increase in tumor incidence, tumor burden and grade (SBR I) as well as pro-inflammatory cytokines. Moreover, it increased enzymatic and non-enzymatic antioxidants (SOD, catalase, and GSH) and decreased MDA levels although a greater effect was observed with Tamoxifen and Letrozole. *P. edulis* has medium content on polyphenols, flavonoids and tannins. ***Conclusion :*** This study aimed to assess the *in vitro* and *in vivo* anti-breast cancer activity of the ethanolic extract of *P. edulis* leaves. *P. edulis* extract inhibited cell proliferation, migration and clones' formation and induced apoptosis in MDA-MB 231 cells. At all the tested doses it significantly inhibited tumor incidence, tumor burden and grade (SBR I) as well as pro-inflammatory cytokines. In addition, it increased enzymatic and non-enzymatic antioxidants and decreased MDA level. No harmful effect was associated with long term exposure to *P. edulis* ethanolic extract. *P. edulis* has chemopreventive effect against DMBA-induced breast cancer in rats through cytotoxic, antioxidative and anti-inflammatory activities. ***Acknowledgment*** The authors are really thankful to the German Academic Exchange Service (DAAD) and the Alexander von Humboldt Foundation for support to Prof. Dr. Dieudonne Njamé and Prof. Dr Stephane Zingue.

## L'usage du miel dans le processus de cicatrisation des plaies : une mini revue de la littérature africaine subsaharienne récente

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### Résumé

**Introduction :** Les effets bénéfiques du miel sont reconnus à toutes les phases de la cicatrisation des plaies ; cependant les dernières guidelines de l'International Working Group on the Diabetic Foot (IWGDF) et de l'European Wound Management Association (EWMA) proscrivent son usage sur les plaies chroniques et les ulcères de jambes en particulier. L'objectif de ce travail est d'identifier l'usage du miel dans le processus de cicatrisation des plaies en Afrique au Sud du Sahara à partir d'études régionales récentes. **Méthodes** Nous avons effectué une mini revue de la littérature africaine subsaharienne dans la base de données électronique African Journal Online (AJOL). Les travaux publiés entre 2018 et 2023 dans les revues francophones et anglophones dont les titres comportaient les mots clés en anglais « wound, honey » et en français « plaies, miel » ont été retenus. L'usage du miel dans le processus de cicatrisation des plaies était identifié à partir des conclusions de ces travaux. **Résultats :** Vingt et une publications ont été retrouvées dont 4 répondaient à nos critères d'inclusion. Deux études étaient in vitro et deux in vivo. Toutes les plaies étudiées aiguës ou chroniques étaient infectées. Une des études a été réalisée chez l'animal et concernait l'administration de miel per os ; une concernait l'application locale de miel chez l'homme et deux impliquaient des tests sur milieux de cultures. Une étude comparait l'activité antibactérienne de la sulfadiazine d'argent à celle du miel médical. L'usage du miel pour son activité antibactérienne et donc à la phase détersive est recommandé par ces études récentes. **Conclusion :** L'usage du miel à la phase détersive est étudié en Afrique au Sud du Sahara. Qu'en est-il des autres phases de la cicatrisation ? Cette question offre d'immenses perspectives de recherche sur l'activité du miel dans le processus de cicatrisation des plaies.

**Mots clés :** miel, activité antibactérienne, plaies, infection.

**Modifications of some natural aromatic compounds can ensure UV skin protection of albinos**

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**Abstract**

The skin is the largest organ of the human body that serves as barrier against external aggressions and the most serious are the ultraviolet (UV) sun radiations composed of UVA (320-400 nm) and UVB (280-320 nm). They are responsible of skin affections like burning, aging, wounds or cancers. In Africa, although black people possess melanin, the pigment that protects the skin against the harmful effects of sun, albinos are a minority who suffer the most from sun skin complications. Sun is their first enemy since they lack of melanin production in the skin, hair and eyes, thus they need a daily protection by using skin sunscreens. The main ingredients of sunscreens are organic and inorganic filters. Organic filters are aromatic compounds capable of absorbing or blocking UV rays through their pi conjugated systems while physical filters are mineral oxides diffracting or reflecting UV rays. Unfortunately, these products are overpriced in sub-Saharan Africa because of importation. Also, the commercially available skin ones have side effects like bio accumulation in organisms, acute toxicities and endocrine disrupting effects. Then, formulation and commercialization of local skin sunscreens suitable for albinos or persons without melanin in Africa is urgent. The aim of this study is to prepare a set of less toxic and biodegradable aromatic compounds capable of absorbing or blocking UVA and UVB. For this purpose, several new aromatic compounds were designed from naturally occurring compounds including salicylic acid, fatty acids, curcuminoids, coumarins, triterpenes, anthraquinones and flavonoids. Salicylates, curcuminates fatty acids, coumarins have been synthesized and chemically characterized. Salicylates have shown to be UVB absorbers while curcuminates and coumarins were UVA absorbers. These new compounds showed good photostability after a long sun-exposure. Their biodegradability and toxicity are under investigations as well as the synthesis of those with triterpenes, anthraquinones and flavonoids as starting materials.

**Keywords:** Albinism - melanin - ultraviolet rays - photo stability - biodegradability

## Salicylate Fatty acid esters: Promising bioactive agents for skin?

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### Abstract

Pollution, global warming or ozone layer depletion are phenomenon that seriously affect human health and particularly the skin - the most exposed part of the body - by causing many diseases like atopic dermatitis or skin cancers. Thus, it is urgent to protect it by using multifunctional topical drugs for protection and treatment. Salicylic acid derivatives and fatty acids have a broad spectrum of antimicrobial activity without classical resistance mechanisms against microbial agents. Compared to the commercially available compounds, salicylates are known as less toxic organic filters -- aromatic compounds capable of absorbing UV radiations and behaving like melanin, the natural pigment that provides protection against sun skin damages. However, for topical uses, avoiding systemic absorption and substantial penetration of products into deeper skin tissues as is essential. Unfortunately, salicylates usually penetrate the skin. Thus, combining salicylic acid derivatives and fatty acids could lead to synthesize highly hydrophobic compounds with less skin penetration. The main goal here was to prepare new lipid-salicylates for topical uses with structural features enabling to protect and treat the skin. To achieve this goal, we synthesized and characterized novel salicylate fatty acid esters (FTIR, NMR, HRMS), measured their UV absorption ability and *in vitro* sun protection factor (SPF), and evaluated their *in vitro* antimicrobial activities as well as *in vivo* acute toxicity. Twenty-four new fatty acid salicylates esters were synthesized from salicylic acid and fatty acids made from commercially available vegetable oils. These salicylates are UVB absorbers (280-320 nm) with good photostability and their photo-protective activity. They showed good and moderate *in vitro* antibacterial and antifungal activities tests against various Gram-positive and Gram-negative bacteria and fungi (dermaphytes). *In vivo* acute toxicity experiments revealed that mono salicyl-palmitate is a relatively non-toxic substance with the median lethal dose (LD50) greater than 5,000 mg/kg.

**Key words:** Salicylate, fatty acid, UV absorption, microbes, acute toxicity

**Nutritional, phytochemical, antioxidant properties and  $\alpha$ -amylasic activity of pulp and whole fruit of three varieties of Christophine fruits (*Sechium edule*, *Curcubitaceae*)**

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**Abstract**

*Sechium edule* are highly nutritious fruits used in many countries in a variety recipe and even for therapeutic purposes. They have many biological activities and can be used as a functional food due to their chemical composition, and their enhanced antioxidant activity. They are rich sources of bioactive compound, but in our context, they remain essentially used for animal feed. The aim of this study was therefore to contribute to the fight against certain diet-related non-communicable diseases such as diabetes through the consumption of *Sechium edule* fruits. Once the pulp and whole fruit of each of the 3 varieties (spiny green, spineless green variety, yellow variety) were dried and ground, the plant underwent a number of phytochemical, antioxidant, nutritional and anti-diabetic analyses using standard methods. The results showed that protein (12.02%) and cellulose (2.01%) contents are high in the pulp of the spiny green variety and the whole fruit of the spineless green variety respectively. All varieties have low fat contents, ranging from 0.66 to 1.14%. Phenol and flavonoid contents were more found in fruit pulps of spiny green varieties, 90.80 mg/g GAE and 13.73 mg/g CE respectively. Condensed and hydrolysable tannin contents were high in the pulps of the spiny green variety, 1.59 and 1.68 mg/100g respectively. The pulp of the yellow variety showed the lowest values in oxalates, cyanides and phytates. The antioxidant potential (FRAP) was 49.80  $\mu\text{mol trolox/g}$  higher value in the pulp of the spiny green variety. The lowest (best potential)  $\text{IC}_{50}$  values of the DPPH radical scavenging test and  $\alpha$ -amylase inhibition test were 128.70  $\mu\text{g/mL}$  in the whole fruit of the spiny green variety and 34.40  $\mu\text{g/mL}$  in the whole fruit of the yellow variety, respectively. All these results show that *Sechium edule* fruits have many properties, and the green spiny variety is the one with the best properties making it the most suitable for the prevalence of diabetes or for regulating the glycaemic index.

**Keywords:** *Sechium edule*, antidiabetic, antioxidant, nutritional, phytochemical properties.

## Hepatic and Antioxidant Effects of *Tetrapleura tetraptera* fruits (Fabaceae) Against Indomethacin-Induced Liver Failure in Wistar Rats

### Abstract

**Background and justification:** *Tetrapleura tetraptera* is used in Cameroon in ethnomedicine to cure liver diseases and jaundice. **Purpose statement:** The aim of this study was carried out on hepatic and antioxidant effects of the aqueous extract fruits of *T. tetraptera* in rats subjected to indomethacin-induced liver failure. **Methodologies:** Thirty-five (35) rats including males and females were divided into 7 groups of 5 each, namely 4 controls (normal, pharmacological, negative, and positive groups) and 3 test groups. The normal and negative groups received distilled water (5mg/kg). The positive group received silymarin (50 mg/kg) and test groups were given *T. tetraptera* aqueous extract at the doses of 100, 200 and 300 mg/kg. All groups, except the pharmacological and normal groups received concomitantly indomethacin (4mg/kg) three days a week for four weeks to induce hepatotoxicity. Histological sections were examined. **Results:** The body weights of the negative group decreased significantly ( $P<0.001$ ) throughout the treatment period compared to normal group. Co-treatment of indomethacin and the doses (200 and 300 mg/kg) of extract significantly ( $P<0.05$ ) increased liver's weight compared to negative group. Administration of extract (300 mg/kg) significantly ( $P<0.001$ ) decreased the enzyme activity (ALT, ASP, ALP, and T. Bil) compared to negative group. Administration of extract (300 mg/kg) increased significantly ( $P<0.001$ ) the lipid profile (Total cholesterol, TG, HDL-cholesterol and LDL-cholesterol) compared to negative group. Administration of extract significantly ( $P<0.001$ ) alleviated the toxic effect of indomethacin in oxidative parameters (SOD, CAT, and GSH) compared to negative group. These results were confirmed by observation of histological sections of the liver. **Conclusion:** These results therefore demonstrated that aqueous extract of *T. Tetraptera* fruits has potential hepatoprotective and antioxidant effects. **Pharmacological group indicated that aqueous extract (300 mg/kg) is not a toxicant.**

**Key words:** Liver, Indomethacin, Silymarin, *Tetrapleura Tetraptera*

**Aridanin and oleanane-3-O- $\beta$ -D-glucoside-2'-acetamide obtained from *Tetrapleura tetraptera* (Schumach. & Thonn) Taub. (Fabaceae) induces potent apoptotic activity in human prostate cancer cells**

