PROCEEDINGS

MYBIOMED SYMPOSIUM 2023

"Navigating the Biomedical Science Landscape in Tackling Health Crises"

Organised by:

The Malaysian Biomedical Science Association & Taylor's University

9th August 2023
0830-1700
Taylor's University Lakeside Campus

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Welcome message

by MyBiomed President,

Assalamualaikum, salam sejahtera and a very good day to all,

Alhamdulillah, all praises be to Allah, the Merciful, the All Beneficent, whose Grace and Blessings have enabled us to organise MyBiomed Symposium 2023. I would like to extend the warmest welcome to all invited speakers and participants to this event.

The Malaysian Biomedical Science Association (MyBiomed) was established and registered in September 2016. MyBiomed Symposium 2023 serves as a valuable initiative to foster stronger relationships among MyBiomed members, researchers, and students and expand professional networks within the field of Biomedical Science. Given the significance of impactful and high-quality research in biomedical science, this symposium acts as a platform for sharing the most recent information, findings, and advancements in Biomedical Science research. Under the theme of '*Navigating the Biomedical Science Landscape in Tackling Health Crises,*' distinguished speakers and presenters will contribute their expertise in navigating the biomedical science landscape in tackling health crises. Their contributions will enable us to exchange ideas on future research directions and stay current with the latest discoveries in this field.

We are thrilled to present this symposium, which is the outcome of the partnership between MyBiomed and Taylor's University. I believe the collaboration between MyBiomed and Taylor's University will benefit all participants. I look forward to seeing MyBiomed contribute to enhancing research quality in Malaysia. Finally, I extend my heartfelt gratitude to all the dedicated committee members for their unwavering commitment and diligent efforts for the success of the MyBiomed Symposium 2023.

Thank you.

Prof. Dr Siti Balkis Budin
President
Malaysian Biomedical Science Association (MyBiomed)

Welcome message

by Emeritus Professor Dr Paraidathathu Thomas A/L P.G. Thomas,

I thank the organizing committee for inviting me to write a foreword for the program book of the MyBiomed Symposium 2023.

The inaugural MyBiomed Symposium 2023 held in conjunction with the Annual General Meeting of the Malaysian Biomedical Association (MyBiomed) and I am proud that Taylor's University has been selected as the venue and that the staff of the School of Biosciences are taking an active role in the organisation of this event.

The theme of the symposium '*Navigating the Biomedical Science Landscape in Tackling Health Crises*' is current and appropriate in the light of the various health and healthcare challenges that the world is facing today – new viruses, reemergence of old diseases, shortage of diagnostic tools and therapeutics agents, contamination of medicines with very harmful substances, emergence of zoonotic diseases etc. I am sure the various speakers and other communication during the symposium will help us better understand and consequently develop tools to address these challenges.

The organizing committee has carefully selected the appropriate keynote speaker and plenary speakers from across the globe – YBhg Professor Emeritus Tan Sri Dato Dr Mohamed Salleh Mohamed Yasin, Prof Dr Chua Chee Wai and Professor Dr Charles Anthony Rhodes respectively, who are pioneers and leaders of the biomedical science arena in Malaysia and experts in their field. They and the other invited speakers will be able to provide both historical perspectives and current developments and approaches to the challenges for the biomedical science profession.

I congratulate the organizing committee for putting together a very interesting program with something for everybody, including students. I wish all participants a fruitful time of learning, exchanges of ideas and discussion and opportunities for collaboration.

Thank you.

Emeritus Professor Dr Paraidathathu Thomas A/L P.G. Thomas
Executive Dean
Faculty of Health & Medical Sciences
Taylor's University

Chairperson

MyBiomed Symposium 2023

Assalamu'alaikum warahmatullahi wabarakatuh and warm greetings!

Welcome all to our very first national Biomedical Science Symposium. This is a very exciting occasion for us. It's been more than 30 years of Biomedical Science in Malaysia!

The Malaysian Biomedical Science Association (MyBiomed) and Taylor's University are jointly organising this inaugural MyBiomed Symposium, with our theme centred on "Navigating the Biomedical Science Landscape in Tackling Health Crises". Being in the biomedical sciences means having a foot in various fields of study. For students, variety provides for thrilling explorations of diverse knowledge. For alumni, many of us have chosen to focus on a service or research field or enterprise. At heart, we are all Biomedical Scientists. Our scientific diversity is our strength as we continue to face new and on-going health challenges.

Befitting our theme, the inaugural MyBiomed Symposium is featuring speakers who will talk about our place and our roles in the Health Science landscape. For our Keynote Speaker, we are incredibly honoured to have the esteemed Professor Emeritus Tan Sri Dr. Mohamed Salleh bin Mohamed Yasin, Chairman of Spectrum Education Group. Tan Sri Dr. Mohamed Salleh was a pioneer for Biomedical Science in Malaysia and was the Founding Dean of the first Faculty of Allied Health Sciences in Malaysia. For our plenary speakers, we are thrilled to have Professor Chua Chee Wai, our homegrown Biomedical Science scholar who is now Principal Investigator and Professor at the Renji-Med X Clinical Research Stem Cell Center in Shanghai, China, where he is advancing stem cell and organoid-related research; and Professor Dr. Charles Anthony Rhodes, Institute of Biomedical Science (IBSM) Fellow and Editor of the British Journal of Biomedical Science (BJBS). Professor Tony Rhodes, as he is warmly known, was formerly a Professor at the School of Health Sciences, International Medical University (IMU) and prior to that, a Professor in the Department of Pathology, Faculty of Medicine, Universiti Malaya.

MyBiomed Symposium is also the stage to present research efforts and output from our postgraduates and undergraduates. And for our Biomed undergrads who are thinking about where their lives' journeys will take them, the Career Development Forum is showcasing alumni who are building their careers and furthering their studies. Moreover, this symposium is the platform for all of us to gather in-person to discuss the impact of the Allied Health Profession Act (Act 774) on our respective professions and careers.

Our MyBiomed Symposium committee thanks you all for joining us for this occasion. We hope this will be a day for reunions and for kindling new friendships and collaborations, and the start of many more MyBiomed events to come!

Dr. Suzita Mohd Noor
Chairperson MyBiomed Symposium 2023

Getting to know MyBiomed

The Malaysian Biomedical Science Association (MyBiomed) is a professional organisation for Malaysian graduates of Biomedical Science and adjacent degrees programmes, and all other professionals affiliated with the Biomedical Sciences. The idea for the formation of MyBiomed was mooted upon the gazettement of the Allied Health Professions Act 774 in February 2016. Under this act, Biomedical Science graduates can be recruited as licenced Medical Laboratory Scientists. However, there is more to Biomedical Science than being allied health practitioners.

MyBiomed was thus established with the Vision to:

- Provide training, activities, and programs in the related fields,
- Build awareness about research, industry development, and current issues related to Biomedical Science,
- Build awareness on the Allied Health Professions Act 774 among members and provide necessary support in the implementation of the Act,
- Strengthen relationships between Biomedical Science professionals and establish professional networks for research and related biomedical science industries.

With this Vision in mind, MyBiomed was launched in conjunction with the 3rd Pan-Asian Biomedical Science Conference on the 7th of December 2016, at Hotel Premiera Kuala Lumpur, amongst a gathering of Biomedical Scientists, Researchers, Academics and Industry Professionals.

Membership to MyBiomed is open to all graduates of Biomedical Science degree and related programmes, as well as all associated academics and professionals. MyBiomed aspires to provide support and resources for its members, alongside a focus on the development of medical technology and its applications in Malaysian healthcare. MyBiomed now has over 80 members consisting of academics and professionals from across Malaysia, all dedicated to advancing the fields of Biomedical Science in Malaysia and the region.

MyBiomed facilitates positive collaborations with ministries and departments within the Malaysian government and fosters strong relationships with non-governmental societies and associations. In addition, MyBiomed is continuously engaging with regional and international organisations related to Biomedical Science to maintain and further enhance its relevance.

Contact: mybiomed16@gmail.com
Further information about MyBiomed please visit:
https://mybiomed16.wixsite.com/mybiomed

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To become a member please scan:

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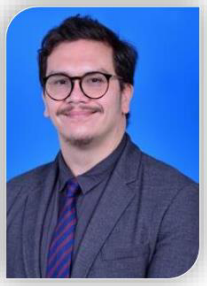

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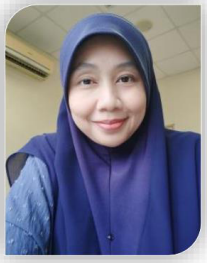

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Event Schedule

9TH AUGUST 2023 - WEDNESDAY
"Navigating the Biomedical Sciences Landscape in Tackling Health Crisis"

TIME	PROGRAMME	VENUE
0830 – 0900	**REGISTRATION**	LT12 Foyer
0900 – 0915	**OPENING CEREMONY** • Speech by Taylor's Executive Dean – Emeritus Professor Dr P.T Thomas • Speech by Chair MyBiomedical Symposium 2023 – Dr Suzita Mohd Noor • Videoshow on MyBiomed	LT12
0915 – 1000	**KEYNOTE ADDRESS:** Prof Emeritus Tan Sri Dato' Dr Mohamed Salleh Mohamed Yasin (Chairman of Spectrum Education Group) *Title: "The prospect and future of Biomedical Sciences in Malaysia"* Session chair: Prof. Umah Rani A/P Kuppusamy	LT12
1000 – 1015	**REFRESHMENTS**	Terrace Deck, Level 2
1015 – 1200	**CONCURRENT SESSIONS**	
	• **ORAL PRESENTATION 1** Moderator: Dr Ibrahim Adham Taib • **ORAL PRESENTATION 2** Moderator: Dr Izatus Shima Taib • **POSTER PRESENTATION** PIC: Dr. Seri Narti Edayu Sarchio	LT12
	UNDERGRADUATE CAREER DEVELOPMENT FORUM Moderators: Ms Teo Sin Yee, Mr Daniel Azreen Bin Amir 1. Ms Kandy anak Bongli (USM Alumni, Science Officer, Hospital Simunjan, MOH) 2. Mr Ayman Lee (IIUM Alumni, Project Manager, Premier Integrated Labs) 3. Mr Bryan Yap (Taylor's University Alumni, PhD fast track candidate) 4. Ms Sally Peh (Taylor's University Alumni, Centre Manager, Byond28 Confinement Care) 5. Ms Mohana Priya (Taylor's University Alumni, Field Application Specialist, Canvio)	LT11
1200 – 1300	**MyBiomed ANNUAL GENERAL MEETING**	LT12

1200 – 1400	**LUNCH BREAK**	Terrace Deck, Level 2
1400 – 1500	**ALLIED HEALTH PROFESSIONAL'S (AHP) FORUM** Moderator: Assoc Prof. Adeline Chia 1. Mr Saravanakumar a/l Maniam (Principal Assistant Director, Allied Health Sciences Division Ministry of Health) 2. Puan Adela Ida Anak Jiram (Head of Profession, Biomedical Scientist, Ministry of Health Malaysia) 3. Prof. Dr. Cheah Yoke Kqueen (Deputy Dean, Faculty of Medicine and Health Sciences, UPM) 4. Dr Raja Elina Raja Aziddin (President, Malaysian Association of Clinical Biochemists) 5. Mr Tan Kian Shing (General Manager, Synapse Sdn Bhd)	LT12
1500 – 1530	**PLENARY LECTURE:** Professor Dr. Chua Chee Wai (Renji-Med X Clinical Stem Cell Research Centre) Title: "Integrating organoid technology and single-cell transcriptomic analysis for the study of prostate luminal progenitors and tumour evaluation" Session Chair: Prof Dr Siti Balkis Budin	LT12
1530 – 1600	**PLENARY LECTURE:** Professor Charles Anthony Rhodes (IBMS Fellow, British Journal of Biomedical Sciences (BJBS) Editor) Title: "Prognostic and predictive biomarkers in breast cancer: an update on clinical usage" Session chair: Assoc. Prof Dr Lim Chooi Ling	LT12
1600 – 1630	**CLOSING CEREMONY** • Announcement of Winners • Closing speech by President, MyBiomed Society 2023/2025	LT12
1630 – 1700	**REFRESHMENT**	Terrace Deck, Level 2

Keynote & Plenary Speakers

Keynote speaker

Prof Emeritus Tan Sri Dato' Dr Mohamed Salleh Mohamed Yasin
(Chairman of Spectrum Education Group)

Professor Emeritus Tan Sri Dato´ Dr Mohamed Salleh Bin Mohamed Yassin graduated in 1974 from Bandung Institute of Technology (ITB), Indonesia in Applied Biology. He later obtained his PhD in1980 and conferred a Doctorate in Science (Honoris Causa) in 2012 from the University of Bath, U.K. Tan Sri was appointed as the 8th Vice Chancellor of the Universiti Kebangsaan Malaysia (UKM) in 2003 until his retirement in 2006. Tan Sri was awarded an Honorary Doctorate in Health Sciences from Universiti Sultan Zainal Abidin (UNISZA) in 2015. In 2014, he was conferred Professor Emeritus from National University of Malaysia (UKM) in 2014.