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**Abstract**

*Tetrapleura tetraptera* (Schumach. and Thonn.) Taub. (Fabaceae) is a tropical plant that is used in Cameroon pharmacopeia for the treatment of many cancers including prostate cancer (PCa), which is a major cause of men's death worldwide. The objective of this study was to evaluate the anticancer properties as well as underlying mechanisms of isolates from *T. tetraptera* on DU145, PC3 and LNCaP cancer cell lines. Eight (8) compounds were purified from *T. tetraptera* stem bark extract through silica gel column chromatography (CC) and characterized using spectroscopic techniques (1D and 2D NMR), HRESIMS. Cell growth was assessed by a well-characterized MTT assay, while BrdU and clonogenicity assays provided information on the cell proliferation index. Further, the impact of the compounds on cell cycle progression and cell death were performed through Flow cytometry. Cell adhesion, cell migration and chemotaxis along with some proteins of epithelial-mesenchymal transition (EMT) were assayed. Out of the eight (1 - 8) isolates from *T. tetraptera* only oleanane-3-O- $\beta$ -D-glucoside-2'-acetamide and aridanin showed potent cell growth arrest with an estimated CC<sub>50</sub> of 15, 23, 16 and 17, 26, 16  $\mu$ g/mL on DU145, PC3 and LNCaP cells, respectively. A 15% (DU145) and 25% (LNCaP) increase in apoptotic cells induced by oleanane-3-O- $\beta$ -D-glucoside-2'-acetamide and aridanin at 10  $\mu$ g/mL were noticed. Oleanane-3-O- $\beta$ -D-glucoside-2'-acetamide and aridanin at 2.5 and 10  $\mu$ g/mL reduced the number of cells in S-phase and raised cells in G2/M phase. At the same concentrations, they decreased the number of invading DU145 cells and increased the adherence of DU145 cells to fibronectin and collagen matrix at tested concentrations, accompanied by an increase in integrin  $\beta$ -1 (10  $\mu$ g/mL) and integrin  $\beta$ -4 (2.5  $\mu$ g/mL) expression. Furthermore, a down-regulation of pcdk1, cdk2, Bcl-2, N-Cad, vimentin and cytokeratine 8-18 was noticed while, p19, p27, p53 pAKT, Bax, caspase-3 and E-Cad were up-regulated. This study outlines for the first time, the anticancer ability of compounds oleanane-3-O- $\beta$ -D-glucoside-2'-acetamide (4) and aridanin (6) from *Tetrapleura tetraptera* and proposes their putative mechanisms of action.

**Keywords:** *Tetrapleura tetraptera*, prostate cancer, apoptosis, oleanane-3-O- $\beta$ -D-glucoside-2'-acetamide, aridanin, epithelial-mesenchymal transition

**Conservation of the immune function of key players in the molecular response to *Phytophthora megakarya* infection in *Theobroma cacao*.L and the effect of MgSO<sub>4</sub> supplementation on the expression level of target resistance genes**

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**Abstract**

**Background:** Plants are sessile beings whose only defence against aggression of any kind is their immune potential. The immune response in plants is the set of mechanisms orchestrated by the plant in response to aggression. Apart from antimicrobial secretion in the event of physical aggression, the immune response is subdivided into two main lines: immunity triggered by pathogen-associated molecular patterns (PTI) and immunity triggered by effectors (ETI). Several studies have been carried out on plant immunity with the aim of developing strategies to boost crop resistance to disease. In view of the high importance of the function of key players in the immune response, consensus regions within gene sequences are conserved during speciation. **Methodology:** This study aims to identify the key players in the immune response shown to be necessary for plant defense against oomycetes, to assess the degree of evolution and to identify the consensus regions of these genes by molecular phylogeny methods, and to evaluate the conservation of the function of these genes by RT-qPCR in MgSO<sub>4</sub><sup>2-</sup> supplemented *Theobroma cacao* to *Phytophthora megakarya* infection. **Results:** Literature research enabled us to identify a number of receptors (LECRK IX.1 and BAK1) involved in pathogen-associated molecular pattern perception (PAMP). Molecular phylogeny enabled us to identify 17 and 04 paralogs respectively in the *T. cacao* genome. 04 consensus regions were identified on the two genes among orthologs from 09 plant species. The expression level after PCR was higher in the ICS40 genotype (susceptible) than in the SCA6 genotype (tolerant), and MgSO<sub>4</sub><sup>2-</sup> was shown to be a positive regulator of expression. **Conclusion:** This study would be important in annotating the *T.cacao* genome, in discriminating between plants according to their differential resilience, and in adopting sustainable and environmentally responsible means of control.

**Keywords:** PTI, ETI, PAMP, LECRK IX.1 BAK1 *Phytophthora megakarya* and *Theobroma cacao*

**Insecticidal effect of *Calotropis procera*, *Eucalyptus camaldulensis* and *Tithonia diversifolia* powders on the foraging activity of *Apis mellifera* on *Vigna unguiculata* flowers in Dang (Ngaoundéré - Cameroon)**

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**Abstract**

**Introduction:** In order to evaluate the insecticidal effect of *Calotropis procera*, *Eucalyptus camaldulensis* and *Tithonia diversifolia* powders on the foraging activity of *Apis mellifera* on *Vigna unguiculata* flowers, studies were carried out in Dang, from June 22 to September 25, 2022. **Methodology:** During the rainy season, 44 plots of 4x3.5 m each were distributed according to a randomized complete block design model, including 04 untreated plots, 04 treated with parastar, and 36 plots treated with 10% aqueous leaf extracts, 20% and 30% sprayed separately. And 4 groups of flowers were randomly selected: (1) free, (2) protected from insects, (3) free exclusively from *A. mellifera* and (4) protected from insects. The foraging activity of *A. mellifera* was assessed in each plot. **Results:** 04 species of pollinating insects have been inventoried on cowpea flowers, *A. mellifera* occupies first place with 50% of visits. The activity of this bee is from 6 - 13 hours with a peak of activity between 8 - 9 hours. they collected nectar and pollen. The average abundance per 1000 flowers, visit duration and average foraging speed of *A. mellifera* were higher in plots treated with *E. camaldulensis* and *C. procera* than in other plots. **Conclusion:** Under the effect of botanical insecticides, *A. mellifera* significantly increased the fruiting rate, the average number of sheaths per fruit and the percentage of normal seeds.

**Keywords:** *Apis mellifera*, *Vigna unguiculata*, bio - insecticide, yield, Dang

**Two phenolic compounds (biscoumarin and biflavonoid) from *Ormocarpum kirkii* S. Moore (Fabaceae) exhibit anticancer properties against human prostate cancer cells**

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**Abstract**

Prostate cancer (PC) is a significant global health challenge in both developed and developing nations. To contribute to the development of new and safe anticancer agents, the isolates (1-14) from *Ormocarpum kirkii* were investigated on human prostate cancer cells. Cell growth was determined based on the MTT assay. Cell cycle and cell death mechanism were analyzed through Flow cytometry while western blotting helped to express some apoptosis and cell cycle regulatory proteins. In addition, cell migration, cell invasion, cell adhesion and chemotaxis were assayed for the anti-metastatic potential of isolates. Extract (IC<sub>50</sub>: 190, 180 and 178 µg/mL), and compounds 6 (IC<sub>50</sub>: 40, 35 and 38 µg/mL) and 12 (IC<sub>50</sub>: 40, 36 and 32 µg/mL) reduced DU145, PC3 and LNCaP cell survival. Compounds 6 and 12 inhibited cell proliferation and colony formation at 5 and 20 µg/mL. They increased the number of apoptotic cells, and cells in the S and G2/M phases in DU145 cells. Both compounds inhibited the number of DU145 cells invading through the matrigel membrane. Only compound 12 at 20 µg/mL significantly ( $p < 0.05$ ) abrogated the DU145 cell migration and increased cell adhesion for collagen as well as the expression of integrin B-1 while, it decreased integrin B-4 expression. Compound 12 down-regulated cdk1, pcdk1, cdk2, cyclin A, Bcl-2, N-cad, p-AKT, vimentin and p-Rictor and up-regulated Bax, p53, caspase-3 and E-cad proteins. Compounds 6 and 12 from *Ormocarpum kirkii* have *in vitro* anticancer activity through the intrinsic pathway of apoptosis and invasion inhibition.

**Keywords:** Prostate cancer; *Ormocarpum Kirkii*; Phenolic compounds; Cytotoxicity; Cell cycle arrest; Apoptosis

**Phytochemical screening, *in silico* molecular docking of an isoflavone, *in vitro* antioxidant/anti-inflammatory activities and *in vivo* pharmacological potentials from *Pterocarpus soyauxii* (Fabaceae) Taub heartwood aqueous extract macerate against neurological disorders linked to postmenopause in a rat model**

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**Abstract**

**Background and justification:** *Pterocarpus soyauxii* (PS) is used in Cameroonian traditional medicine to alleviate postmenopausal symptoms. Previous studies showed that it possesses estrogenic-like activities on vaginal atrophy and tissue-dependent potential. UHPLC of its aqueous extract revealed the presence of phytoestrogen like 7-O-acetylformononetin, Khirinone A, 3',5'-dimethoxy-4-stilbenol, However, there is no evidence of its effects on neurological disorders linked to post-menopause (ND-PO). **Purpose statement:** the current study aimed to 1) investigate the phytochemical profile of PS aqueous extract, 2) assess the neuroprotective potential of PS aqueous extract in rats, and 3) explore possible underlying pathways. **Methodology:** To warrant aim 1, colorimetric assays were employed to determine the phytochemical profile of PS aqueous extract. To guarantee aim 2, the activities of PS aqueous extract on behavioral parameters, neuronal signaling, and integrity in an 84-day ovariectomized rats' model were assessed. To guarantee aim 3, molecular docking was performed to assess the binding affinity of 7-O-acetylformononetin, an isoflavone contained in PS, to the active sites of AChE, MAO-A, and GABA-T. Besides, the anti-AChE/BchE, antioxidant, and antiinflammatory effects of PS were assessed by *in vitro* tests. **Results:** PS aqueous extract contains polyphenols ( $656.58 \pm 9.18$  mgEAG/100gMS), flavonoids ( $201.25 \pm 5.52$  mgEQ/100gMS), tannins ( $18.42 \pm 1.25$  mg/100gMS), and saponins ( $6.37 \pm 0.14$  mg/100gMS). It slows down anxiety, depressive disorders, cellular disorganization, and neuronal death in the hippocampus, dentate gyrus, and cortex. *In silico* model was a powerful tool to assess the 7-O-acetylformononetin's, ability to cross the BBB and strongly bind and inhibit/activate AChE, MAO-A, and GABA-T. **Conclusion:** By combining GABAergic, cholinergic, and serotonergic modulation, PS aqueous extract also possesses remarkable anti-AChE/BchE *in vitro* and induced antioxidant and anti-inflammatory potential in macrophages. This can partially explain their traditional medicinal use.

**Keywords:** Menopause, neurological disorders, *Pterocarpus soyauxii*, antioxidant, anti-inflammatory

**Comparative Anti-plasmodial and Cytotoxic Activities of *Coffea arabica* and *Coffea canephora* alkaloids extracts**

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**Abstract**

**Introduction:** The increase of Plasmodial parasite resistance to available antimalarial drugs underscores the emergency to research alternatives to new drugs development. Medicinal plants traditionally used against malaria are potential source of new molecules; however, their efficiency must be scientifically validated. **Objectives:** The present study is therefore aimed at evaluating the anti-plasmodial potential and the cytotoxicity effect of alkaloids from *Coffea Arabica* and *Coffea canephora*. **Methods:** Alkaloids were extracted in acidic medium from powder of the dry leaves of each plant. Characterization of alkaloids was carried out using Mayer and Wagner reagents. Anti-plasmodial tests based on the fluorescence of SYBR green were carried out on two isolates of *Plasmodium falciparum*. The revelation was made by flow cytometry. Toxicological evaluation of the extracts had been carried out through hemolysis test, erythrocyte sensitivity as well as cytotoxicity on Vero cells and Raw cells using spectrophotometry. **Results:** Evaluation of anti-plasmodial activity showed that *C. arabica* was active on isolates Pf3D7 and PfDd2 with resistance index of 0.78 and IC50 values of  $9.53 \pm 1.51 \mu\text{g/mL}$  and  $7.48 \pm 0.93 \mu\text{g/mL}$  respectively; On the other hand, *C. canephora* showed a weak activity on the strain Pf3D7 (IC 50  $>100\mu\text{g/mL}$ ) and a moderate activity on the strain PfDd2 (IC50 =  $85.55 \pm 1.17 \mu\text{g/mL}$ ). The toxicological profile was favorable for both extracts concerning hemolysis test (HC 50  $>1000 \mu\text{g/mL}$ ) and for cytotoxicity test (CC 50  $>30 \mu\text{g/mL}$ ). **Conclusion:** The present study revealed that these extracts could constitute glimmers of hope by offering an alternative to the management of malaria