Prof. Emeritus Tan Sri has made many significant contributions in Health Sciences nationally and internationally. Among his major involvements in the development of Health Sciences include:
Past Chairman, Medical Technologists' Training Programme, Medical Faculty, UKM.
Former Head, Dept. of Microbiology and Immunology, Medical Faculty, UKM.
Past President, Malaysian Society for Infectious Diseases and Chemotherapy (MSIDC).
Past Fellow, Commonwealth Medical Fellowship (Mycology Reference Lab., Public Health Lab. Services, U.K)
Former Deputy Dean (Academic), Med. Fac., UKM.
Founding Head, Biomedical Sciences Degree Programme. (In Collaboration with Commonwealth Higher Education-CICHE and Institute of Biomedical Sciences–IBMS, U.K.)
Founding Dean, Faculty of Allied Health Sci., UKM.
Former Deputy Vice Chancellor (R&D), UKM.
Former Chairman, Board of Directors, Malaysian Qualifications Agency (MQA).
Former Lead Assessor, MQA Self-Accreditation Team.
Founding Director, United Nations University Institute for Global Health (UNU-IIGH).
Former Pro Chancellor / Chairman, Board of Governors, Allianze University College of Medical Sciences (AUCMS).
Current Member, Professional External Advisory Committee (PEAC) & Academic Quality Committee (AQC), International Medical University (IMU).
Current Chairman, Board of Governors, University College MAIWP International (UCMI).
Current Academic Advisor, Damai Specialist Hospital (DSH) Institute of Technology (DIT).
Former Member of Board of Directors (BOD) and current Visiting Professor, Faculty of Medicine, National Defence University of Malaysia (UPNM).

As a scientist in the field of Health Sciences, Tan Sri Professor Salleh´s main research interests are in developing diagnostic kits for systemic fungal infections, as well as research in environmental health.

Presentation Summary

The Future of Biomedical Sciences Programmes in Malaysia: Challenges and Opportunities

M.Salleh B.M Yasin

The first Bachelor of Biomedical Sciences degree programme in Malaysia was offered by Universiti Kebangsaan Malaysia (UKM) in 1992. There are now more than 20 Higher Education Institutions (HEIs) in Malaysia that are offering almost 50 Biomedical Sciences or similar programmes at different levels. The obvious question would be, are there too many of these programmes being offered most importantly in terms of firstly from the need of country perspective and secondly in terms of graduate employability.

The presentation will highlight the history leading to the introduction of Biomedical Sciences programmes in Malaysia, the present state of affairs and the need to revisit and review the challenges and justifications as well the opportunities of offering these programmes so as to be certain that these programmes are relevant and sustainable in the foreseeable future.

Plenary Speaker

Professor Dr. Chua Chee Wai
(Renji-Med X Clinical Stem Cell Research Centre)
cheewaichua@yahoo.com; cwchua@sjtu.edu.cn

Dr. Chee Wai CHUA is a Principal Investigator and Professor at Renji-Med X Clinical Research Stem Cell Center, a Group Leader at State Key Laboratory of Systems Medicine for Cancer, and an Adjunct Professor at Department of Urology, Shanghai Jiao Tong University (SJTU) School of Medicine-affiliated Renji Hospital. He has been selected for the prestigious Shanghai Overseas High-Level Talent Program, and appointed as a Professor of Special Appointment by Shanghai Institutions of Higher Learning, which carries the title "Eastern Scholar". Dr. Chua received a Bachelor of Biomedical Science with honors from Universiti Kebangsaan Malaysia and a Doctor of Philosophy (PhD) in Cancer Biology at Li Ka Shing Faculty of Medicine, The University of Hong Kong. He then joined Professor Michael Shen's group at Columbia University Medical Center (CUMC) for postdoctoral training and was later promoted to an Associate Research Scientist position at Department of Urology, CUMC. At Columbia, Dr. Chua received the Department of Defence Prostate Cancer Research Program Postdoctoral Training Award and AACR Scholar-in-Training Award to functionally analyze the role of androgen receptor in a prostate luminal progenitor population. More importantly, he has developed a novel organoid culture method for maintaining prostate luminal progenitors, prostate and bladder cancers as well as metastases. Notably, these works were published in top journals, include Nature Cell Biology, eLife and Cell, and have earned him two international patents. In the first ever organoid workshop held at Cold Spring Harbor Laboratory, Dr. Chua was invited to serve as a Laboratory Instructor to teach the prostate organoid culture methodology to research trainees from all over the world. He is currently an Editorial Board Member of Cancer Letters and have initiated and served as a Guest Editor of the Special Issues on Prostate Cancer and Stem Cells and Cancer in the journal. Dr. Chua has also served as an ad hoc reviewer for different journals and grants for international organizations, such as Swiss 3R Competence Centre and World Cancer Research Fund International. Since the inception of his research group in Shanghai, Dr. Chua has been actively involved in various stem cell and organoid-related research activities in China and internationally, including serving as the Vice Chair of the Organizing Committee of the Inaugural and the Second Frontiers in Stem Cell and Cancer Research International Conference, contributing on invited reviews on prostate organoid technology and tumor modeling, speaking at various major stem cell and organoid conferences, providing expert opinion for standardized organoid protocols, and involving in drafting of the consensus on clinical application of organoid technology in China and work report on organoid research for Chinese government.

Presentation Summary

Integrating organoid technology and single-cell transcriptomic analysis for the study of prostate luminal progenitors and tumor evolution

Chee Wai Chua, Ph.D.

Principal Investigator and Professor
Renji-Med X Clinical Stem Cell Research Center,
State Key Laboratory of Systems Medicine for Cancer, and Department of Urology,
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In the recent years, we have witnessed the emergence of androgen receptor (AR)-independent prostate cancer (AIPC) with the clinical use of second-generation androgen deprivation therapy, namely Enzalutamide and Abiraterone. Upon the progression to AIPC, the remaining treatment options are mainly palliative but not curable. Therefore, understanding the cellular origins and dynamics involved in AIPC evolution is crucial for the identification of timely treatment strategies for these patients. In this presentation, I will share with you how we integrate organoid technology and single-cell transcriptomic analysis to identify novel AR-independent prostate luminal progenitor and cancer subsets. In particular, we have generated a novel genetically-engineered mouse model, which can efficiently delete *AR* in the prostate epithelium, resulting in the enrichment of AR-independent prostate luminal progenitors. Notably, systematic single-cell transcriptomic profiling and inference study of the isolated prostate luminal progenitor candidate and its organoid derivative have enabled the elucidation of prostate luminal progenitor differentiation trajectories. In addition, we have also analyzed oncogenic-transformed prostate luminal progenitor-initiated tumors upon transplanted into C57BL/6 host mice and identified AIPC subsets that are preferentially expanded or maintained under immune-intact condition. Taken together, our findings have highlighted the capability of organoid technology in preserving progenitor potential and tumor heterogeneity. In future study, we will systematically assess tumor-initiating ability of different prostate luminal progenitors, and elucidate cellular heterogeneity and molecular characteristics of different subsets in the oncogenic-transformed luminal progenitors-initiated AIPCs. Consequently, these investigations should yield novel insights into the emergence of AIPCs as well as identify novel therapeutic targets for AIPC patients.

Key words: AR-independent prostate cancer; prostate luminal stem cells and progenitors; androgen-deprivation therapy; organoid technology; genetically-engineered mouse models

Plenary Speaker

Professor Charles Anthony Rhodes (IBMS Fellow, British Journal of Biomedical Sciences (BJBS) Editor)

Dr Rhodes is currently Editor-in-Chief of the British Journal of Biomedical Science and is a fellow of both the UK Institute of Biomedical Science and the Royal College of Pathologists. He has previously held a range of professorial positions both in Kuala Lumpur and the United Kingdom and has over 19 years experience working in UK NHS laboratories and 20 years employed as an academic. He has researched primarily in the field of breast cancer, which to date have attracted over 19,000 citations and has contributed to ASCO/CAP international guideline papers for the testing of estrogen receptors and HER2 in breast cancer.

Presentation Summary

Prognostic and predictive biomarkers in breast cancer: an update on clinical usage

Anthony Rhodes

Editor-In-Chief,
British Journal of Biomedical Science
*Correspondence: carhodes60@gmail.com

All women with newly diagnosed breast cancer are tested for the hormone receptors, estrogen receptors (ER) and progesterone receptors (PR) in order to determine their likely benefit following surgery of treatment with targeted estrogen antagonists, such as tamoxifen and aromatase inhibitors (1). In addition, since 2005, patients with breast cancer have been routinely tested for expression of the oncogene, human epidermal growth factor receptor -2 (HER2), similarly, to determine benefit from a targeted therapy, trastuzumab (Herceptin) (2). It is important to have reliable assays to detect ER, PR and HER2 in tissue samples, in order determine which patients are likely to respond favorably to these treatments and those that will not. Failure to ensure this can have disastrous results for all concerned. In some instances, assessment of the proliferation marker Ki67, may also be useful in identifying women with early-stage aggressive breast cancers that may benefit from adjuvant chemotherapy. This presentation will discuss the evidence for testing in clinical pathology in addition to the latest recommendations with respect to how the results of the tests should be assessed.

1. Wolff AC et al. American Society of Clinical Oncology/College of American Pathologists guideline recommendations for HER2 testing in breast cancer. J Clinical Oncol 2007; 25: 118-145.
2. Hammond EH, et al. American Society of Clinical Oncology/College of American Pathologists guideline recommendations for immunohistochemical testing of estrogen/progesterone receptors in breast cancer. J Clin Oncol 2010; 28: 2784-2795.
3. Torsten O Nielsen et al, Assessment of Ki67 in Breast Cancer: Updated Recommendations From the International Ki67 in Breast Cancer Working Group, JNCI 2021; 113 (7): 808–819, https://doi.org/10.1093/jnci/djaa201

Allied Health Professional's (AHP) Forum Panels

Panel 1

Mr Saravanakumar a/l Maniam (Principal Assistant Director, Allied Health Sciences Division Ministry of Health)

Mr. Saravanakumar presently holds the position of Principal Assistant Director at the Secretariat for the Malaysian Allied Health Profession Council, Allied Health Sciences Division, Ministry of Health. His career began in 2004 as a Science Officer (Forensic) within the Ministry of Health, immediately after obtaining a degree in Forensic Science from USM.

His professional journey includes service at Kota Bharu Hospital in 2004, Tengku Ampuan Rahimah Hospital in Klang (2005-2011), and Sungai Buloh Hospital (2011-2015). In these roles, he significantly contributed to the development and implementation of forensic procedures, managed the forensic laboratory setup, and provided valuable technical guidance.

In 2015, Mr. Saravanakumar was promoted to the Malaysian Allied Health Professions Council, playing an essential role in establishing the secretariat. He has been instrumental in overseeing the Council's establishment, developing regulatory policies, and offering technical expertise to allied health professionals and organisations.

Over his 19 years of service, Mr. Saravanakumar has continuously expanded his knowledge, earning Master's degrees in Criminal Justice (2011) and Analytical Chemistry (2014) from University Malaya. His extensive experience and understanding of the Allied Health Professions Act and related policies are a testament to his commitment to regulating allied health professionals' practices."

Panel 2

Puan Adela Ida Jiram
(Head of Profession, Biomedical Scientist, Ministry of Health Malaysia)

Miss Adela is a registered Biomedical Scientist, currently serving at the Parasitology Unit of the Infectious Diseases Research Centre at the Institute for Medical Research Malaysia (IMR). She currently serves as the Head of Profession for Biomedical Scientists in the Ministry of Health Malaysia

With a robust career spanning over a decade, Miss Adela's focus revolves around malaria, encompassing both human and simian strains. She holds a Bachelor of Science and a Master of Medical Science from the University of Malaya. Additionally, she possesses an Advanced Diploma in Applied Parasitology and Entomology from the IMR, and she is actively pursuing her PhD in Molecular Medicine at Universiti Sains Malaysia.

Miss Adela's dedication to research is evident through her role as the Principal Investigator for three significant projects at the IMR. She is deeply involved in numerous research initiatives related to human and simian malarias, including ground-breaking work in discovering sub microscopic malaria in Malaysia.

Beyond her research accomplishments, Miss Adela plays an integral role in the academic community. She is an esteemed reviewer for peer-reviewed journals such as Malaria Journal, Acta Tropica, American Journal of Tropical Medicine and Hygiene, and Tropical Medicine. Her extensive contributions extend to authoring and co-authoring over ten journal articles in esteemed peer-reviewed publications. Notably, she is also a contributing author to the "Ensiklopedia Penyakit Berjangkit," a publication by Dewan Bahasa Pustaka.

Miss Adela's remarkable journey in the field of biomedical science serves as an inspiration to fellow researchers and professionals alike. Her commitment to advancing our understanding of malaria and infectious diseases showcases her unwavering dedication and contributions to the medical community.

Panel 3

Prof. Dr. Cheah Yoke Kqueen (Deputy Dean, Faculty of Medicine and Health Sciences, UPM)

Prof. Ts. Dr. Cheah Yoke Kqueen is the Deputy Dean, (Graduate Studies, Industry & Community Relations and Income Generation), Faculty of Medicine and Health Sciences, UPM. He is a Fellow of Academy of Science, a registered Medical Laboratory Scientist (Malaysia), a Chartered Scientist, Fellow of Institute of Biomedical Science, UK and Chartered Biologist, Fellow of the Royal Society of Biology, UK and Fellow of the Royal Society of Chemistry, UK. Prof. Dr. Cheah contributes immensely to non-governmental organisation. He holds the position as the Advisor for Malaysian Biomedical Science Association (MyBiomed), President for BiomedKL and Korean Government Scholarship Alumni. Currently, Prof. Dr. Cheah is the first the Malaysia Allied Health Profession Council for Biomedical. He is also a certified professional in Biorisk Assessment and Biosecurity.

Prof. Ts. Dr. Cheah is an established scientist with more than 250 scientific publications, 5 patents, copyrights and won numerous awards in national and international research exhibitions. He has successfully led 16 grants in the area of Molecular Diagnostics, Genetic Engineering, Drug Discovery, Molecular Biology, Molecular Microbiology, Medical Biotechnology, Molecular Medicine, Genetics, Cancer Biology and Bioinformatics. Prof. Dr. Cheah was awarded as the Top Research Scientist Malaysia in 2017 in listed in the Malaysia Book of Records in 2022.

Panel 4

Dr Raja Elina Raja Aziddin

BSc., DMM, DCB (level 5), PhD.

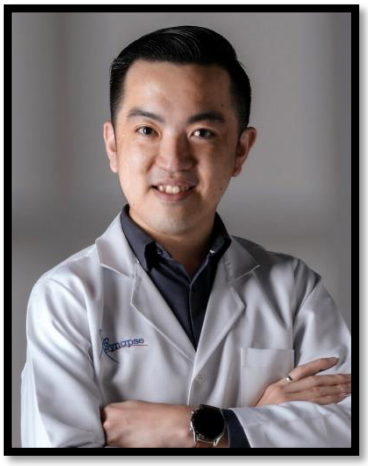
(President, Malaysian Association of Clinical Biochemists)

Dr. Raja Elina has a degree in Biochemistry and PhD in Medical Sciences from University of Malaya. She set up the Drug and Research Unit in Hospital Kuala Lumpur and was head of unit until her retirement in June 2018. Among her in-service accomplishments include the setting up the drug of abuse tests by GC/MS and Tandem Mass Spectrometry for the MOH labs; setting up of special proteins, tumour markers and TDM services in Pathology Department HKL, the implementation of the laboratory information system in mid 90s, ISO 15189 laboratory accreditation in early 2000 as well as the implementation of six sigma and risk management. She was the head of the Clinical Biochemists profession for the Ministry of Health from 2017-2018. Dr Elina has been an invited speaker at many national and international conferences. In 2017 she was appointed as the APFCB travelling lecturer for a term of 3 years.

Dr. Elina is currently the President of the Malaysian Association of Clinical Biochemists (MACB), the national representative to the Asia Pacific Federation of Clinical Biochemistry and Laboratory Medicine (APFCB), a past member of the APFCB Education and Laboratory Management Committee, past chair of the APFCB Communications and Publications Committee and past editor of the APFCB News. In Jan 2023 she was appointed as treasurer of the APFCB.

She is also the national representative to the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) and a corresponding member of the IFCC Committee on Reference Interval and Decision Limits (C-RIDL. She is currently a member of the IFCC Committee on Clinical Laboratory Management (C-CLM).
Dr. Elina is a Senior Technical Assessor under Standards Malaysia for MS ISO 15189 and is a trained lead assessor. She is a member of Technical Committee of "Clinical Laboratory Testing & In Vitro Diagnostic Test Systems (TC/R/7)" for the Preparation of Malaysian Standards and a member of the International ISO TC 212 working group. In 2020, Dr. Elina was appointed as a Member of Malaysian Allied Health Professions Council (MAHPC) for the Allied Health Professions Act 774 Malaysia for the term 2020 -2023. Dr. Elina has been appointed as the External Advisor for Sunway University for Master in Medical Science and Doctor of Philosophy in Medical Science programs from July 2021 – July 2024. In August 2022 Dr. Elina was appointed as an Adjunct Professor for the School of Health Sciences, University Kebangsaan Malaysia.

Panel 5



Mr Tan Kian Shing
(General Manager, Synapse Sdn Bhd)

Mr. Tan Kian Shing is currently the General Manager at Synapse Laboratory, Petaling Jaya, Selangor.
He is a Registered Medical Laboratory Scientist with the Malaysian Allied Health Professions Council (MAHPC) with over 13 years of scientific and managerial experience in medical diagnostics industry. He has accumulated a diverse background of work experience throughout his career at Synapse Laboratory ranging from laboratory testing to quality management. He is currently responsible for overseeing daily operations and implementing growth strategies for Synapse Group of Companies. He represents the company in meetings with financial investors, senior management professionals, clinicians, and key opinion leaders in the industry. He is also a frequent speaker at various local and international CPD talks and conference on medical laboratory-related topics.
Mr. Tan is also the President-Elect of the Malaysian Institute of Medical Laboratory Sciences (MIMLS) and represents MIMLS at various professional activities organised by the Malaysian Confederation of Allied Health Professional Associations (MyCAHP), ASEAN Association for Clinical Laboratory Sciences (AACLS), Asia Association of Medical Laboratory Scientists (AAMLS) and International Federation of Biomedical Laboratory Science (IFBLS). He is also involved in the Allied Health Professions Act 2016 (Act 774) Working Committee for Medical Laboratory Technologist profession at the Allied Health Science Division (BSKB), Ministry of Health, Malaysia.

Scientific Session (Oral & Poster Presenters)

Oral Session 1 (10.15am-11.15am)

ID	PRESENTER	INSTITUTION	TITLE
OL8	Khairin Hamimi Hashim	Universiti Putra Malaysia (UPM)	Molecular Characterization of Carbapenem Resistance in *Klebsiella pneumoniae* Clinical Isolates
OL10	Nur Erysha Sabrina Jefferi	Universiti Kebangsaan Malaysia (UKM)	EVNol SupraBio™ Ameliorates the Testicular Steroidogenesis via Reproductive Hormone Regulation in Bisphenol F-Induced Sprague Dawley Rats
OL11	Noor Saleh Ali Hamam	Universiti Putra Malaysia (UPM)	Occurrence Of Carbapenem-Resistant in *Klebsiella pneumoniae* Clinical Isolates
OL12	Nur Hazirah Tarmizi	Universiti Teknologi MARA(UiTM)	Quantification of Ultrafiltrate Bromelain Enzyme from MD2 Pineapples (*Ananas cosmos*) Cores and Its Cytotoxicity Activity Against L929 Cell
OL13	Raveena Vaidheswary Muralitharan	Universiti Kebangsaan Malaysia (UKM)	Establishing A UVB-Induced BALB/c Mice as a Skin Photoaging Animal Model
ON10	Nur Insyirah Mohd Razalan	Universiti Kebangsaan Malaysia (UKM)	Virulence Genotyping and Multidrug Resistance of *Escherichia coli* Isolated from Plaque Psoriasis Fecal Samples

Oral Session 2 (11.15am-12.00pm)

ID	PRESENTER	INSTITUTION	TITLE
ON1	Se Thoe Ewen	Taylor's University Lakeside Campus	*In Vitro* Evaluation and *In Silico* Prediction of *Cordyceps militaris*-Derived Nucleosides as Potential Therapeutic Agent Against Alzheimer's Disease
ON2	Ng Chu Xin	Taylor's University	Optimization, Characterization, And Cytotoxicity Evaluation of Tuneable Pegylated Liposome Co-Loaded with Doxorubicin Hydrochloride and miR-145 Mimics Against Triple Breast Negative Cancer *In Vitro*

ON7	Yong Gong Yi	Management & Science University (MSU)	Aza-BODIPY based Polymeric Nanoparticles Improves Anti-Tumor Activity for Photothermal Cancer Therapy in Chick Embryo Model
OL1	Sharon Rachel Wong	Taylor's University	miR-21 Expression in Breast Cancer Patients and its Correlation with Demographics, Subtype and Tumour Suppressor Genes: PTEN and PDCD4 in Putrajaya Hospital
OL6	Siti Nursyahirah Bakar	Management & Science University (MSU)	Targeting Tropomyosin Receptor Kinase C Expressing Cancer Cells Through Synthetic Ligand Conjugate and Cyclophosphamide for Immunotherapy
OL9	Rose Amalina Ruslan	Universiti Malaya (UM)	Effects of Quinazoline Derivatives on Non-Small Cell Lung Cancer

Poster Session 1 (10.15am-11.00am)

ID	PRESENTER	INSTITUTION	TITLE
PL2	Nur Athirah Azhar	Universiti Kebangsaan Malaysia (UKM)	Effects of Antibacterial Activity in Extracts Organ of Cockroach (*Periplaneta americana*) Against *Escherichia coli, Staphylococcus aureus, Vibrio cholera, Streptococcus pyogenes*
PL5	Christine Liew	Taylor's University	Cloning of Recombinant FcAR Receptor (CD89) Gene Into the *E.coli* Vector
PL7	Sher Lee Tan	Taylor's University	The Development of 3D-Printed Hemorrhoid Model for Effective Clinical Hemorrhoidal Laser Ablation Training
PL9	Farah Ezleen Aqilah Abu Bakar	Universiti Kebangsaan Malaysia (UKM)	Lineage-Specific Toxicity in Maternal Mice Hematopoietic Stem/Progenitor Cells Induced by Hydroquinone
PL13	Muhammad Adam Jayiddin	Universiti Kebangsaan Malaysia (UKM)	The Effect of Inflammation and Heart failure biomarkers in *Porphyromonas gingivalis*-Induced Zebrafish Hearts
PL15	Nadiah Abdul Gapal	Universiti Selangor (UNISEL)	*In-Vitro* Vasorelaxation Effect of HAB10R12 Endophytic Extract on Isolated Rings from Sprague Dawley Rat

PL16	Chen Mei Ong	Universiti Tunku Abdul Rahman (UNITAR)	Association Between Traditional Chinese Medicine (TCM) Body Constitutions and Polymorphisms of CYP11B2 Gene in Relation to Hypertension in Malaysia
PC9	Nur Izzatul Iman Hairil Azmi	Universiti Kebangsaan Malaysia (UKM)	Isolation and Characterisation of Bacteriophage Against *Pseudomonas aeruginosa*

Poster Session 2 (11.00am-11.30am)

ID	PRESENTER	INSTITUTION	TITLE
PN8	Muhd Hanis Md Idris	Universiti Teknologi Mara (UiTM)	Structural Evidence of Flavonoids as Antitumorigenic Agents against Multiple Targets of Breast Cancer: A Virtual Screening Approach
PN11	Muhammad Luqman Nul Hakim Rohaizad	Universiti Kebangsaan Malaysia (UKM)	Antioxidant Activity of *Plukenetia volubilis* (Sacha Inchi) Oil and Its Effects on The Viability of Human Keratinocyte (HaCaT)
PN15	Amirul Hafiz Ahmad Abdullah	Universiti Kebangsaan Malaysia (UKM)	The Aluminium Exposure Towards Cognitive Functions in Rats
PN20	Shafreena Shaukat Ali	Universiti Sains Malaysia (USM)	Therapeutic Potential of Exosome-Mediated Roselle Extract in Systemic and Histological Alterations Seen in Hypercholesterolemia Rats
PN21	Omchit Surien	Universiti Kebangsaan Malaysia (UKM)	Chemopreventive Effects of Oral Pterostilbene on Initiation and Promotion of Multistage Carcinogenesis in DMBA/TPA Induced Skin Squamous Cell Carcinoma Mouse Model
PN22	Yee Xin Lee	Universiti Kebangsaan Malaysia (UKM)	The Effect of a Short-Term Low Protein Diet on The Oxidative Stress, Biochemical Profile and Histological Changes in The Renal of Weaning Sprague Dawley Rat
PN23	Muhammad Hafiz Zuhdi Fairof	Universiti Kebangsaan Malaysia (UKM)	The Effects of Aluminium Exposure Towards Cognitive Functions in Rats

Poster Session 3 (11.30am-12.00pm)

ID	PRESENTER	INSTITUTION	TITLE
PC1	Humairaa' Majdan	International Islamic University Malaysia (IIUM)	Characterization Of *Candida albicans* Strain (Cocrii-Ac01) Isolated from Autistic Child with Caries and Its Susceptibility Towards Gold, Silver and Bimetallic Gold-Silver Nanoclusters
PC2	Reese Tien Ru En	Taylor's University	*In Silico* Identification of New Anti-SARS-CoV-2 Main Protease (M^{pro}) Molecules from *Datura fastuosa*
PC4	Abdin Shakirin Mohamad Norpi	Universiti Kuala Lumpur Royal College of Medicine Perak	Nano-architecture of Multiadjuvants Amphiphilic Chitosan Nanoparticles as a Delivery Platform for Lipopeptide-Based Vaccine against Group A Streptococcus: Synthesize, Formulating and Physicochemical Analysis
PC6	Dhipan Raj A/L Subramaniam	Universiti Malaysia Terengganu (UMT)	Medicinal Properties of Coastal Medicinal Plant *Ipomoea pes-caprae* Stem and Roots as Anti-Oxidant and Antibacterial
PL6	Elvi Zi Xun Lim	Taylor's University	Labelling Accuracy and Microbiological Quality of Probiotic Dietary Supplements Sold in Malaysia