PCBS-HZEC30

**First indoor residual spraying in Cameroon highlights a great potential of Fludora fusion (mixture of deltamethrin and clothianidin) to better control the wild pyrethroid-resistant malaria vectors *Anopheles funestus* and *An. gambiae***

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**Abstract**

Rapid spread of pyrethroid resistance in the major malaria vectors threatens the efficacy of vector control tools in Africa with increase malaria transmission. New interventions such as Fludora® fusion and interceptor G2 have been introduced in public health to mitigate this challenge. We evaluated in field the efficacy of Fludora fusion against pyrethroid-resistant malaria vectors from Cameroon and assessed the potential cross-resistance. The performance and residual efficacy of Fludora® Fusion was evaluated in experimental huts in comparison with deltamethrin and clothianidin applied alone. CDC bottle tests were used to determine the susceptibility profile of various mosquito strains. The L119F-GSTe2 and L1014F Kdr-w markers were genotyped to established their impact on the efficacy of Fludora® Fusion. All *Anopheles* species tested were fully susceptible to clothianidin and clothianidin-deltamethrin mixture in CDC bottle assay; while resistant to deltamethrin (36% and 78% for *An. gambiae* and *An. funestus* respectively). Fludora® Fusion and clothianidin induced significantly higher mortality rates in experimental huts than deltamethrin (62.83%, 64.42% and 42.42% respectively with free flying *An. funestus* from Elende); however, lower mortality rates were recorded against *An. gambiae* from Nkolondom (50%, 45.56% and 26.68% respectively). *In-situ* cone test on the wall showed a high residual efficacy of Fludora® Fusion and clothianidin on the susceptible Kisumu strain (>12 months) and moderate one on the highly pyrethroid-resistant *An. gambiae* strain from Nkolondom (6 months). Although no association was observed for both L119F-GSTe2 and L1014F Kdr-w pyrethroid-markers and the ability of mosquitoes to survive Fludora Fusion exposure. This study highlights that Fludora fusion, has good potential of controlling pyrethroid-resistance mosquitoes with prolonged residual efficacy. This could be therefore an appropriate tool for vector control in several malaria endemic regions.

**Keywords:** Malaria, insecticide resistance, indoor residual spraying, Fludora fusion, clothianidin, L119F-GSTe2 mutation, kdr.

**Biofilm Formation Ability, Virulence Factors Analysis and Antibiotic Resistance Profile of Three *Staphylococcus spp.* Isolates from Urine and Synergistic Effects of Combination of Bioactive Natural Products with Currents Antibiotics.**

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**Abstract**

**Background.** According to the World Health Organization, the incidence of urinary tract infections is 150 million per year worldwide. This increase is explained by failures of antibiotic therapy in their management as well as by the ability of the uropathogenic bacteria to express virulence factors including the biofilm, giving them a multi-resistant phenotype (MDR). This study aimed to evaluate the prevalence and bacteriological profile of uropathogens at the Dschang district hospital and then identify natural substances that can serve as adjuvants to antibiotics to fight against multidrug resistance associated with biofilm. **Methods.** A cross-sectional study was conducted at the Dschang District Hospital over 5 months from March to July 2021 during which urine samples were collected and the uropathogens were identified using Chromagar orientation media and Mannitol salt agar then the confirmation of the identification of the isolates was done by API20E identification system. The resistance profile of the isolates was established using the antibiogram method. The virulence factors were detected using the standard methods. Then, the anti-biofilm activity of natural substances was assessed using the safranin staining method. The checkerboard method was used for combination studies. **Results.** A total of 62 isolates of *Staphylococcus spp.* were isolated from 342 urine samples with a prevalence of 18.12%. A total of 76.36% of the isolates presented an MDR phenotype with major resistance to cephalosporin and cefazolin antibiotics. Most isolates were moderate biofilm formers, with 44.44% positive for phospholipase, 31.75% for esterase, and 30.16% for hemolysin. Plumbagin, curcumin, berberine, and thymol showed antibiofilm activity activities ranging from 2-256, 64-1024, 64-512 and 64-1024 µg/mL respectively. The synergistic effects were obtained between the combination of these natural substances with antibiotics. **Conclusions.** Combination therapy could be a promising strategy to fight against multi-resistant uropathogenic bacteria.

**Keywords:** Urinary tract infections, *Staphylococcus spp.*, virulence, natural substances, combination.

**ART restores progesterone and testosterone imbalances in women of childbearing age in Cameroon**

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**Abstract**

There is a paucity of data on hormonal regulation across the ovarian cycle in virally suppressed Women Living with HIV (WLHIV). Hormonal levels influence fertility and HIV-related immunological and virological factors. This study aimed to evaluate the effects of viral suppression on fluctuations in Progesterone and Testosterone levels in women of childbearing age on ART across the ovarian cycle. The study enrolled 33 women with and 18 women without HIV. Progesterone and Testosterone levels were assessed during the early (~Day 1) and late (~Day 14) follicular phases of the ovarian cycle. Hormonal levels were assessed using the Luminex Magpix instrument. Progesterone levels in WLHIV and those without HIV on days 1 and 14 were not different ( $P>0.05$ ). On Day 14, testosterone levels were higher ( $P=0.02$ ) in WLHIV. When stratified by suppression state, hormonal levels were not different in the suppressed group compared to the HIV-negative group on day 1 and day 14. The virally unsuppressed women (viremia  $\geq 40$  Cps/ml) had significantly higher levels of progesterone ( $P= 0.02$  for day 1 and 14 respectively) and testosterone ( $P=0.02$  for day 14) than virally suppressed women (viremia  $<40$  Cps/ml). This study demonstrates the need to maintain WLHIV virally suppressed as blips might cause hormonal upsets which might affect their health.

**Keywords:** Viral suppression, Progesterone, Testosterone, Ovarian cycle.

Effect of restraint-induced psychogenic stress on some parameters of *ex copula* ejaculation in the rat

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**Abstract**

**Context:** Stress is omnipresent in life and is more prominent in the etiology of male infertility. However, studies showing its involvement in the occurrence of ejaculatory disorders are rare. **Objective of the study:** the aim of this study was to evaluate the impact of psychogenic stress induced by restraint on some parameters of ejaculatory function in sexually experienced rats. This study will provide a better understanding of the mechanisms involved in these disorders in order to improve patient care. **Material and methods:** 72 sexually experienced rats were used in this study for the induction of restraint stress (8h/day) following three periods (7, 14 and 28 days). This rats were divided into 3 groups of 8 animals each: control (C) (unstressed animals), stressed (stressed animals) (RS) and satellite (SAT) (animals stressed and left unstressed for an equivalent period). Throughout the experimentation, behavioral tests (elevated plus-maze and light-dark) were performed before and after stress induction in order to assess the animals' state of anxiety . In additional, the parameters of *ex copula* ejaculation were determined only at the end of each period after a section of the spinal cord in the near of the sixth thoracic segment (T<sub>6</sub>). Urethral (US), tactile (TS) and pharmacological (DOPA) stimulations were applied to the bulbospongiosus muscle and the electromyogram obtained was used to determine the latency and the number of contractions of each muscle. After the sacrifice, the plasma obtained was used for the corticosterone assay and the brain removed was used for histological sections in the median preoptic area of the hypothalamus. **Results** We obtained a significant decrease in the number of entries into the open arms (NEOA) and the time spent in these arms (TOA) of the elevated plus-maze, coupled to an increase in the time spent in the dark compartment of the light-dark box (Table I and II) in stressed animals compared to control.

**Transmission of Soil-Transmitted Helminthiasis (STH) in the Adamawa Region, Cameroon, almost interrupted after seventeen years of uninterrupted preventive chemotherapy: way forward**

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**Abstract**

Soil-transmitted helminthiasis remains a major public health concern in Sub-Saharan Africa, including Cameroon where more than 10 million of people are infected in all the 10 Regions. This disease bears an important burden, especially among school-aged children. The control of this parasitic disease relies almost exclusively on annual deworming campaigns of at-risk populations using Benzimidazoles (Albendazole or Mebendazole). The Cameroon National Program for the Control of Schistosomiasis and Soil Transmitted Helminthiasis (PNLSHI) has been established in 2005 and treatments launched in all the 10 Regions since 2007, including in the Adamawa Region where STH prevalence was estimated at 17.6% in 2010. Despite this control sustained efforts, monitoring and evaluation data are very scanty for this Region; the current epidemiological situation of STH is therefore unknown and it appears difficult to take any action towards elimination. This study therefore aimed to assess the current status of helminthiasis in Adamawa region in order to better focus control efforts. Stool samples were collected from 474 participants living in the 10 districts of the region and analyzed using Mini-flotac technic. A total of 13 participants out of the 474 examined excreted STH eggs resulting in an overall infestation rate of 2.7% (95% CI: 1.6% - 4.6%). *Ascaris lumbricoides* (0.2%; 95% CI: 0.0% - 1.2%), and *Strongyloides stercoralis* (2.5%; 95% CI: 1.5% - 4.4%) were the two STH species found. Another intestinal helminth (*Enterobius vermicularis*: 0.2%; 95% CI: 0.0% - 1.2%) was also identified. This study revealed a significant reduction of STH infection rate thanks to control efforts, especially preventive chemotherapy, even though a residual transmission was still occurring. Ongoing preventive chemotherapy should be sustained and likely coupled to additional control efforts such as health and hygiene education for the last miles in the path toward STH elimination in the Adamawa Region.

**Keywords:** Soil-transmitted helminthiasis, Preventive Chemotherapy, Mini-FLOTAC, Adamawa Region, Cameroon

**Sensitivity profile of fungal pathogens isolated from respiratory samples in Yaounde.**

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**Abstract**

Respiratory tract infections are the leading cause of death among all infectious diseases. The isolation of *Candida* spp. from respiratory tract secretions of non-immunocompromised, mechanically ventilated patients varies between 20% and 55%, but it might represent colonisation rather than infection. appropriate antifungal therapy has been shown to be an important predictor of favorable outcome for patients with invasive fungal infections. Therefore, the development of reliable diagnostic measures for the detection of invasive pulmonary candidiasis is crucial. The objective of our study was to bring out the sensitivity profile of fungal pathogens isolated from respiratory samples in Yaounde. We carried out a transverse and descriptive study during a 6 month period. A macroscopic, microscopic, fungal culture of the sputum and BAL was carried out and a germ tube test, fungal sensitivity as well as specie identification using the ID 32 C gallery was carried out on the positive cultures. 300 patients participated in this study. They had mean age  $\pm$  standard deviation of  $41.59 \pm 17.5$  years and extremities of 1 and 91years. The male/female ratio was 2:1 Fungal infection was positive in 127 patients, 75 *Candida albicans*, 25 *Cryptococcus humicola*, 10 *Candida tropicalis*, 6 *Candida krusei*, 4 *Candida famata*, 4 *Candida sake* and 3 *Cryptococcus curvatus*.The total drug susceptibility was ; Nystatine (98.47%), Amphotericine B (86.91%), Miconazole (55.42%), Econazole (52.61%), Ketoconazole (52.57%) and Fluconazole (14.42%). Of the 300 pateints, 71 had tuberculosis, 24 were HIV positive and 6 were diabetic. We had 5 patients with HIV, tuberculosis and fungal co-infection, 16 with HIV and fungal co-infection and 6 with HIV and tuberculosis co-infection. This study showed a relative high prevalence (42.33%) of the colonisation of the respiratory tract by fungal pathogens.