List of Oral and Poster Participants for MyBiomed Symposium 2023

List of Oral Participants

OC1	***Plasmodium cynomolgi* and *Plasmodium inui*: New Public Health Challenges by Emerging Zoonotic Simian Malaria Parasites due to High Transmission Efficiency of The Vector** Nantha Kumar Jeyaprakasam, Van Lun Low, Sandthya Pramasivan, Jonathan Wee Kent Liew, Wan-Yusoff Wan-Sulaiman & Indra Vythilingam Biomedical Science Program, Center for Toxicology and Health Risk Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia
OC3	**Antibacterial Effect of *Zingiber zerumbet* Extract with Different Polarity and Its Combination with Antibiotics Toward Gram Negative Bacteria Using Azdast Method.** Noor Syazwani Abdul Majid, Asmah Hamid, Ahmad Zorin Sahalan, and Nurul Farhana Jufri Centre for Toxicology and Health Risk (CORE), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur, Malaysia
OD1	**Identification of 18-Amino Acids Anticancer Peptide (ACP) Derivative, D18.13 from Pardaxin Using in Silico Analysis** Yong Hui, Wong & Sau Har, Lee School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University, Subang Jaya, Selangor
OL1	**MIR-21 Expression in Breast Cancer Patients and Its Correlation with Demographics, Subtype and Tumour Suppressor Genes: PTEN and PDCD4 In Putrajaya Hospital** Sharon Rachel Wong, Pei Pei Chong, Tamri Mohd Islahuddin Mohd & Sau Har Lee School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University, Selangor, Malaysia
OL2	**Comparison of Polyphenolic Bioactive Compounds in Aqueous, Aqueous Ethanolic, And Polyphenol Rich Extract of *Hibiscus sabdariffa* Linn** Syaifuzah Sapian, Izatus Shima Taib, Jalifah Latip, Haliza Katas & Siti Balkis Budin Centre for Diagnostic, Therapeutic and Investigative Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur 50300, Malaysia.
OL3	**Optimization of Total Flavonoids Extraction from *Suaeda salsa* and Evaluation of Their Toxicity Profile in Sprague-Dawley (SD) Rats** Liu Hongxia, Yow Hui Yin, Zhang Guozhe & Sharina Hamzah School of Pharmacy, Faculty of Health and Medical Sciences, Taylor's University, 47500, Subang Jaya, Selangor, Malaysia.
OL5	**The Effects of *Zingiber officinale* Extract on Chronic Nicotine Toxicity in Mice Kidney** Putera Muhammad Hazim Amiruddin, Liyana Shafiqah Sahul Hamid, Nor Syafinaz Yaakob & Satirah Zainalabidin Programme of Biomedical Science, Centre of Toxicology and Health Risk Study, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.
OL6	**Targeting Tropomyosin Receptor Kinase C Expressing Cancer Cells Through Synthetic Ligand Conjugate and Cyclophosphamide for Immunotherapy** Siti Nursyahirah Bakar, Kevin Burgess, Kiew Lik Voon & Kue Chin Siang Faculty of Health and Life Sciences, Management and Science University, Seksyen 13, 40100 Shah Alam, Selangor, Malaysia
OL7	**Testing Insecticide Susceptibility of *Aedes albopictus* Collected from Recreational Parks in Selangor, Malaysia, in WHO Tube Tests** Nurul-Nastasea Sabar, Yu Ke-Xin, Norain Zulkarnain, Low Jo Ee, Rohani Ahmad, Zurainee Mohamed Nor, Rezki Sabrina Masse, Roza Dianita & Tengku Idzzan Nadzirah Tengku Idris Faculty of Health and Life Sciences, Management and Science University, Seksyen 13, 40100 Petaling, Selangor, Malaysia.

OL8	**Molecular Characterization of Carbapenem Resistance in *Klebsiella pneumoniae* Clinical Isolates** Khairin Hamimi Hashim, Nurshahira Sulaiman, Hazmin Hazman, Mohd Nasir Mohd Desa Department of Biomedical Sciences, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM), 43400, Serdang, Selangor, Malaysia
OL9	**Effect of Quinazoline Derivatives on Non-Small Cell Lung Cancer** Rose Amalina Ruslan, Suzita Mohd Noor, Leong Kok Hoong & Anwar Norazit Department of Biomedical Science, Faculty of Medicine, Universiti Malaya 50603 Kuala Lumpur
OL10	**EVNOL SUPRABIO™ Ameliorates the Testicular Steroidogenesis via Reproductive Hormone Regulation in Bisphenol F-Induced Sprague Dawley Rats** Nur Erysha Sabrina Jefferi, Joyce Goh Yi Shin, Siti Balkis Budin, Zariyantey Abdul Hamid & Izatus Shima Binti Taib Centre of Diagnostic, Therapeutic & Investigative Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Aziz, 50300 Kuala Lumpur, Malaysia
OL11	**Occurrence of Carbapenem-Resistant In *Klebsiella pneumoniae* Clinical Isolates** Noor Saleh Ali Bin Hamam, Hazmin Hazman, Nurshahira binti Sulaiman & Siti Nurbaya Masri Department of Biomedical Science, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia
OL12	**Quantification of Ultrafiltrate Bromelain Enzyme from MD2 Pineapples (*Ananas cosmos*) Cores and Its Cytotoxicity Activity Against L929 cell** Nur Hazirah Tarmizi, Amin Saiff Johari, Nur Ayunie Zulkepli, Norehan Mokhtar & Mohd Khairul Ya'kub Centre for Medical Laboratory Technology Studies, Universiti Teknologi MARA, Puncak Alam Campus, Selangor, Malaysia
OL13	**Establishing A UVB-induced BALB/C Mice as A Skin Photoaging Animal Model** Raveena Vaidheswary Muralitharan, Dayang Fredalina Basri, Siti Fathiah Masre & Ahmad Rohi Ghazali Center for Toxicology and Health Risk Studies (CORE), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur
ON1	***In Vitro* Evaluation and *In Silico* Prediction of *Cordyceps militaris*-Derived Nucleosides as Potential Therapeutic Agent Against Alzheimer's Disease** Ewen Se Thoe, Yoke Yin Chia, Sunita Chamyuang & Yin Quan Tang School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University Lakeside Campus, 47500 Subang Jaya, Selangor, Malaysia
ON2	**Optimization, Characterization, and Cytotoxicity Evaluation of Tuneable Pegylated Liposome co-Loaded with Doxorubicin Hydrochloride and MIR-145 Mimics Against Triple Breast Negative Cancer *In Vitro*.** Chu Xin Ng, Chee Wun How, Pei Pei Chong & Sau Har Lee School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University, Lakeside Campus, Selangor, Malaysia.
ON3	**Suppression of Diabetic Cardiomyopathy Progression by Roselle Polyphenol-Rich Extract via Modulation of Oxidative Stress** Fatin Farhana Jubaidi, Nur Liyana Mohammed Yusof, Satirah Zainalabidin, Izatus Shima Taib, Zariyantey Abdul Hamid & Siti Balkis Budin Center for Diagnostic, Therapeutic & Investigative Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia
ON4	**The Bisphenol F Induced Estrogen-Like Effect in The Seminiferous Tubules of *Sprague-Dawley* Rats** Asma' 'Afifah Shamhari, Siti Balkis Budin, Zariyantey Abd Hamid & Izatus Shima Taib Center of Diagnostics, Therapeutics, and Investigative Studies (CODTIS), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur 50300, Wilayah Persekutuan, Malaysia

ON5	**Proteomic and Barrier Analysis of Human Brain Endothelial Cells (HBEC-5i) Under Compromised Lysosome Function** Iffah Nadiah Laili, Nurul Farhana Jufri, Asmah Hamid, Farah Wahida Ibrahim & Mohd Hamzah Mohd Nasir Centre for Toxicology and Health Risk Studies (CORE), Programme of Biomedical Science, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia
ON7	**AZA-Bodipy Based Polymeric Nanoparticles Improves Anti-Tumor Activity for Photothermal Cancer Therapy in Chick Embryo Model** Gong Yi Yong, Anyanee Kamkaew & Chin Siang Kue Faculty of Health and Life Sciences, Management and Science University, Seksyen 13, 40100 Shah Alam, Selangor, Malaysia
ON9	**Role of Nestin and Associated miRNAS in Extracellular Vesicles Derived from Colorectal Cancer** Wen Ao Bong, Siti Fathiah binti Masre & Nadiah Abu UKM Medical Molecular Biology Institute, The National University of Malaysia, Cheras, Malaysia
ON10	**Virulence Genotyping and Multidrug Resistance of *Escherichia coli* Isolated from Plaque Psoriasis Fecal Samples** Nur Insyirah Binti Mohd Razalan, Vanitha Mariappan, Shanti Krishnasamy, Tang Shirley Gee Hoon & Kumutha Malar Vellasamy Department of Medical Microbiology, Faculty of Medicine, Universiti Malaya, 50603 Kuala Lumpur Malaysia
ON12	**Effects of Oral Pterostilbene Towards Pigmentation in UVB-Induced Skin Photoaging Balb/C Mouse Model** Poh Jing Ren, Ahmad Rohi Ghazali & Raveena Vaidheswary Muralitharan Center for Toxicology and Health Risk (CORE), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, 50300, Malaysia
ON13	**The Impact of Carvacryl-2-Oxoethylgallate on Oxidative Stress in Doxorubicin-Induced Cardiotoxicity** Alhaan Faatihah Muha, Jalifah Latip & Satirah Zainalabidin Programme of Biomedical Science, Centre of Toxicology and Health Risk Study, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.

List of Poster Participants

PC1	**Characterization of *Candida albicans* Strain (COCRII-AC01) Isolated from Autistic Child with Caries and Its Susceptibility Towards Gold, Silver and Bimetallic Gold-Silver Nanoclusters** Humairaa' Majdan, Syarifah Nurhikmah Izzati Syed Nasarudin, Humairaa' Majdan, Ricca Rahman Nasaruddin & Mohd Hafiz Arzmi Cluster of Cancer Research Initiative IIUM (COCRII), International Islamic University Malaysia, Kuantan, Pahang, Malaysia
PC2	***In Silico* Identification of New Anti-SARS-CoV-2 Main Protease (M^{pro}) Molecules from *Datura fastuosa*** Tien RRE & Tang YQ School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University, Subang Jaya, Selangor, Malaysia
PC3	**Assessment of Knowledge, Attitude, and Prevention Practices Towards Melioidosis Among Farmers in Selangor: A Cross-Sectional Study** Nur Dina Muhammad Fuad, Vanitha Mariappan, Ismarulyusda Isyak, Kumutha Malar Vellasamy & Sheila Nathan Biomedical Sciences Program, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur, Malaysia
PC4	**Nano-architecture of Multiadjuvants Amphiphilic Chitosan Nanoparticles as a Delivery Platform for Lipopeptide-Based Vaccine against Group A Streptococcus: Synthesize, Formulating and Physicochemical Analysis** Abdin Shakirin Mohamad Norpi, Fazren Azmi, Muhammad Luqman Nordin, Nuraziemah Ahmad, Haliza Katas & Abdullah Al-Hadi Ahmad Fuaad Faculty Pharmacy and Health Sciences, Universiti Kuala Lumpur, Royal College of Medicine Perak, Perak 30450, Malaysia
PC5	**Neutrophil Oxidative Burst Activity Response to *Staphylococcus aureus* of Carriage Origin** Seri Narti Edayu Sarchio, Nur Farahna Talib & Mohd Nasir Mohd Desa Department of Biomedical Sciences, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia
PC6	**Medicinal Properties of Coastal Medicinal Plant *Ipomoea pes-caprae* Stem and Roots as Anti-Oxidant and Antibacterial** Dhipan Raj, Khaizuran Shahiran Mohd Izhan & Suvik Assaw Marine Biology Program, Faculty of Science and Marine Environment, Universiti Malaysia Terengganu, 21030 Mengabang Telipot, Kuala Nerus, Terengganu, Malaysia.
PC7	**Quality of Life Status and Risk Factors Among Hospital Canselor Tuanku Muhriz (HCTM) Staff Who Have Recovered From COVID-19** Ismarulyusda Ishak, Fathin Nurnabila Ab Sofi, Hazfalinda Hamzah, Wan Nor Atikah Che Wan Mohd Rozali, Khamsiah Nawawi, Nurmasitah Mohd Nazri, Nora Aini Ramly, Manendra & Indang Trihandini Biomedical Science Program, Center for Toxicology & Health Risk Research (CORE), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia
PC8	**Uncovering The Link: Mobile Phones as Potential Fomites to Bacterial Transmission - A Case Study From Universiti Kebangsaan Malaysia** Laila Rashiqah binti Md Rapit, Shirley Gee Hoon Tang, Noraziah Mohammad Zin & Nor Malia Abd Warif Biomedical Science Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia

PC9	**Isolation and Characterization of Bacteriophage against *Pseudomonas aeruginosa*** Nur Izzatul Iman Hairil Azmi, Vanitha Mariappan, Yap Wei Boon, Yue-Min Lim & Kumutha Malar Vellasamy Biomedical Sciences Program, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur, Malaysia
PD1	**GABAergic Circuit of Brain Circadian Clocks: Theoretical Framework of A Network Simulation** Ze Ee Chan & Sheena Yin Xin Tiong Institute of Biological Sciences, Faculty of Science, Universiti Malaya, 50603 Kuala Lumpur
PD2	**Biological Activities of *Cordyceps militaris* & *Yerba santa* as Acetylcholinesterase Inhibitors** Thit Oo, Chia Yoke Yin & Chua Lin Lin School of Biosciences, Taylors University, Subang Jaya, Malaysia
PD3	***In-Silico* Sequence and Phylogenetic Analyses of Hemagglutinin (H) and Fusion (F) Genes of Canine Distemper Virus (CDV) Towards Prediction of Its Zoonosis Potential** Mohd Arifin Kaderi, Nurul Fatihah Nadia Abdullah & Muhammad Danial Adham Rosman Department of Biomedical Science, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia
PD4	**Determination of Knowledge, Attitude and Practice Questionnaires on E-Huffaz Prohealth: Development and Validation** Wan Nor Atikah Che Wan Mohd Rozali, Ismarulyusda Ishak, Arimi Fitri Mat Ludin, Amanina Athirah Mad Azli, Nurul 'Izzah Solah, Farah Wahida Ibrahim & Nor Malia Abd. Warif Biomedical Science Program, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia
PL1	***Canarium odontophyllum* Miq. Leaves Extract as New Drug Alternative for Malaria Treatment** Fifi Fariza Azmi, Shafariatul Akmar Ishak, Dayang Fredalina Basri, Noraziah Md Zin, M. Ismail Md Esam, Yee Ling Lau & Jonathan Wee Kent Liew Centre for Diagnostic, Therapeutic & Investigative Studies (CODTIS), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia
PL2	**Effects of Antibacterial Activity in Extracts Organ of Cockroach (*Periplaneta americana*) against *Escherichia coli, Staphylococcus aureus, Vibrio cholera, Streptococcus pyogenes*** Nur Athirah Azhar, Shafariatul Akmar Ishak & Ahmad Zorin Sahalan Department of Biomedical Sciences, Faculty of Health Science, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Wilayah Persekutuan Kuala Lumpur, Malaysia
PL3	**Histological Study of The Effects of Dabai Leaf (*Canarium odontophyllum*) In Methanol Extract on ICR Mice Infected with *Plasmodium berghei* NK65** Nurul Izzatie Mohd Ghabi, Shafariatul Akmar Ishak & Fifi Fariza Azmi Degree Program in Biomedical Sciences, Faculty of Health Sciences, University International of Malaysia (UKM), Kuala Lumpur, Malaysia
PL4	**The Histological Effects of Hexane Extract *Canarium odontophyllum* miq. Leaves Towards ICR Mice Infected with *Plasmodium Berghei* NK65** Khairunnisa-Khairuddin, Shafariatul Akmar-Ishak & Fifi Fariza-Azmi Department of Health Science Faculty,University Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.
PL5	**Cloning of Recombinant FCAR Receptor (CD89) Gene into The *E. coli* Vector** Christine Liew, Pei Pei Chong, Siti Hajar Yusof & Jason Khai Wei Lee School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University

PL6	**Labelling Accuracy and Microbiological Quality of Probiotic Dietary Supplements Sold in Malaysia** Elvi Zi Xun Lim & Caroline Lin Lin Chua School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University.
PL7	**The Development of 3D-Printed Hemorrhoid Model for Effective Clinical Hemorrhoidal Laser Ablation Training** Sher Lee Tan, Yin How Wong, Yin Quan Tang, Chai Hong Yeong & Lin Lin Caroline Chua School of Medicine, Faculty of Health and Medical Sciences, Taylor's University
PL8	**Effects of Low Protein Diet on Oxidative Stress and Liver Function in Weaning Sprague Dawley Rat** Natasya Asyura Mohd Yunus, Balkis Budin, Lim See Meng & Elvy Suhana Mohd Ramli Biomedical Science Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia
PL9	**Lineage-Specific Toxicity in Maternal Mice Hematopoietic Stem/Progenitor Cells Induced by Hydroquinone** Farah Ezleen Aqilah Abu Bakar, Zariyantey Abd Hamid, Nur Najmi Mohamad Anuar & Nur Afizah Yusoff Biomedical Science Programme, Center for Diagnostic, Therapeutic and Investigative Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur 50300, Malaysia
PL10	**Analysis of Oxidative Stress and Hepatotoxicity in Maternal Mice Exposed to Hydroquinone** Nurizzati Arifah Mazlan, Zariyantey Abd Hamid, Siti Balkis Budin & Nur Afizah Yusoff Biomedical Science Programme, Center for Diagnostic, Therapeutic and Investigative Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur 50300, Malaysia
PL11	**Effects of *In Utero* Hydroquinone Exposure on Oxidative Stress and Histopathological Changes in Maternal Mice Kidney** Nurul Husnina Khairul Zain, Zariyantey Abdul Hamid, Izatus Shima Taib & Nur Afizah Yusoff Biomedical Science Programme, Center for Diagnostic, Therapeutic and Investigative Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur 50300, Malaysia
PL12	**Investigating The Effect of *In Utero* Hydroquinone Exposure on Oxidative Stress And Histopathological Changes in Spleen of Maternal Mice** Nur Afizah Yusoff, Zariyantey Abd Hamid, Isna Syafiqa Isnimudin, Nor Malia Abd Warif, Siti Balkis Budin & Izatus Shima Taib Biomedical Science Programme, Center for Diagnostic, Therapeutic and Investigative Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, Kuala Lumpur 50300, Malaysia
PL14	**The Association Between Cytogenetics Abnormalities with Prognosis of Acute Myeloid Leukemia (AML) in Pantai Premier Pathology (PPP)** Nurul Farhana Jufri, Nur An-Nasyirah Hanin Abu Bakar, Saira Bahnu Mohamed Yousoof, Farah Wahida Ibrahim, Siti Fathiah Masre & Ismarulyusda Ishak Biomedical Science Programme, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300, Kuala Lumpur.
PL15	***In-Vitro* Vasorelaxation Effect of HAB10R12 Endophytic Extract on Isolated Aorta Rings from Sprague Dawley Rat** Nadiah Abdul Gapal, Ahmad Norasidi Mohd Raffie, Sharifah Izwan Tn Othman, Hamidah Abu Bakar & Wan Amir Nizam Wan Ahmad Faculty of Health Sciences, Universiti Selangor (UNISEL), Shah Alam Campus, Jalan Zirkon A7/A, Section 7, Shah Alam, Selangor Darul Ehsan

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PN3	**Evaluating The Effect of *Abelmoschus esculentus* (L.) Moench Peel On Cardiac Oxidative Stress in Obese Mice Model** Ainnur Syarahafizah Mohd Soeb, Azizah Ugusman, Adila A Hamid & Nur Najmi Mohamad Anuar Programme of Biomedical Science, Centre for Toxicology & Health Risk Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia
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EISSN NO: 2600-8491
https://journals.iium.edu.my/ijahs/index.php/IJAHS/index

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OC1|*PLASMODIUM CYNOMOLGI* AND *PLASMODIUM INUI*: NEW PUBLIC HEALTH CHALLENGES BY EMERGING ZOONOTIC SIMIAN MALARIA PARASITES DUE TO HIGH TRANSMISSION EFFICIENCY OF THE VECTOR

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ABSTRACT

The elimination of malaria in Southeast Asia has become more challenging due to rising knowlesi malaria cases. In addition, naturally occurring human infections with other zoonotic simian malaria caused by *Plasmodium cynomolgi* and *Plasmodium inui* adds another dimension of complexity in malaria elimination in this region. Unfortunately, data on the vectors which are responsible for transmitting this zoonotic disease is very limited. Thus, this study aims to investigate the entomological parameters of the simian malaria vectors and to examine the genetic diversity and evolutionary pattern of their simian *Plasmodium*. All the captured *Anopheles* mosquitoes from multiple locations in Peninsular Malaysia were dissected and mosquitoes which were positive with simian *Plasmodium* were subjected to nested PCR targeting 18S SSU rRNA gene to examine the genetic diversity and evolutionary pattern of their simian *Plasmodium*. Our study revealed that *Anopheles* Leucosphyrus Group mosquitoes are highly competent vectors, as evidenced by their high parity rate, survival and sporozoite infections in these mosquitoes. Besides, haplotype analysis on *P. cynomolgi* and *P. inui* from this study had shown close relationship between simian *Plasmodium* from the *Anopheles* mosquitoes with its vertebrate hosts. In conclusion, *P. cynomolgi* and *P. inui* were highly prevalent in mosquitoes and they demonstrated close genetic relationship with their vertebrate hosts, suggesting ongoing transmission between the vectors, macaques, and humans. With constant microevolutionary processes, there are risks for both the simian *Plasmodium* to emerge and spread as a major public health problem, following the trend of *P. knowlesi* in Southeast Asia.

Keywords: *Anopheles*, Simian *Plasmodium*, Vector bionomics, Population expansion, Zoonotic malaria.

OC3|ANTIBACTERIAL EFFECT OF *Zingiber zerumbet* EXTRACT WITH DIFFERENT POLARITY AND ITS COMBINATION WITH ANTIBIOTICS TOWARD GRAM NEGATIVE BACTERIA USING AZDAST METHOD.

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ABSTRACT

Zingiber zerumbet provides various benefits to public health. Zerumbone provides medicinal value, identified through phytochemical screening and antioxidant bioassay analysis through extraction using organic solvents of different polarities (methanol, ethyl acetate, and hexane) on its rhizomes. Gram-negative bacteria (*Escherichia coli* ATCC 25922 & *Pseudomonas aeruginosa* ATCC 27853) are used due to

higher resistance and endotoxins, contributing to morbidity and mortality worldwide. This research aims to determine the antibacterial effect of *Zingiber zerumbet* (different polarity) against gram-negative bacteria (*Escherichia coli* and *Pseudomonas aeruginosa*) through minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) values together with an antibiotic combination using 0-1000mg/ml Ampicillin and Penicillin, respectively. Inoculation, (0.082 in *Escherichia coli*) and (0.102 in *Pseudomonas aeruginosa*). MIC for both bacteria, in methanol (125mg/ml), ethyl acetate (250mg/ml), and hexane (350mg/ml) while the MBC for each bacteria species in methanol (1000mg/ml), ethyl acetate (1000mg/ml) and hexane (700mg/ml). Extracts concentration used from 0-1000mg/ml, respectively which used in the mixed study. Antibiotics used are in liquid form which gives Synergistic effects (All inhibited) when combined with extracts in different polarities. This study concludes that methanol does give the strongest effect (125mg/ml), followed by ethyl acetate (250mg/ml) and hexane (350mg/ml) against gram-negative bacteria. In Azdast, combination of extract (different polarity) with ampicillin gives the strongest antibacterial effect followed by combination of extracts with penicillin and result of antibiotics and extracts alone. In conclusion, antibacterial effects in *Zingiber zerumbet* can give benefits to public health.

Keywords: *Zingiber zerumbet* (Natural Plant), Antibacterial effects, Antibiotics Combinations, Azdast Method, Gram Negative Bacteria (*Escherichia coli* ATCC 25922 & *Pseudomonas aeruginosa* ATCC 27853)

OD1| IDENTIFICATION OF 18-AMINO ACIDS ANTICANCER PEPTIDE (ACP) DERIVATIVE, D18.13 FROM PARDAXIN USING IN SILICO ANALYSIS

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ABSTRACT

Conventional cancer treatments were reported with side effects, which urged the discovery of alternative anticancer drugs. Recent studies revealed full-length pardaxin that possessed *in vitro* anticancer effects against different cancers but concurrent haemolytic effects had restrained its potential as an anticancer drug. This study proposes to discover shorter-length pardaxin derivatives that retain the anticancer properties yet diminish the haemolytic effects through in silico analysis. Potential anticancer peptide (ACP) derivatives were identified based on high SVM scores, lower haemolytic probability, exhibiting alpha-helices, and higher docking scores towards the FAS death receptor. The anticancer effects were only found retained in C-terminal truncated peptides. Besides, the shortened peptide displayed weakened haemolytic probability whereas the longer truncated peptides established a stronger affinity towards the death receptor. The single residue replacement enhanced the anticancer properties of peptide derivatives ranging from 16 to 20 amino acids, which lead to the identification of D18.13, an 18-amino acids ACP. D18.13 was discovered with selective anticancer activity, possessing alpha-helices, and higher affinity towards FAS death receptor. The conservation of anticancer activity usually relied on the type of amino acids that are present. The shorter sequence reduced the haemolytic probability due to decreased hydrophobic area which limits the peptide interaction with the erythrocyte's membrane. Despite the stronger affinity, only peptides with lower haemolytic probability will be identified as potential therapeutic drugs. This *in silico* study discovered potential ACP derivatives from pardaxin that are worth further investigation to validate the *in silico* findings and support its use as anticancer agent.

Keywords: *In silico*, pardaxin, anticancer peptides (ACPs), truncation, single residue replacement

OL 1 | MIR-21 EXPRESSION IN BREAST CANCER PATIENTS AND ITS CORRELATION WITH DEMOGRAPHICS, SUBTYPE AND TUMOUR SUPPRESSOR GENES: PTEN AND PDCD4 IN PUTRAJAYA HOSPITAL

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ABSTRACT

Breast cancer (BC) is the most common cancer affecting women in Malaysia. While a limited number of studies have explored tumorigenic gene expression among Asian demographics, yet the multi-ethnic make-up of Malaysia's communities have meant that such studies are inadequate to develop a complete understanding of BC gene expression in Malaysia. As miR-21 acts as a regulator of malignancy, especially in BC, this will be investigated by analysing the degree of expression of the oncogene miR-21 and comparing it between breast tumour tissues and normal adjacent tissues excised from 67 BC patients from Putrajaya Hospital, among the different ethnic groups (Malay, Chinese and Indian), age groups, treated and non-treated patients and BC subtype with RT-qPCR methodology. The expression of tumour suppressor proteins; PTEN and PDCD4 will also be investigated via Western Blot methodology between the two tissue types. There was no significance of miR-21 expression within the demographic factors, however, there was significance of miR-21 expression between the normal adjacent tissues and BC tissues ($p<0.000$). Meanwhile, significance was also detected between the miR-21 oncogene and its tumour suppressor counterpart; PTEN ($p<0.010$). Conversely, the protein analysis did not produce the significance of protein expression of tumour suppressor proteins; PTEN and PDCD4 in both tissue types. Based on this study's patient cohort, it can be deduced that miR-21's gene expression is independent, as it is upregulated when a patient has BC. miR-21 has a notable presence in BC and therefore possesses the potential of being a biomarker for BC diagnosis in priori.

Keywords: breast cancer, miR-21, demographic, Putrajaya Hospital, tumour suppressor proteins.

OL2 | COMPARISON OF POLYPHENOLIC BIOACTIVE COMPOUNDS IN AQUEOUS, AQUEOUS ETHANOLIC, AND POLYPHENOL RICH EXTRACT OF HIBISCUS SABDARIFFA LINN

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ABSTRACT

Hibiscus sabdariffa Linn or known as roselle is a perennial herb that is native to Malaysia which contains abundance of polyphenolic compounds mainly in calyx. However, the polyphenolic compounds extracted from roselle calyx is highly influenced by the type of extraction and the solvent used. This study aimed to compare the content of polyphenolic compounds in aqueous, aqueous ethanolic, and polypenol rich extract (HPE) of roselle. These three different extracts have been commonly used in previous studies. The solvent used for aqueous extract is water, for aqueous ethanolic extract are water and ethanol meanwhile HPE

solvents are methanol, hexane and ethyl acetate. The polyphenolic bioactive compounds were analyzed using high-pressure liquid chromatography (HPLC) with photodiode array detector (PDA) by using the column HPLC Kinetex Biphenyl at the wavelength 254 nm, 330 nm, and 520 nm. The polyphenolic bioactive compounds that were identified and quantified were chlorogenic acid, caffeic acid, rutin, quercetin, delphinidin-3- sambubioside and cyanidin-3-sambubioside. HPE was found to contain a higher content of chlorogenic acid than the aqueous and aqueous ethanolic extracts. However, aqueous ethanolic extract has higher content of caffeic acid, rutin, delphinidin-3-sambubioside and cyanidin-3-sambubioside when compared with aqueous extract and HPE. Delphinidin-3-sambubioside and cyanidin-3-sambubioside were not detected in HPE while quercetin was undetected in aqueous extract and aqueous ethanolic extract. The composition of polyphenolic bioactive compounds is highly dependent on the types of extraction method. Aqueous ethanolic extract was found to have higher content of polyphenolic bioactive compounds compared to aqueous extract and HPE.

Keywords: polyphenol; roselle; extraction; phytochemicals; HPLC

OL3 |OPTIMIZATION OF TOTAL FLAVONOIDS EXTRACTION FROM *SUAEDA SALSA* AND EVALUATION OF THEIR TOXICITY PROFILE IN SPRAGUE-DAWLEY (SD) RATS

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ABSTRACT

Suaeda salsa is an annual herb with various chemical components, which has high edible and medicinal health value. Although previous studies confirmed that it is rich with flavonoid content and has significant medicinal values, its extraction yield is not high. This study explored the highest-yield optimal condition using CO_2 supercritical extraction method for total flavonoids from *Suaeda salsa (TFSS)* and analyzed its toxicity in preparation for its subsequent use in disease treatment. *Suaeda salsa* was used as the raw material, and the technological conditions（Including extraction temperature, extraction pressure, extraction time, and ethanol concentration）of CO_2 supercritical extraction of *TFSS* were optimized by an orthogonal experiment. Ten healthy young adult female SD rats (about 200 g) were adaptively fed for 5 days before being administered once with the maximum gavage dose of 2000 mg/kg body weight of *TFSS* for acute toxicity study. Mortality and behavioural changes were observed. The optimal CO_2 supercritical extraction was at the extraction temperature of 45℃, extraction pressure of 30MPa and extraction time of 2h with an ethanol concentration of 95%. Under this condition, the extraction yield of *TFSS* was 10.25%, which is higher than the previous report, which is 6.57%. After administering the maximum dose of *TFSS*, there were no abnormalities in the skin, fur, eyes, and mucous membranes of the rats and no tremors, convulsions, salivation, diarrhoea, drowsiness, sleep, coma, or deaths were observed. The optimized supercritical CO_2 extraction method resulted in a higher extraction rate of TFSS. Furthermore, the toxicity assessment revealed no toxic effects from TFSS.

Keywords: *Suaeda salsa*; Total flavonoids; SD rats; Extraction; Toxicity Profile

OL5|THE EFFECTS OF *Zingiber officinale* EXTRACT ON CHRONIC NICOTINE TOXICITY IN MICE KIDNEY

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ABSTRACT

Zingiber officinale known for its health benefits, as antioxidant and anti-inflammatory agent. Prolonged exposure to nicotine can cause damage to the kidney cells because it induce the generation of reactive oxygen species (ROS). Thus, this study aims to investigate the effects of *Z. officinale* extract on chronic nicotine toxicity in mice kidney. A total of 48 male Swiss albino mice were randomly divided into six groups. The method used was the Conditioned Place Preference (CPP) divided into three phases, i.e. CPP 1; nicotine administered alternately with saline for 7 days, CPP 2; all the mice was administered with nicotine for 28 days, and CPP 3; mice was administered with 6-gingerol, ginger extract (GE) 70, 100 and 130 mg/kg, for 7 days. The mice were euthanized after 51 days and kidney were collected for further analysis. One-way ANOVA were used for statistical analysis, where value of $p<0.05$ is considered significant. The treatment with GE 70, 100 and 130 mg/kg had significantly increased the level of reduced glutathione (GSH) ($p<0.05$). The treated groups showed that GE treatment reverted the enhanced advanced oxidation protein product (AOPP) significantly ($p<0.05$). However, the treatment with GE 70, 100 and 6–gingerol tended to reverse the peroxidation marker of malondialdehyde level ($p>0.05$). The treatment with 6–gingerol showed an increase ($p<0.05$) activity of superoxide dismutase (SOD), however the treatment with GE remained unaltered. These suggest that *Z.officinale* extract counteract the oxidative damage within the kidneys caused by nicotine, possibly by its antioxidant properties and its organic compounds.

Keywords: Zingiber officinale, Oxidative stress, Natural product, antioxidant, Kidney

OL 6 | TARGETING TROPOMYOSIN RECEPTOR KINASE C EXPRESSING CANCER CELLS THROUGH SYNTHETIC LIGAND CONJUGATE AND CYCLOPHOSPHAMIDE FOR IMMUNOTHERAPY

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Cancer cells have a higher expression of biomarkers than normal cells to sustain their growth and are associated with immunosuppressive microenvironment. Tropomyosin receptor kinase C (TrkC) is one of the biomarkers reported to be overexpressed in cancer to regulate its survival and metastasis. This study aimed to study the antitumor efficacy of synthesized TrkC-targeted dinitrophenol (DNP) hapten conjugate (IYIY-DNP), in combination with antineoplastic and immunomodulator drug, named cyclophosphamide (CYP) for immunotherapy. Female Balb/c mice immunized with DNP-KLH (Keyhole Limpet Hemocyanin) with the production of anti-DNP antibodies, were implanted with 4T1 breast carcinoma cells. Tumor-bearing mice were randomly divided into groups of 10 mg/kg IYIY-DNP, 25 mg/kg CYP, and 10 mg/kg IYIY-DNP + 25 mg/kg CYP (IYIY-CYP) for treatment on every alternative day, for five cycles. Tumor size was recorded using a caliper every two days for 21 days. Mice treated with IYIY-CYP had a 44.40%, 10 mg/kg IYIY-DNP 28.17% and 25 mg/kg CYP 18.58% lower tumor volume compared to saline-treated mice post-21 days of treatment. Cytokines profiling showed that IYIY-CYP has increased levels of IL-2, TNF-α, IFN-γ, IL-4, IL-6 and IL-17a while suppressing the levels of TGF-β, in correlation with Tregs inhibition. These findings suggest that IYIY-DNP, in combination with CYP could significantly decrease tumor growth by inhibiting immunosuppressive and increasing immunoactivator cytokines.

Keywords: Tropomyosin Receptor Kinase C (TrkC), 4T1 cells, cyclophosphamide, immunotherapy, dinitrophenol.

OL 7 | TESTING INSECTICIDE SUSCEPTIBILITY OF *AEDES ALBOPICTUS* COLLECTED FROM RECREATIONAL PARKS IN SELANGOR, MALAYSIA, IN WHO TUBE TESTS

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ABSTRACT

Current vector control program relies heavily on the application of chemicals insecticides due to the absence of vaccine and anti-viral medication. This present study aims to determine the ovitrap index (OI) and insecticide susceptibility of *Aedes albopictus* collected from four recreational parks in Selangor, namely Taman Tasik Section 14 Shah Alam (Petaling district), Taman Rekreasi Awam Bandar Parklands (Klang district), Taman Tasik Sri Gombak (Gombak district) and Taman Teratai Awam Bandar Baru Salak Tinggi (Sepang district). A total of 313 ovitraps were placed between September 2021 to September 2022. WHO tube test was performed to determine the insecticide susceptibility of adult mosquitoes against bendiocarb 0.1%, DDT 4%, malathion 0.8% and permethrin 0.25%. From the ovitraps collected, all sites recorded more than 75% of OI. Among 13,646 mosquitoes collected, 92% were confirmed as *Aedes albopictus*. In WHO test tube, high resistance of malathion 0.8% were observed in all sampled sites whereby Petaling strain exhibited the highest resistance level (0% mortality) followed by Klang (3 ± 1.2% mortality), Gombak (9 ± 1.72% mortality) and Sepang (12 ± 1.50% mortality). Resistance towards permethrin 0.25% was observed in three sites, namely Gombak, Klang and Sepang strains (mortality ranged from 26-84%). In contrast, Petaling strain was susceptible to DDT 4% (KT_{50} = 18.32 min) and bendiocarb 1% (KT_{50} = 20.80 min), while Klang was susceptible to bendiocarb 1% (KT_{50} = 23.33 min). This study indicates constant usage of insecticides has caused development of resistance in *Ae. albopictus* which could impact the effectiveness of vector control program.

Keywords: Aedes, insecticide resistance, pyrethroid, vector control, Selangor.

OL8|MOLECULAR CHARACTERIZATION OF CARBAPENEM RESISTANCE IN *Klebsiella pneumoniae* CLINICAL ISOLATES

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ABSTRACT

Klebsiella pneumoniae is a Gram-negative, encapsulated, and rod-shaped bacterium known to be a dominant public health threat, especially in nosocomial and community-acquired infections. The emergence of carbapenem resistance, a last-line antibiotic used to treat infections caused by multidrug-resistant Gram-negative bacteria, is a major global health concern. Nevertheless, knowledge about the genetic background of sequence types (ST) of *K. pneumoniae* among clinical isolates in Malaysia is still insufficient. The aim of this study is to investigate the molecular characterization of carbapenem resistance of *K. pneumoniae* clinical isolates based on the distribution of sequence type (ST). Overall, 14 of 227 (6.1%) *K. pneumoniae* isolates evaluated positive for carbapenem resistance. Seven different sequence types were identified by MLST

analysis and subsequent phylogenetic analysis revealed two distinct clades (Clade 1 and 2). Six of the fourteen carbapenem-resistant *K. pneumoniae* isolates were identified as ST307, which is known to be the predominant lineage, followed by ST580 (2), ST15 (2), ST23 (1), ST17 (1), ST1540 (1), and ST2558 (1). Only ST2558 belonged to a different clade, showing genetic variation in nucleotide sequence. In addition, there was no significant similarity of all sequence types with the previous study in Malaysia, indicating the emergence of a new carbapenem-resistant *K. pneumoniae* strain in patients. Thus, the incidence of carbapenem resistance *K. pneumoniae* is increasing in Malaysia. The study successfully characterized the sequence typing of carbapenem resistance *K. pneumoniae* clinical isolates which provide a valuable contribution to the molecular epidemiology of multidrug resistant bacteria.