**Key words :** Respiratory tract infections, candida species, fluconazole, Nystatine, fungal pathogens.

**Contribution of the intensive agriculture to the constant malaria transmission in the Manjo districts, Littoral Region, Cameroon**

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**Abstract**

Agriculture is the main income-generating activity for rural communities in Cameroon. However, the increased and uncontrolled use of insecticides and/or pesticides by the local farmers and corporations is associated with the high levels of insecticide resistance in wild mosquito populations, including vectors of malaria, the main endemic disease in Cameroon. As part of the entomological surveys carried out in 2022 and 2023 in the commune of Manjo, which is home to PHP's plantations, we determined the malaria transmission profile and the resistance status of *Anopheles gambiae* s.l. mosquitoes to insecticides (pyrethroids and DDT) in rural areas (Manengoteng) and suburban areas (Manjo). A total of 1754 mosquitoes (1057 in Manjo and 697 in Manengoteng) were collected using the night landing catches on human volunteers. *Anopheles* mosquitoes accounted for 85% of the total sample in Manengoteng and 3.6% in Manjo, with average entomological inoculation rates per night varying by periods from 0 to 0.56 pi/H and from 0 to 0.23 pi/H, respectively. The WHO bioassays performed on the F0 adults of *Anopheles gambiae* s.l. revealed a phenotype resistance status against pyrethroids (0.75% permethrin, 0.05% deltamethrin) and 0.5% DDT, with mortality < 21% in Manengoteng and < 56% in Manjo ( $p < 0.0001$ ). This confirmed insecticide resistance in malaria vectors associated with intensive agricultural settings is an indication that it is essential to adequately address the management and use of pesticides in agriculture, as critical prerequisite to achieve the global objective of malaria elimination in Cameroon.

**Key words:** Vector, malaria, resistance, insecticide, agriculture.

Etude épidémiologique, clinique et thérapeutique des inflammations oculaires et annexielles non traumatiques à Yaoundé - Cameroun

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Résumé

**Introduction** : Les inflammations de l'œil et des annexes [IOA] sont un motif fréquent de consultation. Toutefois, il n'existe pas de consensus quant à leur prise en charge. L'objectif général était d'étudier le profil épidémiologique, clinique et thérapeutique des IOA dans le service d'ophtalmologie au Centre Hospitalier Universitaire de Yaoundé. **Méthodes** : Une étude transversale descriptive a été menée sur 824 dossiers de patients entre janvier 2020 à février 2022. Les paramètres sociodémographique, clinique et thérapeutique ont été collectés et analysés grâce au logiciel SPSS. **Résultats** : La prévalence des IOA était de 20,57%. L'âge médian était de 22 ans [9-37 ans] et les femmes étaient majoritaires [57,6%]. Les principales IOA étaient les atteintes de la conjonctivite [n=627], des annexes [n=192] et de la cornée [n=128]. La conjonctivite allergique [n=364] et la forme infectieuse [n=224] prédominaient dans les atteintes de la conjonctive. Concernant les atteintes annexielles, la blépharite [n=89] et les chalazion/orgelet [n=50] étaient les plus fréquents. Les uvéites [n=27] et les inflammations de la sclère [n=36] étaient moins représentées. Le prurit [61,3%] et la rougeur oculaire [60%] étaient les symptômes les plus fréquents. Un examen paraclinique a été demandé dans 4,9% des cas. L'automédication avait été effectuée dans 22% des cas. Le traitement médical était dominé par l'usage de l'antibiothérapie [n=796]. Un traitement chirurgical était nécessaire dans 3,6% des cas. Le sexe masculin [p=0,03] et l'âge inférieur à 18 ans [p<0,001] étaient des facteurs de risque de la limboconjonctivite endémique des tropiques. **Conclusion** : les IOA ont un diagnostic majoritairement clinique et le traitement médical est le plus prescrit. Toutefois, l'automédication précède la prise en charge en milieu hospitalier dans un quart des cas. L'établissement d'un consensus de gestion des IOA et le renforcement de la sensibilisation contre l'automédication améliorerait la prise en charge.

Mots-clés : Inflammation, œil, annexes, traitement

**Restraint stress induces anxiety, estrous cycle and ovarian hormones disorders in female rat: The involvement of the CA1, CA3 regions of the hippocampus**

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**Abstract**

In the world, women are three to four times more likely than men to develop stress-related psychopathological disorders such as reproductive dysfunctions. Studies presenting the involvement of the hippocampus in stress-induced infertility. This study was to evaluate the effect of restraint stress on hippocampus, anxiety and reproductive functions in female rats. 30 adult females' rat of Wistar strain presenting 5 consecutive regular estrous cycles were selected, divided into 3 groups of 10 animals each and subjected to 8 hours of stress per day for 0 week, 2 weeks and 4 weeks respectively. Exploratory, anxiety, and estrous cycle parameters, ovarian hormone levels, histological and histomorphometric examinations of the hippocampus were evaluated in this study. Significant decreases in exploratory activity and increases in the anxiety parameters were observed in the stressed rats compared to the control. Moreover, irregularities in the estrous cycle parameters characterized by a significant increase in metestrus/diestrus, estrus and proestrus coefficients were noticed in stressed females. Significant decreases in serum estradiol (65%) and progesterone (13,10%) levels coupled to histological alterations and decreases in the number of neurons in the CA1 (26%) and CA3 (15,43%) regions of the hippocampus were also observed in stressed animals compared to the control. All these alterations were more significant after 4 weeks of stress. The hippocampus plays a crucial role in stress-induced anxiety disorders and reproductive dysfunctions in rats.

**Key words:** Stress, estrous cycle, hippocampus, estradiol, progesterone, rat

## Iron profile, inflammation in sickle cell patients in 02 hospitals in Cameroon

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### Abstract

**Background and justification.** Major sickle cell syndromes are the most common hemoglobinopathy in the world. It is considered to be a real public health problem. The sickle cell patients are subjected to several factors causing inflammation and the iron metabolism elevation of precursors in correlation with the deregulation of its metabolism. Inflammation in patients with major sickle cell syndromes in Cameroon, identify the factors associated with inflammation and raise the consequences for the patient including the iron profile and the profile of the hemogram. **Materials and methods:** We conducted an analytical cross-sectional study over 03 months. The patients with major sickle cell syndromes interned and/or followed at the Hematology Department of the Regional Hospital of Bafoussam and the Central Hospital of Yaoundé have been recruited. Diagnosis of inflammation was made by determining CRP, IL6 and ferritin concentration and hematological parameters were evaluated in the latter. Martial assessment in participants were determined. Statistical analysis of the data was performed; Univariate and multivariate logistic regression analyses allowed to identify factors associated with inflammation in patients, using the statistical tool R version 4.1.1.. The comparison of proportions was made with the chi-square test when the expected numbers were greater than 5 and the Fisher test when not. **Results.** The frequency of inflammation in the population was 42.3%. Hyperferritinemia was significantly greater ( $p < 0.001$ ) in patients with inflammation compared to the non-inflammatory patients (96.8% and 76.7% respectively). Patients with inflammation showed a significant elevation of ferric markers ( $p < 0.05$ ). In addition, ferritin and IL6 elevation are associated with inflammation during major sickle cell syndromes respectively (Or = 4.96; 95% CI [1.15-36.42];  $p = 0.056$ ) and (Or = 6.23; 95% CI [1.43-45.96];  $p = 0.030$ ). **Conclusion.** Patients with Major sickle cell syndrome in inflammation are subject to a deregulation of iron metabolism causing iron overload. Hence the need of controlling inflammation and iron in Major Sickle Cell Syndrome is necessary.

**Keywords:** sickle cell anemia, iron profile, inflammation, associated factors.

**Multidrug-Resistant (MDR) and Extended-spectrum  $\beta$ -lactamase producing *Escherichia coli* isolated from slaughtered pigs and slaughterhouse workers in Cameroon: A One Health Perspective**

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**Abstract**

Extended-spectrum  $\beta$ -lactamases producing *Escherichia coli* remain a global public health threat, especially for developing countries. This study aimed to determine the prevalence, risk factors, resistance profile, and clonal relatedness of ESBL-*Escherichia coli* isolated from pigs and abattoir workers. A total of 375 rectal samples of pigs arranged in 125 pooled samples and 7 faecal samples of exposed workers have been collected. Samples were cultured and ESBLs producer's strains were double screened using selective ESBL Chromagar™ and a double disc synergy test. Resistance genes including *bla*<sub>CTX-M</sub>, *bla*<sub>SHV</sub>, *bla*<sub>TEM</sub>, and *tet(A)* were detected using the polymerase chain reaction method. The prevalence of ESBL-Ec isolated among exposed workers and slaughtered pigs were 71.4 % (n=5/7) and 69.6 % (n=87/125) respectively. The multivariate and univariate logistic regression analysis showed a significant association between breeding origin and sampling time points ( $p=0.001$  and  $p<0.001$  respectively) with ESBL-Ec carriage in pigs. ESBL-Ec strains exhibited a high resistant to tetracycline (86.7%) and trimethoprim-sulfamethoxazole (81.9%). However, gentamicin (3.8%), chloramphenicol (8.6%), and fosfomycin (14.3%) showed good activities. The *bla*<sub>CTX-M</sub> was the most prevalent resistant gene among exposed workers (n=6, 100%) and pigs (n=80, 80.8%) followed by *bla*<sub>TEM</sub> (33.3% each). In addition, *tet(A)* was also predominant in both humans (n=2, 33.3%) and pig (n=48, 48.5%). ESBL-Ec strains were found among slaughtered pigs and exposed workers in both abattoirs with more than 80% of similarity. The study concluded that pigs remain an important reservoir of MDR-ESBL-Ec, suggesting that the One Health approach needs to be addressed in this setting.

**Keywords:** *Escherichia coli*; antimicrobial resistance; pigs; exposed workers; CTX-M.

**Risk factors associated with the spatial distribution of priority zoonoses in Cameroon from 2012 to 2021 in animal health**

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**Abstract**

Geographic information systems and risk mapping are important tools to produce spatial predictive maps to better understand the ecological, epidemiological and environmental factors that affect the transmission of infectious diseases. The objective of this study was to contribute to a better understanding of the risk factors associated with the spatial distribution of areas conducive to the transmission of priority zoonotic diseases in Cameroon from 2012 to 2021 in animal health. Ecological niche modeling using MaxEnt was used to determine the risk factors most associated with the spatial distribution of Highly Pathogenic Avian Influenza, anthrax, rabies and bovine tuberculosis. It was found that the model used is excellent with a mean value of the Area Under the Curve (AUC) equal to 0.903. The accessibility variable is very important, with a contribution percentage of 85.4% for avian Influenza, 67.9% for anthrax, 73.9% for bovine tuberculosis and 80.2% for rabies. The specific variables that most contributed by zoonotic disease were: solar radiation (11.7%), chicken density (0.9%) and precipitation in the coldest quarter (0.8%) for Avian Influenza; nice wind breeze (Wind04) (14.8%), precipitation in the coldest quarter (13.4%), good wind breeze (Wind05), and precipitation in the driest month (0.1%) for anthrax ; average temperature of the coldest quarter (9.1%), sheep density (6.5%), annual precipitation (4.8%), precipitation of the driest month (2.3%) and precipitation of the wettest month (0.9%) for bovine tuberculosis; annual temperature variation (2.8%), temperature seasonality (2.4%), precipitation of the coldest quarter (1.9%), and average diurnal variation (1.1%) for rabies. The departments of the Far North, North, North-West, West and Central regions are the areas at greatest risk of priority zoonotic diseases in Cameroon. This study provided basis for predicting, from the analyses made, the highest risk areas for the zoonotic diseases studied, and to enable policyinformed decision making to strengthen surveillance.

**Keywords:** Zoonoses, Risk, Ecological niche, MaxEnt, Area Under the Curve (AUC).

**Relation between haptoglobin polymorphism and oxidative stress status, lipid profile and cardiovascular risk in sickle cell anaemia patients**

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**Abstract**

Haptoglobin is a protein involved in protecting the body from the harmful effects of free hemoglobin. The haptoglobin (Hp) gene located on chromosome 16q22 exhibits a polymorphism that can impact its capacity to inhibit the deleterious oxidative activity of free haemoglobin, as well as cardiovascular risk. The aim of this study was to determine the Hp polymorphism influence on oxidative stress, lipid profile and cardiovascular risk in Cameroonian sickle cell patients (SCP). For this purpose, Hp genotypes of 102 SCP (SS), 60 healthy individuals (AA) and 55 subjects with sickle cell trait (AS) were determined by Allele-specific PCR, and the blood parameters were determined using standard methods. The results showed that Hp2-2 genotype was significantly ( $p < 0.05$ ) represent in SS (54%) than in AS (42%) and AA (38%). Levels of catalase and cell reactive protein were higher, while levels of total antioxidant capacity, triglycerides, low-density lipoprotein cholesterol, blood pressure, Framingham score, and body mass index were lower in the SCP. These parameters appeared to be unrelated to the haptoglobin genotypes. SCP with Hp1-1 genotype present a higher oxidative stress index ( $0.53 \pm 0.31$ ) than those with Hp2-1 ( $0.33 \pm 0.18$ ). Lipid profile and cardiovascular risk were not significantly different comparing various Hp genotypes in SCA patients. In conclusion, Haptoglobin polymorphism did not affect lipid profile, cardiovascular risk and oxidative stress status of SCP. Nevertheless, SCA patients with Hp1-1 genotype tended to be more prone to oxidative stress than those with Hp2-1.