KEYWORDS: *Klebsiella pneumoniae,* carbapenem resistance, sequence type, Multilocus Sequence Typing (MLST), phylogenetic analysis

OL 9 | EFFECT OF QUINAZOLINE DERIVATIVES ON NON-SMALL CELL LUNG CANCER

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ABSTRACT

Cancer is the second most common cause of death for people in the developed world, behind cardiovascular disease. In recent years, the treatment of lung cancer with chemotherapy has demonstrated notable resistance and insensitivity. Therefore, it is essential to study anti-lung cancer drugs with high efficacy and minimal toxicity. In the present study, the effects of quinazoline derivatives on non-small cell lung cancer (NSCLC) were evaluated. Two new quinazoline derivatives, namely compound 307 and compound 308, were synthesized, and their biological activity evaluated. Two NSCLC cell lines (A549 and H1975) were used for MTT assay. Compound 307 possessed noteworthy cytotoxic effect on both cell lines, where they have lower IC50 values than the standard drug gefitinib. The Fish Embryo Acute Toxicity (FET) test was done to assess compound 307. The zebrafish larvae xenograft model was used to study the antiproliferative effects of compound 307 against the H1975 cancer cells in vivo. H1975 cells were injected into the yolk of 2-days post fertilization (dpf) embryos which were then treated with compound 307. Compound 307 exhibited low toxicity towards zebrafish larvae within 0-7.5 µM range whereby the safest treatment concentration was 3.75 µM/mL with 0% mortality rate and lowest risk of causing sub-lethality endpoints. Our results identified compound 307 as a promising cytotoxic agent against H1975 cells and may be a promising compound for the treatment of lung cancer.

Keywords: Zebrafish, Xenograft, Non-small cell lung cancer, Quinazoline derivatives, Cytotoxic activity

OL 10 | EVNOL SUPRABIO™ AMELIORATES THE TESTICULAR STEROIDOGENESIS VIA REPRODUCTIVE HORMONE REGULATION IN BISPHENOL F-INDUCED SPRAGUE DAWLEY RATS

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ABSTRACT

Bisphenol F (BPF) is an endocrine-disrupting chemical which exhibits toxicity effects towards male reproduction. EVNol SupraBio™ (EVNol) is a Malaysian palm oil-based product well-known for its antioxidant status. However, the effects of EVNol towards BPF-induced changes in male reproductive system remain

unknown. Therefore, present study was done to investigate the effects of EVNol on hormonal regulation towards BPF-induced toxicity in the testis. Forty male Sprague-Dawley rats (weighed 220g to 250g) were randomly assigned to five groups which are control group (1mg/kg corn oil), EV100 (100mg/kg EVNol), BPF (10mg/kg BPF), BE50 (EV50 (50mg/kg) +BPF) and BE100 (EV100+BPF). All rats received daily oral gavage treatments for 35 days, with EVNol administered 30 minutes before BPF. Current findings showed no significant difference between groups for weight gain and dietary intake. Sperm count was not significantly different between all groups whereas sperm motility in BPF group was significantly reduced compared to EV100 group ($p<0.05$). No significant difference was detected between groups for level of MDA, SOD and GSH in sperm as well as for the level of LH ($p>0.05$). Significantly elevated levels of testosterone in EV100 group compared to the BPF group ($p<0.05$) were reported. EV100 and BE100 groups had significantly lower estradiol levels than BPF group ($p<0.05$), suggesting EVNol inhibits testosterone aromatisation by deactivation of alternative testicular steroidogenic pathways. In conclusion, overall results showed that 100 mg/kg of EVNol in BPF-induced rats by regulating reproductive hormones.

Keywords: EVNol Suprabio™, Bisphenol F, male reproductive system, oxidative stress, testicular steroidogenesis.

OL11|OCCURRENCE OF CARBAPENEM-RESISTANT IN *KLEBSIELLA PNEUMONIAE* CLINICAL ISOLATES

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ABSTRACT

Klebsiella pneumoniae is a facultatively anaerobic, non-motile, and encapsulated gram-negative bacterium. It can cause multiple infections such as urinary tract infections and bacteremia. In Malaysia, studies have reported that *K. pneumoniae* strains have shown increasing resistance to carbapenem antibiotics. These strains can cause serious untreatable infections, highly transmissible, hypervirulent, and multidrug-resistant. This study aims to determine the occurrence of carbapenem resistance among *K. pneumoniae* clinical isolates. A total of 227 isolates were collected to determine carbapenem-resistance occurrence among *K. pneumoniae* clinical isolates using antimicrobial susceptibility test (AST), minimum inhibitory concentration (MIC), and modified carbapenem inactivation method (mCIM). In addition, the association between carbapenem-resistant *K. pneumoniae* and the hypermucoviscosity phenotype was observed using the String test. Furthermore, multiplex PCR was used to investigate the capsular serotypes K1 and K2. Among the 227 isolates, only 14 (6.1%) were detected as carbapenemase-producing *K. pneumoniae*. K1 (n= 18) and K2 (n= 26) capsular serotypes were detected in 7.9% and 11.5% of the isolates, respectively. The string test showed hypermuscoviscosity-positive results for 24.7% of the isolates. Statistical analysis showed that K1 and K2 capsular serotypes and hypermuscoviscity phenotype were not significantly associated with carbapenem-resistant *K. pneumoniae* (P= 0.465) and (P= 0.087), respectively. However, there was a significant association observed between these serotypes and hypermucoviscosity ($P < 0.001$). This study demonstrated a high prevalence of carbapenem-resistant *K. pneumoniae* strains in Malaysian hospitals. Thus, emphasize the importance of continuous surveillance to effectively control infections caused by these bacteria.

Keywords: *Klebsiella pneumonia*, carbapenem-resistant, antimicrobial susceptibility test, *magA*, *K2A*.

OL12|Quantification of Ultrafiltrate Bromelain Enzyme from MD2 Pineapples (*Ananas cosmos*) Cores and Its Cytotoxicity Activity Against L929 cell

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ABSTRACT

The booming pineapple industry in Malaysia has a significant contribution on the increase of agriculture waste. The waste from the pineapples cores contains a proteolytic enzyme called bromelain. Application of bromelain has been used in various industries, but the yield of the bromelain is closely related to the purification method. Thus, this study aims to quantify bromelain enzyme from MD2 pineapple cores purified using ammonium sulphate precipitation and ultracentrifugation and examine its cytotoxicity potential. The pineapples cores were blended to obtain the crude. The crude underwent ammonium sulphate precipitation to obtain fractionate and was further purified using ultracentrifugation with 10 kDa centrifugal units to obtain ultrafiltrate bromelain (UFB). Quantification of UFB was done using SDS–PAGE and ImageJ software while cytotoxicity testing was done on L929 cells using Alamar Blue dye. In the present study, the molecular weight of UFB was approximately 23kDa. When compared to the crude, the result showed UFB with the highest bromelain concentration with a 1.15 ratio of band intensity as compared to fractionate with a 1.1 ratio, showing an increase of bromelain concentration after each purifying step. This indicates ultracentrifugation is an effective method in producing high bromelain yield. From the cytotoxicity testing, UFB was determined to demonstrate no cytotoxic effect at 12.5%, 6.25%, 3.125%, 1.563% and 0.781% concentrations. The result shows that the combination of ammonium sulphate precipitation and ultracentrifugation is an effective method to extract and purify bromelain from pineapple cores. The low cytotoxicity effect of UFB shows UFB as a potential key ingredient in the formulation of health products.

Keywords: Bromelain, Pineapple Core, gel electrophoresis, cytotoxicity effect, ultracentrifugation

OL13|ESTABLISHING A UVB-INDUCED BALB/C MICE AS A SKIN PHOTOAGING ANIMAL MODEL

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ABSTRACT

Photoaging occurs when skin is exposed to prolonged solar ultraviolet (UV) radiation. Hence, our study aimed to establish a UVB-induced skin photoaging BALB/c mice model. Sixteen female mice (7 weeks old) were divided into 2 equal groups. Group 1 was not exposed to UVB, while Group 2 was exposed to UVB. In the first 2 weeks, mice were given daily oral treatment of corn oil via oral gavage, without UVB exposure, followed by 8 weeks of UVB exposure (Group 2 only) 3 times a week at increasing doses, totalling 3.7 J/cm^2. During these 8 weeks, skin elasticity was measured once a week using pinch test, which showed that Group 2 (4.890 ± 0.401 seconds) skin took significantly longer ($p < 0.01$) to return to its normal conformation compared to Group 1

(3.328 ± 0.192 seconds), indicating skin elasticity loss. Next, dorsal skin photos were taken just before culling, whereby Group 1 showed fine wrinkles and no skin redness, while Group 2 showed coarse wrinkles, skin redness and peeling. Then, histopathological changes were identified via Hematoxylin & Eosin (H&E) staining and epidermal thickness was measured using ImageJ. Group 2 showed a significant increase ($p < 0.01$) in epidermal thickness (51.850 ± 7.460 µm) compared to Group 1 (15.800 ± 0.957 µm). Finally, Masson's Trichrome staining showed that Group 2 had a significant 0.16 relative expression decrease ($p < 0.05$) in collagen density compared to Group 1, indicating collagen destruction. In conclusion, a UVB-induced skin photoaging BALB/c mice model has been established.

Keywords: skin, photoaging, mice, ultraviolet, UVB

ON1 | *IN VITRO* EVALUATION AND *IN SILICO* PREDICTION OF *CORDYCEPS MILITARIS*-DERIVED NUCLEOSIDES AS POTENTIAL THERAPEUTIC AGENT AGAINST ALZHEIMER'S DISEASE

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ABSTRACT

Alzheimer's disease (AD) is an age-associated neurodegenerative disorder mainly treated using cholinesterase inhibitors and *N*-Methyl-D-aspartate receptor antagonists. However, these drugs display side effects and are limited to targeting acetylcholine deficit and glutamatergic excitotoxicity, triggering the need to develop novel AD therapeutic agents via drug repurposing. Among natural products, *Cordyceps militaris* is reputed for its enriched medicinal properties. Hence, this study aims to investigate the neuroprotective activity of *Cordyceps militaris*, and predicts the binding efficacy of its nucleoside analogues against Liver X Receptors (-α, -β). Interestingly, treatment of $A\beta_{42}$-incubated SH-SY5Y cells with cordycepin and adenosine compounds reported a significant higher cell viability than mycelial and fruiting body extracts. Both compounds predicted acceptable oral bioavailability. Docking analysis revealed a similar strong binding affinity in LXR-α-cordycepin and LXR-α-donepezil as compared to LXR-α-adenosine (-6.8 kcal/mol vs. -5.9 kcal/mol); while LXR-β-cordycepin depicted the highest binding affinity (-7.8 kcal/mol) than LXR-β-adenosine (-7.0 kcal/mol) and LXR-β-donepezil (-6.5 kcal/mol). Across the 10 ns MD simulation, a comparable lower RMSD values were portrayed by LXR-α-adenosine and LXR-α-donepezil (~0.45 nm) than LXR-α-cordycepin (~ 0.5 nm). As for LXR-β-complexes, adenosine exhibited the steadiest RMSD trajectories (~0.125 nm), followed by cordycepin (~0.5 nm) and donepezil (~1.125 nm). Both results indicated higher structural stability in adenosine. In terms of RMSF analysis, high fluctuations were observed at specific regions for all six complexes, demonstrating increased motility in the residues involved, which contributed to conformational changes. In conclusion, *Cordyceps militaris* can inhibit $A\beta_{42}$-induced neurotoxicity, and adenosine possesses potential to suppress AD by targeting the LXRs.

Keywords: Alzheimer's disease, *Cordyceps militaris*, Liver X Receptors, molecular docking, molecular dynamics simulation.

ON2 | OPTIMIZATION, CHARACTERIZATION, AND CYTOTOXICITY EVALUATION OF TUNEABLE PEGYLATED LIPOSOME CO-LOADED WITH DOXORUBICIN HYDROCHLORIDE AND MIR-145 MIMICS AGAINST TRIPLE BREAST NEGATIVE CANCER *IN VITRO*.

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ABSTRACT

PEGylated Liposomal Doxorubicin (PLD) is commonly used in triple-negative breast cancer (TNBC) treatments, but its adverse effects constraint its application in the elderly, who constitute a significant proportion of breast cancer patients. This study aims to synthesize and characterize PEGylated liposome co-loaded with Dox-HCl and miR-145 mimics, and to investigate its *in-vitro* anti-proliferative activity against MDA-MB-231 cells. Dox-HCl and miR-145 mimics co-loaded in PEGylated liposomes were developed using composite central design (CCD) to optimize nanoparticle size (YS) and encapsulation efficiency (EE%) of Dox-HCl (YD) and miR-145 mimics (YM). The optimized formulation, F6, exhibited the highest desirability function (D = 0.814), demonstrating ideal nanoparticle size (134.7 ± 0.6 d.nm) and high EE% for both Dox-HCl (58.86 ± 3.11%) and miR-145 mimics (47.95 ± 0.30%). Furthermore, F6 displayed excellent stability over 60 days at 4°C, maintaining a stable nanoparticle size and zeta potential ($p < 0.05$), while the relative EE% of Dox-HCl and miR-145 mimics at final incubation day were 94.97±0.53% and 51.96±2.67%, respectively. F6 displayed increased *in vitro* cellular uptake, correlating with its higher toxicity (IC_{50} = 0.58 ± 0.02μM) against MDA-MB-231 cells than the free Dox-HCl and miR-145 regimen (IC_{50} = 1.03 ± 0.07μM). Additionally, F6 showed higher drug release rate at acidic condition, favouring a prominent selectivity index of 1.97 ± 0.67 on MDA-MB-231cells rather than normal breast cells, MDF-10A. In conclusion, our findings suggest that PEGylated liposome is tuneable for the effective delivery of anti-cancer drugs and therapeutic miRNAs into tumour cells, necessitating further investigation.