**Keywords:** Haptoglobin, lipid, oxidative stress, polymorphism, sickle cell anemia

**Dolutegravir based-regimen ensures good virological and immunological responses of HIV-1 infected adolescents in Cameroon**

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**Abstract**

**Background:** The World Health Organization has preconized Dolutegravir, an integrase inhibitor, in first line therapy for all patients including adolescents. This transition from childhood to adulthood is somehow fragile, because at this age group they are left on their own to take drugs, they are more and more independent and more likely to be less adherent to their treatment. Our study aims to evaluate the virological and immunological response of HIV-1 infected adolescents under Tenofovir-Lamivudine-Dolutegravir (TLD) drug combination in Cameroon. **Methods:** We carried out a cross sectional study at the Chantal BIYA Reference Center from April 2022 to April 2023 on HIV-1 infected adolescents in 3 hospitals in the Center region of Cameroon. We evaluated the virological response using plasmatic viral load (VL) and immunological response using CD4 and CD8 count and CD4/CD8 ratio. Statistical analysis was done using SPSS, Chi square of Pearson was used to evaluate the association between variables and Spearman to evaluate correlations. P value <0.05 was considered statistically significant. **Results:** Our study population was composed of 51 adolescents under TLD with a predominance of males (51 %). Median age was 15 [12 - 18] years. The median VL value was 40 [1 - 128] copies/ml, 37,3% had values of viremia less than 40 and 82,4% were virally suppressed. The median values were 705 [584 -927] cells/mm<sup>3</sup> for CD4 cells, 902 [612 - 1231] cells/mm<sup>3</sup> for CD8 cells and of 0,86 [0,58 - 1,17] for CD4/CD8 ratio. **Conclusion and Recommendations:** This study reveals a good immunological and virological success of TLD drug combination in HIV-1 vertically infected adolescents. A few cases of treatment failure are attributed to poor adherence. Therefore, adherence must be strengthened in this sensitive age group to ensure sustainable use of TLD.

**Key words:** HIV-1, ART, Adolescents, Dolutegravir

PCBS-EQCC44

Distribution des invertébrés dans le lac Carrière De Ngoa-Ekele : importances des variables abiotiques

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Abstract

**Introduction** : Parmi les hydrosystèmes, les Lacs constituent une importante réserve en eau douce sur la planète. De plus, leurs eaux hébergent de nombreux organismes animaux et végétaux qui entretiennent des relations étroites avec leur milieu de vie (Amaïrd *et al.*, 2008) l'étude des macroinvertébrés qui sont des bioindicateur de la qualité des eaux, permet de mieux appréhender la caractérisation, la santé et la richesse de nos milieux aquatiques. De plus, l'influence des paramètres physico-chimiques sur la distribution des macroinvertébrés a été étudié. **Méthodologie** : Les prélèvements ont été réalisés suivant une fréquence mensuelle. Les paramètres physicochimiques ont été mesurés suivant les recommandations de Rodier, les macroinvertébrés aquatiques ont été échantillonnés suivant l'approche multihabitat et les microinvertébrés aquatiques ont été échantillonnés entre la surface et 0,5 mètre de profondeur pour les pluricellulaires (zooplanctons) et par la méthode directe dans plusieurs multihabitat pour les unicellulaires (ciliés). **Résultats** : Les analyses physicochimiques révèlent que les eaux étudiées sont peu oxygénées ( $34,88 \pm 7,96\%$ ), acides à neutre, pauvres en matières organiques oxydables ( $5,79 \pm 2,68$  mg/L), en composés azotés ( $\text{NH}_4^+$  la valeur moyenne est de  $0,49 \pm 0,31$  mg/L ;  $\text{NO}_3^-$  la valeur moyenne est de  $4,18 \pm 0,88$  mg/L) et très minéralisées ayant une forte valeur pour la conductivité ( $921,90 \pm 82,74$   $\mu\text{s}/\text{cm}$ ), montrant ainsi que les eaux du lac carrière de Ngoa-ékélé sont de qualités passables. Un total de 9251 individus d'invertébrés (macro et microinvertébrés) a été identifié et réparti en 30 familles. 11 appartiennent aux ciliés, 3 appartient aux rotifères, cladocères, copépodes et 16 appartiennent à des macroinvertébrés. Les indices de Shannon & Weaver ( $H'$ ) et d'équitabilité ( $J$ ) de Pielou montrent une plus faible diversité des taxa. Indice Biotique Global Normalisé (IBGN) révèle des eaux de mauvaise qualité. **Conclusion** : Au vu des résultats les ciliés qui ont la plus grande répartition de famille indique que la qualité de l'eau du lac carrière de Ngoa-ékélé est mauvaise.

**Mots clés** : Distribution, Variables Abiotiques, Invertébrés, Lac carrière, Ngoa-Ekéle

**Evaluation des terres pour la culture de la pistache africaine (*Citrullus mucosospermus*) dans l'arrondissement de Bafia (Centre-Cameroun)**

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**Résumé**

La valorisation des cultures vivrières indigènes comme la pistache africaine qui sont en pleine érosion contribuerait à la sécurité alimentaire de millions de personnes qui vivent de l'agriculture. Une des limites à la production optimale de la pistache africaine est le manque d'information pédo-climatique pour une meilleure gestion de la culture. Évaluer et classer les terres fournir des informations climatologiques et pédologiques permettant d'attribuer à un milieu agro-écologique donné une culture particulière et d'identifier les contraintes de production en vue de l'optimiser. Les sols de l'arrondissement de Bafia ont été caractérisés et classés afin d'évaluer leurs aptitudes par rapport à la culture de la pistache africaine et leurs niveaux de fertilité. Sept sites représentatifs de la zone d'étude ont été identifiés suivant les sept grands groupes de sol qui avaient été définis par l'ORSTOM. Ces sols ont été classés suivant la WRB et évalués suivant la méthode paramétrique. Les résultats indiquent sept classes de sol regroupées dans trois groupes de sol de référence : ferrallosol, acrisol, cambisol. Le climat de la zone est moyennement apte avec pour principale limitation l'humidité relative. Cependant 42,9 %, 28,57%, 85,71% et 14,29 % des terres de la zone d'étude ont respectivement pour limitation les caractéristiques physiques du sol(t), topographie(t), caractéristiques de fertilité(f) et Humidité(w). Plus précisément ces limitations sont liées à la pente, la texture du sol, le pH, l'inondation et la saturation en base. Ainsi donc 28,6 % de ces terres sont inaptes actuellement et potentiellement aptes (N1) et 71,3 % sont marginalement aptes (S3). Sur la base de cette évaluation des terres les bonnes méthodes de défense et restauration des sols qui peuvent aller dans le sens de l'amélioration des propriétés physiques, chimiques et biologiques des sols doivent être pratiquées pour atténuer de façon rentable les limitations.

**Mots clés :** Evaluation des terres, Aptitude des terres, Pistache africaine, Fertilité, Arrondissement de Bafia

## Qualité physico-chimique et dynamique des invertébrés dans l'étang d'Odza à Yaoundé

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### Résumé

**Introduction :** Dans l'optique de déterminer la dynamique des invertébrés dans l'étang d'odza de la région du centre au Cameroun en relation avec la qualité physico-chimique ; une étude a été menée dans étang d'Odza à Yaoundé d'avril à septembre 2021. **Méthodologie :** Les paramètres abiotiques ont été mesurés suivant les recommandations Rodier, tandis que l'échantillon des macroinvertébrés a été effectué selon l'approche multihabitat suivant une fréquence mensuelle. **Résultats :** Les analyses physico-chimiques révèlent des eaux faiblement oxygénées ( $25,03 \pm 11,53$  %), peu turbides ( $41,79 \pm 57,67$  FTU), légèrement acides ( $6,83 \pm 0,29$  UC), pauvres en matières organiques oxydables ( $3,47 \pm 0,86$  mg/L), en composés azotés ( $\text{NH}_4^+$ ,  $\text{NO}_3^-$  et  $\text{PO}_4^{3-}$ ) avec pour moyennes respectives ( $1,03 \pm 1,76$  mg/L) ; ( $2,84 \pm 1,80$  mg/L) et ( $0,03 \pm 0,02$  mg/L) et ayant de faible valeurs pour la couleur ( $299,77 \pm 357,37$  Pt.Co). Durant la période d'étude, un total de 695 individus a été dénombré et réparti en 03 embranchements : les Arthropodes (94,39%), les Annélides (3,45%) et les Mollusques (2,16%) et appartiennent à 03 classes, 08 ordres et 18 familles. Les indices de Shannon & Weaver ( $H'$ ) et d'équitabilité ( $J$ ) de Pielou montrent une plus faible diversité des taxa dans les stations d'Odza, où les conditions semblent moins favorables au développement des invertébrés. L'indice d'Hilsenhoff (FBI) montre une pollution organique probable à la station Odza 1 et une légère pollution organique à la station Odza 2 et Odza 3. L'IBGN (Indice Biotique Global Normalisé) révèle des eaux de qualité passable. Il apparaît également que la faune des invertébrés de l'étang d'Odza est surtout formée d'organismes polluo-tolérants comme les organismes appartenent à ces différentes familles : Notonectidae, libellulidae, Naucoridae, Népidae, Hydrophilidae, Dystiscidae, Lestidae, Hygroblidae and Macromilidae. **Conclusion :** Ces résultats montrent que les eaux de l'étang d'Odza sont anthropisées traduisant une mauvaise intégrité environnementale de ce plan d'eau. **Impact de l'étude :** Evaluer l'intégrité environnementale des eaux à partir des analyses physico-chimiques et des macroinvertébrés.

**Mots clés :** Qualité physico-chimique des eaux, Dynamique des Invertébrés, Etang d'Odza Yaoundé.

**Caractérisation par les macroinvertébrés benthiques d'un cours d'eau de la région du Littoral Cameroun (Ndog Bissolo)**

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**Résumé**

Une étude portant sur la caractérisation du cours d'eau Ndog Bissolo situé à Edéa dans la zone forestière du Littoral Cameroun, par les macroinvertébrés benthiques, a été réalisée sur une période allant d'avril à septembre 2020. Les analyses physico-chimiques ont été faites suivant les recommandations de APHA et Rodier (2009), tandis que les MIB ont été prélevés selon l'approche multihabitat (Stark *et al.*, 2001). De ces analyses, il ressort que les eaux du cours d'eau Ndog Bissolo sont bien oxygénées, légèrement acides, très peu turbides et présentent de très faibles valeurs en composés azotés ainsi qu'en matières organiques. Sur le plan biologique, 2045 individus appartenant à 3 embranchements, 4 classes, 12 ordres, 54 familles et 97 genres ont été récoltés. Les Arthropodes sont les plus représentés avec 92% d'abondance relative, suivis des Mollusques et des Annélides avec respectivement 6,75% et 0,29% d'abondances relatives. La classe des Crustacés est la plus abondante avec 55,60% d'abondance relative. L'ordre des Décapodes avec 57,42 % d'abondance relative est le plus abondant. Sur 54 familles dénombrées, la famille des Atyidae est la plus abondante de la faune benthique avec 49,93% d'abondance relative. Les indices de diversité de Shannon et Weaver (H') et d'équitabilité (J) de Piéluou montrent une plus grande diversité taxonomique en amont du cours d'eau. L'IPO indique un milieu très peu perturbé dans l'ensemble. L'IBGN révèle des eaux de bonne qualité écologique vue la diversité des peuplements de MIB.

**Mots clés :** Ndog Bissolo, Macroinvertébrés Benthiques, qualité écologique, activités anthropiques, Edéa

**Impact des vidanges des fosses septiques sur la diversité des formes environnementales des parasites intestinaux dans le cours d'eau Avo'o (Nomayos-Yaoundé)**

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**Résumé :**

Introduction : Un cours d'eau est un écoulement d'eaux courantes dans un lit naturel à l'origine, alimenté par une source et présentant un débit suffisant une majeure partie de l'année. Quant aux installations septiques qui peuvent affecter la qualité des plans d'eau de surface ainsi que des puits d'eau potable locaux. Si une fosse septique située à proximité d'un puits ne fonctionne pas correctement, les contaminants de l'effluent peuvent se retrouver dans l'eau potable, ce qui peut entraîner l'apparition des maladies graves. Les bactéries, les virus et protozoaires des eaux usées peuvent provoquer des maladies comme : la typhoïde, les maladies gastro-intestinales, l'hépatite A et le choléra. Lorsqu'elles ne sont pas correctement traitées, les eaux usées contiennent beaucoup d'azote provenant de l'urine, des déchets alimentaires, des matières fécales ainsi que des produits de nettoyages. Méthodologie : L'échantillonnage s'est fait grâce aux flacons en polyéthylène à double bouchage pour le prélèvement de la biologie qui soit fixée au formol alors que les paramètres physico-chimiques se sont déroulés suivant les recommandations de Rodier et al. (2009). Résultats : Les analyses physico-chimiques révèlent que les eaux du cours d'eau de Nomayos sont légèrement acides, basique, bien oxygénées et ont une forte pollution organique. L'analyse biologique fait état de 20900 kystes et oocystes de protozoaires dans 1 L d'eau appartenant à 4 grands groupes et 14 espèces. Le groupe des oocystes de Coccidies est prédominant avec une abondance relative de 80%. Il est suivi par des kystes d'Amibes avec une abondance relative de 14 %, les kystes de Flagellés avec une abondance relative de 4% et enfin les kystes de Ciliés avec une abondance relative de 0%. Le nombre de kystes varie suivant le point de prélèvement. Dans l'ensemble, la corrélation de Spearman nous a permis de relever des corrélations entre les variables physico-chimiques d'une part et entre ces variables et les variables biologiques, d'autre part. Conclusion : Les eaux du cours d'eau de Nomayos sont perturbées par le déversement des boues de vidanges des fosses septiques ainsi que par les activités anthropiques et sont donc de mauvaise qualité écologique.

**Mots Clés** : Boues de vidange, Fosses septiques, Kystes, Oocystes de protozoaires.

**Distribution spatio-temporelle du zooplancton du lac de barrage de Mékin : influence des variables abiotiques**

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**Résumé**

Dans l'optique de préserver le zooplancton des lacs de barrage et contribuer à la gestion durable des ressources halieutiques, une étude annuelle a été entreprise de mai 2020 à mai 2021 en vue de déterminer la distribution spatio-temporelle du zooplancton du lac de barrage de Mékin en relation avec les variables environnementales. Ce lac est alimenté par les rivières Dja, Lobo et Sabé (région du sud, Cameroun). Pour ce faire, 14 stations d'échantillonnage ont été retenues. Les variables physico-chimiques des eaux ont été déterminées suivant les méthodes standards alors que le zooplancton récolté a été identifié grâce aux ouvrages appropriés. Les résultats physico-chimiques montrent que les eaux sont faiblement acides ( $6,2 \pm 0,5$  UC), très faiblement minéralisées ( $16,12 \pm 3,73$   $\mu$ S/cm), moyennement oxygénées ( $52,81 \pm 20,26\%$ ) et sujette à une très faible pollution organique ( $4,67 \pm 0,08$ ). Ceux du zooplancton révèlent un total de 60 taxons récoltés et regroupés en 23 familles et 37 genres. Les familles Chydoridae et des Lecanidae sont les plus diversifiées avec chacune 9 taxons. *Mesocyclops aequatorialis* est la seule espèce omniprésente alors que *Moina macropa* est la seule espèce régulière. L'analyse des corrélations entre les variables biologiques et physico-chimiques montrent que la température et l'oxydabilité influencent fortement la distribution spatio-temporelle du zooplancton.

**Distribution spatio-temporelle du zooplancton de quelques cours d'eau dans la zone agricole d'Awae (Centre-Cameroun)**

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**Résumé**

**Introduction :** Dans l'optique de préserver le zooplancton des milieux hydro-agricoles, une étude saisonnière a été entreprise de juillet 2021 à mai 2022 dans quelques cours d'eau d'Awae.

**Méthodologie :** Pour ce faire, 12 stations d'échantillonnage ont été retenues. Les prélèvements ont été effectués deux fois par saison suivant une fréquence mensuelle. Les variables physico-chimiques des eaux ont été déterminées suivant les méthodes standards tandis que le zooplancton récolté a été identifié grâce aux ouvrages appropriés.

**Résultats :** Les analyses physico-chimiques montrent que les eaux sont acides, faiblement minéralisées, moyennement oxygénées, colorées et sujettes à une forte pollution organique. Quant au zooplancton, 70 taxons ont été récoltés et regroupés en 22 familles et 44 genres. La famille des Chydoridae est la plus diversifiée. La plupart des autres familles sont mono-spécifiques (Rotifères et Ostracodes particulièrement). *Alonella* sp. est la seule espèce omniprésente alors que *Acroperus* sp1., *Acroperus* sp2., *Chydorus* sp2. et *Kurzia* sp. sont les seules espèces régulières. Malgré la faible richesse spécifique obtenue pendant les grandes saisons, la grande saison sèche se démarque par l'augmentation de la diversité des espèces également bien réparties dans le milieu. Les corrélations entre variables biologiques et physico-chimiques montrent que la température, la conductivité électrique et les matières organiques influencent fortement l'abondance et la diversité spécifique.

**Conclusion :** Les variations spatio-temporelles du zooplancton dépendent des caractéristiques hydrologiques et physico-chimiques du milieu. Cette étude confirme davantage l'impact négatif des activités anthropiques sur les milieux aquatiques et leurs ressources.

**Mots clés :** Zooplancton, distribution, agricole, awae.

## Dynamique de l'occupation de sol dans les arrondissements de Douala III et V de 1975 à 2020

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### Résumé

Les écosystèmes naturels de façon générale représentent une source de revenus, d'alimentation et de protection pour l'ensemble de la population mondiale et leur dégradation sans cesse par l'agriculture et l'urbanisation est irréversible. Dans une perspective de développement durable, un travail de recherche dont l'objectif principal est de caractériser la dynamique spatio-temporelle des écosystèmes forestiers face à l'urbanisation et aux activités agricoles a été réalisé. La méthodologie utilisée dans cette étude est basée sur l'analyse diachronique de l'occupation du sol via les imageries satellitaires sur une période de 45 ans. Les données satellitaires utilisées sont celles des images Landsat 02 de 1975, Spot 05 de 2003 et Sentinelle 2A de 2020. Les résultats obtenus montrent une perte énorme des formations végétale dans les arrondissements de Douala V et III avec une précision globale  $\pm 92,65\%$  et un indice de Kappa  $\pm 0,90$ . De 1975 à 2020, les forêts primaires et les mangroves ont régressé de 29,8 % soit une perte de 9 762,51 ha. Cependant, les bâtis et sols nus ont connu une augmentation drastique de 51,1% soit 16 752,35 ha pour la même période. Le temps allant de 2003 à 2020 est marqué par une dégradation très considérable avec une croissance de 13 177,73 ha de bâtis et sols nus soit 40,2% de l'ensemble de la zone d'étude et une perte de prêt de 13 291,05 ha pour les forêts secondaires. A l'issue de cette étude, 05 unités d'occupations de sol ont été identifiées et les classes de végétation (forêts primaires et mangroves y compris les forêts secondaires) ont connu une dégradation exacerbée au profit des bâtis et sols nus.

**Mots clé :** Agriculture, cartographie, dégradation, écosystèmes forestiers, urbanisation.

**Potentiel d'adaptabilité des accessions locales de ricin (*Ricinus communis* L.) en zone des Hautes Savanes Guinéennes du Cameroun**

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**Résumé**

Le ricin (*Ricinus communis* L.) est une plante oléagineuse appartenant à la famille des Euphorbiaceae. Elle présente de multiples usages bien sur le plan traditionnel que sur le plan industriel. Cette étude vise à déterminer l'accession locale de ricin Camerounais qui s'adapte le mieux sous climat des Hautes Savanes Guinéennes du Cameroun. Les expérimentations se sont déroulées en champ au sein du campus de l'Université de Ngaoundéré suivant un dispositif en bloc complètement randomisé à 05 traitements (accessions de ricin Camerounais) répétés 03 fois. Les paramètres de développement et de croissance, ainsi que de rendement sont évalués suivant des méthodes appropriées. En outre, le taux de mycorhization racinaire des plants est évalué. L'accession Ndoutourou est plus productive en graines par rapport aux autres accessions de ricin utilisée. La floraison, la fructification et la maturation des graines sont précoces chez l'accession Ndoutourou. Des quatre accessions identifiées dans les Départements de la Vina et du Mbéré, l'accession Z présente un rendement en graines élevé par rapport aux autres accessions locales de ricin bien qu'ayant un nombre de feuilles et un nombre de ramification très faible respectivement de  $17,4 \pm 13,05$  et de  $14,23 \pm 5,09$ . Ces informations obtenues dans cette étude serviront de base de données pour l'implémentation du ricin comme culture alternative de l'agriculture Camerounaise.

**Mots clés :** Adamaoua-Cameroun, accessions locales de ricin, Potentiel d'adaptabilité

**Etude ethnobotanique, caractérisation et géolocalisation des accessions locales de ricin (*Ricinus communis* L.) en zones des Hautes Svanes Guinéennes du Cameroun**

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**Résumé**

Le présent travail s'est déroulé dans la Région de l'Adamaoua-Cameroun afin de contribuer à la valorisation des accessions locales de ricin Camerounais. Une enquête ethnobotanique est effectuée sur le ricin ; les caractéristiques physiques du port végétatif et des graines du ricin, ainsi que la biomasse sèche des plants sont évaluées. En outre, la géolocalisation de ces accessions locales de ricin est effectuée. Le plan expérimental des enquêtes ethnobotaniques sur le ricin est constitué de 24 villages correspondant aux 12 Arrondissements des Départements de la Vina et du Mbéré, à raison de deux villages par Arrondissement, repérés par les techniques d'échantillonnage au hasard simple. 60 personnes font l'objet d'un échantillonnage par village. Il ressort de ces enquêtes que le ricin est utilisé dans l'Adamaoua Cameroun sur le plan thérapeutique pour soigner plusieurs maladies ; sur le plan alimentaire par la consommation de l'huile et sur le plan magico-religieux. Les résultats obtenus sur les caractéristiques physiques du port végétatif et des graines ont permis d'identifier 04 différentes accessions locales de ricin : W, X, Y et Z. Il existe une différence significative ( $p < 0,05$ ) entre ces 04 accessions locales de ricin sur la taille des plants, la longueur du pétiole et la surface du limbe des feuilles. L'accession Z présente la taille la plus élevée ( $302,96 \pm 44,36$  cm) alors que la plus petite taille ( $148,63 \pm 19,05$  cm) est observée chez l'accession W. Le stock de carbone de l'accession Z de ricin est respectivement 2,96 ; 1,03 et 1,8 fois plus élevée que celui des accessions W, X et Y. L'accession W est la plus répandue suivis de l'accession X et les accessions Y et Z sont les moins répandues. Vu les résultats obtenus dans cette étude, l'accession Z de ricin peut contribuer efficacement à la lutte contre le changement climatique et la désertification. Cependant, le potentiel d'adaptabilité et le rendement en graines des accessions W, X, Y et Z de ricin obtenues dans cette étude restent à étudier.

**Mots clés :** *Ricinus communis* L., étude ethnobotanique, géolocalisation, Adamaoua-Cameroun.

## Effet de la vaccination sur la qualité de vie des personnels de santé de 7 formations sanitaires de la région de l'Ouest

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### Résumé

**Justification** : La COVID-19 a eu de nombreuses répercussions sur la qualité de vie des personnels de santé puisqu'ils étaient en première ligne de la lutte contre la pandémie. La vaccination a été utilisée pour leur assurer une sécurité et protection. L'objectif de l'étude était de comparer l'effet de la vaccination anti-COVID-19 sur la qualité de vie des personnels de santé vaccinés et non vaccinés de la région de l'Ouest. **Méthodologie**: Il s'agissait d'une étude transversale à visée analytique, effectuée auprès des personnels de santé de 7 formations sanitaires, elle s'est déroulée de décembre 2022 à juillet 2023. L'échantillonnage était par convenance pour le choix des formations sanitaires et consécutif pour les participants, avec une taille minimale estimée à 139. L'EQ 5D 5L a été utilisé pour comparer la qualité de vie des personnels sur 5 dimensions. L'analyse des données s'est faite à l'aide du logiciel SPSS. Le test de Khi 2 a été utilisé pour la comparaison des proportions et celui de Student pour les moyennes, et la régression logistique multivariée utilisée pour la recherche des déterminants associés à une qualité de vie altérée. Nous avons considéré une valeur de p significative à  $p < 5\%$ . **Résultats** : Au total, nous avons 166 participants, la proportion de vaccinés était de 50,6% (84). L'âge moyen était de  $36,2 \pm 9,9$  ans. La comparaison de la qualité de vie des personnels, nous a permis d'obtenir les proportions de qualité de vie altérées plus importantes chez les non vaccinés que chez les vaccinés respectivement, dans les 4 dimensions suivantes : Mobilité 11% (9) et 7,1% (6), Activités courantes 7,3% (6) et 3,6% (3), Douleur/inconfort : 22% (18) et 14,3% (12) et cette différence était statistiquement significative pour la dimension l'anxiété/dépression : 39% (32) et 10,7% (9). Aucun personnel n'a présenté de problème d'autonomie. La détermination des facteurs associés à une qualité de vie altérée par régression logistique nous a montré une association avec un âge compris entre 50-59 ans avec un ORa (IC à 95%) = 0,892(0,796-0,999). **Conclusion** : Cette étude apporte des éléments supplémentaires sur les bénéfices de la vaccination concernant l'amélioration de la qualité de vie des personnels de santé surtout pour la composante mentale.

**Mots clés** : Vaccination, COVID-19, qualité de vie, personnels de santé.

PCBS-AGEFC56

**Effects of substrate and mycorrhizal inoculum on stem segment cuttings of *Pterocarpus erinaceus* Poir. (Fabaceae) in the Guinean savanna's highlands of Cameroon.**

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**Abstract**

*Pterocarpus erinaceus* Poir. is a woody species of the Soudano-Guinean to Soudano-Sahelian zones with very high food, medicinal and commercial potential leading to the overexploitation. This study aimed to contribute to the domestication of this species using stem segment cuttings. The sand/sawdust and black soil/sawdust substrates were inoculated with 0.10, and 20 g of mycorrhizae. The split plot with 4 repetitions was used as the experimental method and set at 10 cuttings per unit. The experience revealed that the appropriate substrate and dose of mycorrhizae for the budding of stem segment cuttings (SSC) were the sand/sawdust mixture (25.00 ± 18.34 %) and 10 g (23.75 ± 5.63 %) respectively. Satisfactory result was recorded in 10 g (4.18 ± 2.52 cm) dose of mycorrhizae for the height of the aerial axes with abundant number of leaves per aerial observed in the sand/sawdust substrate (2.36 ± 0.48). Concerning the rooting ability of the cuttings, adequate substrate for the number of newly formed roots is the sand/sawdust mixture (25.00 ± 18.34 %) while the dose of 10 g favoured the appearance of roots (23.75 ± 14.07 %). The best substrate for the length of newly formed roots is the sand/sawdust mixture (10.64 ± 7.14 cm) and 10g dose improved the length (9.82 ± 6.40 cm) for Senegal rosewood. Given the above results, we can admit that the improvement of certain parameters in *P. erinaceus* is possible by vegetative propagation.

**Key words:** *Pterocarpus erinaceus*, Domestication, Vegetative propagation, Stem Segment Cuttings, Inoculum mycorrhizian.

**Nutrients and secondary metabolites contents of tomato fruit (*Lycopersicon Esculentum* Mill.)  
sprayed with *Callistemon Citrinus* and mancozeb**

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**Abstract**

Synthetic chemical products have been using to improve tomato yield and those products can influence quality of tomato fruits. Natural agricultural inputs in tomato cultivation can be beneficial for nutritional quality, environmental and food safety. This research assessed the effect of *Callistemon citrinus* (CAL) and mancozeb spraying on nutrients and secondary metabolites contents of tomato fruit. The experiment was a completely randomize blocked design with 3 blocks, 18 plots and 3 repetitions in field and pots. Two varieties of tomato used were Cobra and Rio. The soil amendment was made of *Tithonia diversifolia* leaves (75g/plant) and cow dung (100g/plant) powders. The plants were sprayed with water, aqueous extract of CAL 5% and mancozeb 5%. Fruits harvested were dried at 60 °C before different analyses. Proximate analysis, antioxidant activities and 14 phenolic acids was evaluated. Tomato sprayed with CAL showed important contents in ash (12.77%), fibre (40.72%) and proteins (5.04 mg/100 g DM). CAL improved zinc (37.72 µg/g) and manganese (56.55 µg/g) contents of Cobra (CO) and Rio (RI) respectively. The best contents in polyphenols (236.3 mg GAE/g DM) and lycopene (28.1 µg/g) were recorded with CAL. Total Antioxidant Capacity was observed with COCAL treatment (15.47 10<sup>2</sup> mg GAE/g DM). Cobra and Rio fruits were rich in shickimic (6204 mg/kg) and carnosic (5348 mg/kg) acid respectively. This result showed that CAL improved nutrients and secondary metabolite contents of tomato fruits, health promoting properties and safety and could be used to enhance the nutritional quality of tomato while providing an efficient way of sustainable agriculture.

**Key words:** Tomato, Nutrients, *Callistemon citrinus* extract, Phenolic acids.

**Impact of chronic consumption of oxidized palm oil diet on some reproductive parameters in rats.**

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**Abstract**

Thermoxydation of palm oil is a very widespread culinary practice in our households with negative repercussions on the male reproductive system. However, few studies report the influence of this dietary habit on male sexual function. This study was undertaken in order to evaluate the effects of chronic consumption of oxidized palm oil diet on some reproductive function parameters in rat. Forty young rats (age: 06 weeks; weight: 100g) were divided into 2 groups of 20 rats each and were fed during 12 and 16 weeks. Each group was subdivided into 2 subgroup (n=10) and received respectively the standard diet and 70% of standard diet + 30% of oxidized palm oil + 10% of sucrose solution. Throughout the experimentation, a bromatological analysis was done. Morphometric, hemodynamic and sexual behavior parameters were also determined. After sacrifice, lipid profile, total proteins and testosterone levels were evaluated. The histomorphometry of median pre-optic area was examined. The oxidized palm oil diet decreased morphometric parameters (body mass index, Lee's index and abdominal circumference) and increased hemodynamic parameters in rats at all feeding periods compared to the standard diet. Moreover, we obtained a dyslipidemia, significant increases in sexual motivation parameters, serum total proteins levels coupled to significant decreases in sexual performance parameters, serum testosterone levels in males fed with oxidized palm oil diet compared to their counterparts receiving standard diet. The histological examination of median pre-optic area (mPOA) showed a neurodegeneration characterized by the presence of pycnotic nucleus and hyperchromatic neurons coupled to a decrease in the number of neurons in oxidized palm oil diet group compared to standard diet group at all feeding periods. In conclusion, the deterioration of reproductive parameters assessed was more important in animals receiving oxidized palm oil diet during 16 weeks and would be due to mPOA impairments.

**Keywords:** oxidized palm oil, sexual behavior, median pre-optic area, rat.

**Metric assessment of domestic bees (*Apis mellifera adansonii*) in the forest low-altitude region of Cameroon**

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**Abstract**

In order contribute to the development of beekeeping, the morphobiometric characteristics of 600 honey bees (*Apis mellifera adansonii*) from the forest low-altitude region of Cameroon were studied. Samples of 30 worker bees per hive were collected in Mfoundi, Lekie, Mefou-Afamba and Mefou-Akono. A total of 18 morphometric parameters were measured. Data collected were subjected to principal component analysis (PCA), hierarchical ascending classification (CAH) and discriminant factor analysis (DFA). The main results showed that, with the exception of the abdomen length in cm ( $7.45 \pm 1.02$ ), metatarsal ( $2.00 \pm 0.04$ ), width of the metatarsal ( $1.00 \pm 0.02$ ) and the right anterior wing ( $2.98 \pm 0.38$ ) which were not influenced ( $P > 0.05$ ) by localities, all the other metric characteristics measured showed significant variations ( $P < 0.05$ ) due to localities. Meanwhile bees from Mefou-Akono had larger features: body length ( $13.64 \pm 1.25$ ), trunk ( $6.12 \pm 0.95$ ) and leg ( $7.27 \pm 0.19$ ). The high correlation coefficients were attributed between femur length and leg length (0.924), between abdomen length and the bee length (0.861). Population studied display 3 morphotypes that can be grouped into two subclasses on the basis of intra /inter population variation and genetic distances. Such genetic variability, suggests that these bees constitute a beekeeping genetic resource with high breeding potential.

**Keywords:** Biometrics, Variability, *Apis mellifera adansonii*, Morphotypes, Cameroon.

**Sixty years after independence Africa is going nowhere: need to change our mind set and embrace sciences, technologies and innovation in Agriculture**

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**Abstract**

Sixty years ago many African countries have taken their independence on the promise of they will feed their people, and sixty years later Africa is still complaining, there's no shortage of Agriculture Universities and Technologies with Research Institutes in agriculture which are donor funding and sixty years later many African are dying more younger than they were dying in 1960, who means that the nutrition level has gone down and in my rural village, like in any rural village in Africa is worst of that when I was a young boy. On the other hands we have generated sixty years later numerous referees' good papers in the high impact factor journal, and we have also acquired many PhDs and Professors in many fields' areas in agriculture but today Africa is still remaining at the bus stage; and the question will be what's the problem? By just looking around we can observe that Africa produce what it doesn't eat (cocoa, coffee...) and eat what he don't produce (wheat...) and African Scientists seen to be very far from African or Africa do not understand them, he did not even appreciate them because Africa did not know the good think they are doing which are very good. How are we going to change that? Is it by having an annual get-together? Is it by having high level conference with scientific key note speakers? Is it by writing numerous referees' papers which are read among ourselves? Preaching to already convert? Is it by relaying on donors funding? No African must go down to the basics and it is only when African will go down to the basic and beginning to talk to ourselves honestly and sincerely that the Africa will begin to realise its potential, explore and exploit it, and to change this the below building blocks and others critical issues will be discussed during this presentation and those of colleagues coming in this session.

**Innovation scientifique en matière de fertilisation des sols acides et dégradés au Cameroun :  
Le gombo comme plante modèle**

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**Résumé**

L'acidité des sols, associée à une forte toxicité aluminique constituent un problème majeur limitant la productivité agricole. L'objectif de ce travail était d'améliorer les rendements en gombo sur sol dégradé et à déséquilibre cationique important à partir d'une approche innovante de fertilisation dans la région du Centre, Cameroun. Pour y parvenir, sept traitements de fertilisation ont été appliqués : témoin sans engrais (Control) ; mycorhizes (CMA) ; mycorhizes + fiente de poule 50% (CMA + 1/2PM); engrais minéraux calculé avec balance cationique à 100 % (MFC100%); mycorhizes + engrais minéraux (CMA +50%MFC) ; fiente de poule 50% + engrais minéraux 50% (MFC50% + ½ PM) et fiente de poule (PM) et deux variétés de gombo utilisées (kirikou F1 et NP Green). Le dispositif expérimental était le split-plot à deux facteurs. L'analyse du sol de la zone d'étude révèle que l'utilisation du rapport d'équilibre Ca/Mg/K de 76/18/6 n'est pas écologiquement applicable à ce sol et pour cette étude, l'engrais minéral a été utilisé suivant un rapport proposé de 68/23/9. Les résultats montrent que les fertilisants appliqués ont eu un effet hautement significatif ( $p < 0,01$ ) sur les paramètres de croissance et de productivité du gombo avec comme meilleur traitement MFC50% + ½ PM suivie de PM et MFC100%. Une augmentation moyenne des rendements frais de 111 % à 1840 % par rapport au témoin a été enregistrée et les meilleurs paramètres symbiotiques ont été observés au traitement CMA associé à la variété NP Green. Cette variété répond mieux à un apport en matière organique tandis que kirikou F1 est plus favorable à un ajout d'engrais chimique. Ainsi, d'un point de vue économique et écologique, il est recommandé d'utiliser la variété Locale et d'y associer le rapport proposé au traitement MFC50% + ½ PM pour une productivité optimale.

**Mots clés :** Acidité ; Aluminium, Fertilisation ; Gombo ; Rapport cationique

Malacological and parasitological descriptions of some aquatic ecosystems in the district of Ndikinimeki, Central-Cameroon Region

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**Abstract**

The low rate of quality water supply observed in most Cameroonian regions forces the population to use surface and ground water for their needs. These waters, subject to various sources of human pollution, particularly fecal, favor the dissemination and transmission of infectious forms of parasites in humans. In order to determine the malacological and parasitological profiles in the locality of Ndikiniméki, Centre-Cameroon Region, this study was conducted in March 2021 in four aquatic environments of this locality. Malacological and parasitological analyses were carried out on mollusks and sludge respectively, followed by the quantification of parasites using the Kato-katz technique. In total, four species of molluscs were identified (*Biomphalaria pfeifferi*, *Melanoides tuberculata*, *Mytilus* sp., and *Potadoma* sp.) with a predominance of the species *Mytilus* sp. (40.99%). The analysis of the diversity and equitability indices of the mollusks showed that the Mandjon River was very diverse with a diversity index of 0.97 and that the species were equitably distributed (with an equitability index of 0.96). The parasitological study of the sludge revealed the presence of 7 species of intestinal parasites (*Entamoeba histolytica*, *Iadamoeba butschili*, *Balantidium coli*, *Ascaris lumbricoïdes*, *Strongyloïdes stercoralis*, *Trichuris trichiura* and *Taenia* sp.) in the different collection sites with a total parasite density of 1752 individuals/g of sludge. Among the parasites found, protozoa were the most represented at 87.67% unlike helminths. The highest density of intestinal parasites (960 individuals/g of sludge) was observed in the Mandjon stream where the *E. histolytica* species presented 864 individuals/g of sludge. The cercarial emission tests were negative in the collected mollusks. These results could reflect the sanitary state of the populations constituting a risk of infestation of the latter by the identified parasites. In order to avoid these parasitosis, these waters must be treated before any use.

**Key words:** Molluscs, Protozoa, Helminths, *E. histolytica*, Ndikiniméki, Central Cameroon.

## Techniques de production et conditions de conservation des farines issues des fruits de Bananiers plantains

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### Abstract

Les farines de fruits de bananiers représentent une forme de conservation aux retombées économiques et sanitaires. Cependant, ces farines peuvent subir diverses altérations dues à la non maîtrise des techniques de production et de conservation susceptibles de modifier leurs qualités. Pour ce faire l'effet de deux traitements thermiques sur les qualités (physicochimiques, couleur, nutritionnelles et anti nutritionnelles) des farines produites à base des pulpes et des fruits entiers de banane plantain (variétés BATARD et CARBAP K7) à différents stades de maturation a été étudié. La caractérisation physicochimique (couleur, TESS, pH, ATT, TE) des farines de plantain traitées et non traitées a été évaluée, l'analyse nutritionnelle (lipides, protéines, fibres) et anti-nutritionnelle (tanins, phytates, oxalates) ont été évaluées à l'aide des méthodes standardisées de l'AOAC, les minéraux par spectrophotométrie atomique et le profil en acides gras par CPG. Les farines de fruits entiers présentent les valeurs de pH, d'ATT et de TESS les plus élevées. Quel que soit le traitement appliqué, les farines issues de fruits entiers présentent les teneurs en nutriments les plus élevées comparées aux farines issues des pulpes. Les teneurs en tanins, phytates et oxalates les plus faibles sont rencontrés dans les farines produites avec les pulpes et les fruits entiers précuits. Bien que les farines soient habituellement produites au stade 1, les stades 3 et 5 peuvent être utilisés dans la production des farines à cause de leur TESS élevé, en acides gras et en nutriments. Pour produire les farines à base de pulpes l'on peut soit utilisé la précuisson, ou n'appliquer aucun traitement. Tandis que pour produire les farines à base de fruits entiers la précuisson doit être utilisé afin d'améliorer les paramètres de couleur surtout pour la variété CARBAP K74.

**Mots clés :** bananiers, production, traitement thermique, farines, qualités

**Induction of the defense system of tomato (*Lycopersicon esculentum mill.*) against fusarium wilt based on *callistemon citrinus* and *tithonia diversifolia***

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**Abstract**

La culture de la tomate (*Lycopersicon esculentum Mill.*) est confrontée à divers problèmes parmi lesquelles les maladies et les ravageurs. Après avoir été longtemps dépendante des pesticides chimiques de synthèse, l'agriculture est aujourd'hui frappée par un courant qui favorise des pratiques plus durables et plus respectueuses de l'environnement. L'objectif général de cette étude était d'évaluer l'effet combiné de *Tithonia diversifolia* (*T. diversifolia*) et de l'extrait aqueux de *Callistemon citrinus* (*C. citrinus*) à induire le système de défense des plants de tomate infectée par la fusariose plus précisément en évaluant les paramètres de croissance et les marqueurs de défense biochimiques. Les semences de tomate ont été traitées à l'aide de l'huile essentielle de *C. citrinus* pour la réalisation de la pépinière. Les plants âgés d'un mois ont été transplantés dans les sachets polyéthylène contenant le substrat cultural stérilisé à différents amendements (non amendé S0 ; amendé à *T. diversifolia* S1; amendé au NPK S2). Deux semaines après, les plantes ont été pulvérisées (eau stérile T0 ; extrait aqueux de *C. citrinus* T1 ; acide salicylique 0,01% T2) puis inoculer (I1) 2 jours plus tard à l'aide d'une suspension de *Fusarium oxysporum f.sp vasinfectum* à la concentration  $1 \times 10^5$  conidies/ml. Six jours après inoculation, les feuilles ont été récoltées pour l'évaluation des marqueurs biochimiques de défense. L'amendement S1 combiné à la pulvérisation T2 (S1T2) à significativement augmenté les paramètres de croissance (taille, diamètre du collet, nombres de feuilles) et les marqueurs de défense comparer aux autres traitements (S1T1, S2T1 et S2T2). Les extraits de plante pourraient être efficace pour la promotion d'une agriculture éco-durable.

**Mots-clés:** *Tithonia diversifolia*, *Callistemon citrinus*, *Fusarium oxysporum f.sp vasinfectum*, *lycopersicon esculentum Mill*, induction de la resistance.

**Level of contamination of mackerel (*Scomber scombrus*) and tuna (*Thunnus spp.*) with histamine and main associated clinical signs among consumers in Yaoundé and Douala - Cameroon.**

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**Abstract**

Fish, an important source of animal protein for Cameroonian population, is a highly perishable, and freezing is the method most used for preservation. Frequent electricity cuts in Cameroon thus subject fish to deterioration and contamination with histamine. This research aimed to determine the level of histamine poisoning of mackerel and tuna, and the main clinical signs among victims in Yaoundé and Douala cities. 250 people were questioned in fish shops/stores and at the port of Douala about the health risks, and 60 samples of tuna and mackerel were collected for analyses at LANAVET laboratory -Douala, using HPLC method. Mackerel was the most consumed fish, with a frequency of 69.8% in Douala and 57.8% in Yaoundé, tuna consumption being low (4.7% and 9.2% in respective cities). Skin manifestations were the main signs of histamine intoxication on the human body, with a frequency of 61% in Douala and 49% in Yaoundé among people auto-declared as has been victims. This poisoning was due to poor conservation of fish (51% in the city of Douala and 28% in Yaoundé, among victims). 75% of fish shop staff were men; and main activity of consumers was trading. Concerning construction norms and hygiene of cold rooms, 16% were excellent in Yaoundé as compared to 10% in Douala. Chromatographic analyses showed that 13(22%) of samples contained histamine, 3(5% of total) of which exceeded the standard required for foodstuffs hygiene. This level of histamine contamination was due to poor hygiene in fish shops (and stores) and cold rooms, and poor temperature control in freezing systems.

**Key-words:** fish; hygiene; contamination; histamine; HPLC method.

**Diversity of Endomycorrhizal Fungi in Northern Cameroon Soil's: Implications for growth improvement and the Success of soils restauration**

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**Abstract**

Growers from Northern Cameroon use chemical fertilizers to improve soil fertility. However, the using of chemical fertilizers exhibits an immediate solution to declining of soil fertility problem, but its exclusive use causes an increase of soil degradation. Arbuscular mycorrhizal fungi (AMF) are root symbionts that increase plant resistance to biotic and abiotic stresses and ameliorate soil quality. The exploration of these symbiotic fungi is the starting point for the selection and production of high-performance organisms adapted to the pedoclimatic conditions. A crucial step in the successful application of arbuscular mycorrhizal fungi (AMF) is the selection of effective and suitable fungal strains. Study was conducted on diversity of endogenous mycorrhizal fungi from Sudano-Sahelian savannahs of Cameroon on cotton plant. Arbuscular Mycorrhizal Fungi diversity and density were assessed according to suitable methods. Results shown that the density of AMF spores/g of soil is higher in the Department of Bénoué (134). Overall, the diversity consists of fifteen species identified on the basis of morphological criteria. The Department of Mayo-Rey (14.00±1.52) has the highest specific richness. The genus *Glomus* is the most represented with five species and a frequency of 100%. By domesticate and applying endogenous mycorrhizal fungi from Northern Cameroon for plant growth, we contribute to increase productivity and to limit the using of chemical inputs, as well as to ensure sustainable agriculture.

**Key words:** Endogenous mycorrhizal fungi, density, diversity, sustainable agriculture

**Bases nécessaires à une classification plus rationnelle et précise des espèces et re-adequation de la classification des chiens et chats en fonction de leurs régimes alimentaires réels**

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**Abstract**

La domestication des animaux impose des profonds changements dans leur vie, des adaptations à l'environnement, à l'alimentation, et souvent des adaptations physiologiques aussi. Ainsi, la catégorisation des animaux sur des critères passibles d'être influencés par ces faits requière une bonne connaissance de ces derniers et des autres composants utiles, comme les zootechniques. Il est question, dans ce travail, d'effectuer une classification pluridisciplinaire d'espèces domestiques dont les chiens et chats, sur la base de leurs régimes alimentaires réels, ce qui permet aussi, en élevage, de formuler des aliments plus complets et appropriés. Un élément fondamental de repère est la couverture des besoins énergétiques de maintien. De ce fait, si oui ou non l'animal, vis-à-vis de l'aliment considéré, s'en nourrit exclusivement, l'a comme préférence naturelle ou en a grand appétit, peut s'en nourrir exclusivement, doit l'ingérer surtout, démontre efficacité d'utilisation post ingestion, en tire profit énergétique après ingestion, présente adéquation de l'anatomie et/ou physiologie digestive pour mise à profit dudit aliment sont les paramètres clés ici considérés pour conclure que : l'Homme et les Suinae domestiques sont des omnivores véritables; les bovidés domestiques et les équins domestiques sont, évidemment, herbivores, bien que ne l'étant pas exclusivement ; les canins domestiques sont des carnivores à forte tendance omnivore, et non strictement (exclusivement) carnivores ni véritablement omnivores ; les félins domestiques sont des carnivores à petite ou faible tendance omnivore. Ces derniers sont alors fortement carnivores, contrairement à la classification de "strictement carnivore" habituellement conférée au chat domestique.

**Mots clés:** domestication, classification, régime alimentaire, élevage, formulation alimentaire, aliment approprié.