Keywords: Breast cancer, tumour suppressing miRNAs, Dox-HCl, PEGylated liposome, nanoparticles.

ON3 | SUPPRESSION OF DIABETIC CARDIOMYOPATHY PROGRESSION BY ROSELLE POLYPHENOL-RICH EXTRACT VIA MODULATION OF OXIDATIVE STRESS

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ABSTRACT

Hyperglycaemia affects various pathways in the diabetic heart, and elevated oxidative stress is one of the major causes of unfavourable cardiac remodelling in persistent diabetic conditions. Particularly in diabetic rats, the polyphenol-rich extract of *Hibiscus sabdariffa* or roselle (HPE), which is high in polyphenols, has been shown to have powerful antioxidant capacity. Therefore, this study aimed to investigate the effect of HPE in limiting the progression of DCM via modulation of oxidative stress. Male Sprague-Dawley rats were randomised into three groups (n=8/group): diabetic alone (DM), diabetic treated with metformin (DMM) and diabetic supplemented with HPE (DMR). The rats were administered streptozotocin (55 mg/kg i.v.) and were left untreated for four weeks. Rats were forced-fed with HPE (100 mg/kg) and metformin (150 mg/kg) daily for four weeks. A subset of non-diabetic rats served as the normal control. HPE supplementation improved diabetes-induced hyperglycaemia and dyslipidaemia, along with the improvement of cardiac systolic and diastolic functions. HPE supplementation also attenuated diabetes-induced lipid peroxidation and protein oxidation exhibited by low malondialdehyde and advanced oxidation protein products. Significantly increased levels of reduced glutathione and superoxide dismutase were observed in DMM and DMR compared to the DM rats. In concert, HPE also markedly suppressed the expression of NADPH oxidase subunits (gp91phox, p47phox and p67phox). In summary, these data suggest that HPE was able to improve cardiac functions and redox imbalance, therefore showing its potential to limit the progression of diabetic cardiomyopathy.

Keywords: cardiac function; diastolic; NADPH oxidase; oxidative stress; systolic

ON4 | THE BISPHENOL F INDUCED ESTROGEN-LIKE EFFECT IN THE SEMINIFEROUS TUBULES OF *SPRAGUE-DAWLEY* RATS

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ABSTRACT

The widespread toxicity effects of bisphenol A (BPA) cause this chemical to be replaced by its analogues such as bisphenols F (BPF) in plastics production. BPF may possess same risk toward the male reproductive system similar to BPA as an endocrine disrupting chemical (EDC). Therefore, this study investigated the effects of BPF on the male reproductive system of *Sprague-Dawley* rats by evaluating testosterone, estradiol, luteinizing hormone (LH) and follicle stimulating hormone (FSH) levels in plasma, oxidative stress (malondialdehyde (MDA) and reduced glutathione (GSH)) and histology observation using the testis. Male *Sprague-Dawley* rats (n = 56) weighing between 230 - 250 g were divided into control group (1 ml/kg/bw

of corn oil) and treatment groups such as BPF1, BPF5, BPF10 (1, 5 and 10 mg/kg/bw), respectively and given via oral gavage everyday for 28 and 60 days. Findings showed estradiol significantly increased in BPF10 compared to the control ($p<0.05$) in 28 and 60 days. Meanwhile, the testosterone was found to be significantly decreased in BPF10 after 60 days compared to the control ($p<0.05$). After 60 days of administration, no changes were reported in the LH among experimental groups, while an increasing trend was shown in the FSH level in a dose-dependent manner. No changes were reported in MDA and GSH levels. The histological analysis of the testis showed exfoliation and degeneration of seminiferous tubules in both exposures which indicated the occurrence of estrogen-like effect. In conclusion, BPF toxicity may be induced via hormonal disturbance without inducing oxidative stress pathways.

Keywords: Bisphenol F; Estrogen-like Effect; Testis; Testosterone; Estradiol

ON5 | PROTEOMIC AND BARRIER ANALYSIS OF HUMAN BRAIN ENDOTHELIAL CELLS (HBEC-5i) UNDER COMPROMISED LYSOSOME FUNCTION

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ABSTRACT

Endothelial cells constitute a substantial portion of the blood-brain barrier (BBB) which is essential for brain homeostasis. BBB disruption has been identified as an early pathological event in Alzheimer's disease (AD) owing to amyloid beta (Aβ) deposition on the cerebrovasculature. AD is associated with dysfunctional lysosomes, which contribute to the accumulation of toxic protein aggregates. These alterations are mediated by proteins that influence cellular biochemical reactions, thereby determining the phenotype or disease progression. This study was conducted to detect changes in protein expression caused by lysosomal dysfunction and its effects on BBB integrity. Human brain endothelial cells (HBEC-5i) were treated with a lysosomotropic compound, chloroquine, for 24 hours at an optimal concentration of 70.5 μM. Proteomic analysis using liquid chromatography-mass spectrometry (LC-MS/MS) identified 71 significantly expressed proteins ($p<0.05$), with decreased expression of lysosomal proteases, cathepsin B (-3.4) and cathepsin D (-3.8). There was an increment in the expression of sequestosome-1 (+2.4) and early endosome antigen 1 (+1.7), while a decrement in cytochrome oxidase subunit 4I1 (-2.5) expression. Gene ontology analysis revealed enrichment in biological processes involving transcription and apoptosis. Protein-protein interaction analysis showed the formation of three main protein clusters involved in translation, autophagy, and lysosomes. Furthermore, measurement of the cell monolayer integrity using transendothelial electrical resistance (TEER) demonstrated a significant increase in cellular permeability ($p<0.05$). These findings suggest that lysosomal failure in HBEC-5i altered cellular protein expression associated with the lysosomal degradation pathway resulting to the loss of barrier integrity which may contribute to the development of neurodegenerative disorders.

Keywords: Alzheimer's disease, Blood-brain barrier, Cellular integrity, Lysosome dysfunction, Proteomics

ON7 | AZA-BODIPY BASED POLYMERIC NANOPARTICLES IMPROVES ANTI-TUMOR ACTIVITY FOR PHOTOTHERMAL CANCER THERAPY IN CHICK EMBRYO MODEL

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ABSTRACT

Photothermal cancer therapy (PTT) utilise photothermal agents (PTA) to generate heat at the local tumour site that led to ablation upon photoirradiation at specific wavelength of the light. However, PTAs are generally poor in selectivity and low deposition in the tumour tissue, leading to poor therapeutic outcomes. In this study, a new push-pull aza-BODIPY (AZB-CF3) which has the excitation wavelength of 808 nm was synthesized. AZB-CF3 was nanoprecipitated with phospholipid-based polyethylene glycol (DSPE-PEG), yielding AZB-CF3@DSPE-PEG nanoparticles (NPs) with a hydrodynamic size of 70 nm. The *in ovo* acute toxicity, anti-angiogenesis and antitumor efficacy of the AZB-CF3@DSPE-PEG were further evaluated in a murine 4T1-tumor xenografted chick embryo model. AZB-CF3@DSPE-PEG demonstrated excellent biocompatibility with LC50 higher than 1000 µg/mL and no observed organ toxicity in chick embryo. AZB-CF3@DSPE-PEG exhibited 20-30% better vascular destruction effects and antitumor efficacy compared to parent-AZB-CF3 post-PTT treatment at 808 nm. In the anti-metastasis study, histology analysis of the chick embryo lungs has proven the great potential of AZB-CF3@DSPE-PEG in inhibiting distant metastasis of aggressive 4T1 tumour cells, probably due to shut down of tumour vascular. Altogether, these findings suggested that AZB-CF3@DSPE-PEG could be a multifunctional photothermal agent in PTT.
Keywords: Aza-BODIPY, Polymeric Nanoparticles, Photothermal Therapy, Chick Embryo

ON9|ROLE OF NESTIN AND ASSOCIATED miRNAS IN EXTRACELLULAR VESICLES DERIVED FROM COLORECTAL CANCER

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ABSTRACT

Nestin, a class VI intermediate filament (IF) protein often identified as biomarkers are found strongly expressed in tumor tissues including colorectal cancer (CRC). Studies have identified Nestin and miRNAs within extracellular vesicles (EVs), however exploration on their acting mechanism is still limited. It is also suggested and not firmly concluded that Nestin may correlate with cancer cell proliferation and migration abilities. This experiment was performed to study the role of Nestin and associated miRNAs in EVs derived from CRC. In-silico analysis confirmed Nestin protein expression in CRC and higher Nestin mRNA expression lowers CRC survival rate, corelates with progressive diseases and new tumor growth after treatment. miR-432-5p was found associated with Nestin and showed significant influence in CRC thus was selected as target. SW480 cell line with confirmed Nestin expression was selected as cell model and Nestin silencing was performed to compare between Nestin and Nestin-deficient samples. EVs were isolated and characterised as exosomes. qPCR and western blot revealed Nestin protein downregulation

but upregulation at transcript level. Nestin showed significant influence in wound healing ($P < 0.0001$), indicating influence on CRC cell proliferation and migration abilities. MTT assay revealed Nestin significant influences CRC cell viability ($P = 0.0083$), suggesting Nestin absence decreases drug resistance in CRC cells. Conclusively, Nestin corelates with CRC pathogenesis, tumorigenesis, and survival rate. EVs derived from Nestin-deficient cells influence CRC cells wound healing ability and drug sensitivity. We suggest that Nestin may influence CRC cells migration and proliferation abilitiy, drug resistance, promote tumorigenesis and progressive diseases.

Keywords: Colorectal cancer, Nestin, miRNA, extracellular vesicles, drug resistance

ON10 | VIRULENCE GENOTYPING AND MULTIDRUG RESISTANCE OF *ESCHERICHIA COLI* ISOLATED FROM PLAQUE PSORIASIS FECAL SAMPLES

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ABSTRACT

Psoriasis is associated with gut microbiota dysbiosis, where it is linked with increased *Escherichia coli* in the gut. Coherently, *E. coli* is also developing resistance to commonly prescribed antibiotics. This study aimed to isolate, identify, and confirm *E. coli* isolated from healthy and psoriasis patients' (mild and severe) fecal samples and determine the presence of virulence genes while evaluating the antimicrobial susceptibility of isolated *E. coli*. McConkey agar was used to grow the bacteria from four fecal samples and DNA of the isolated bacteria was extracted using the boiling method. Genotypic confirmation of *E. coli* using the 16srRNA gene was performed before proceeding to virulence genotyping and antimicrobial susceptibility testing. Genotyping analysis revealed more virulence genes were found in *E. coli* isolated from psoriasis patients compared to healthy donors and almost all isolates (18/20) presented with the type 1 fimbriae (*fimh)* gene. All *E. coli* isolates were susceptible to gentamicin (10ug) and ceftriaxone (30ug), but either resistant or intermediate to imipenem (10ug), ampicillin (10 ug), and erythromycin (15ug). Four out of 20 tested isolates were found to be multi-drug resistant *E. coli*. The treatments of *E. coli* infections are suggestive of prior antimicrobial susceptibility testing to combat antibiotic resistance. This study revealed that all isolates are *E. coli* with distinct possession of virulence genes and susceptibility towards different classes of antibiotics.

Keywords: Psoriasis, *Escherichia coli*, virulence genes, antimicrobial susceptibility test, multi drug-resistant

ON12 | EFFECTS OF ORAL PTEROSTILBENE TOWARDS PIGMENTATION IN UVB-INDUCED SKIN PHOTOAGING BALB/C MOUSE MODEL

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ABSTRACT

Skin photoaging, induced by exposure to ultraviolet B (UVB) radiation, leads to various visible damages, including erythema, skin peeling, and uneven skin tone and texture. Pterostilbene, a natural compound with potential antioxidant, anti-inflammatory and anti-pigmentation properties has gained attention for its potential protective effects against UV-induced skin damage. This study aimed to investigate the effects of oral pterostilbene on pigmentation in a UVB-induced skin photoaging BALB/c mouse model. BALB/c mice were divided into four groups: UVB(+) (UVB-exposed control), UVB(-) (non-UVB-exposed control), Pter low (30 mg/kg pterostilbene), and Pter high (60 mg/kg pterostilbene), with each group containing 6 mice (n=6). Under macroscopic observation of dorsal skin, we had found that an increase in pterostilbene dosage correlates with a reduction in skin damage, resulting in observable improvements visible to the naked eye. For skin melanin content, the mean melanin content per weight of skin was determined for each group as follows: UVB(+) = 0.3868 µg/mg, UVB(-) = 0.2708 µg/mg, Pter low (30mg/kg) = 0.3229 µg/mg, and Pter high (60mg/kg) = 0.3049 µg/mg. Statistical analysis revealed significant differences only between the UVB(+) and UVB(-) groups ($p<0.05$), while no significant differences were observed among the other treatment groups. This study demonstrates the potential of oral pterostilbene in mitigating UVB-induced skin damage and pigmentation. Further investigations are warranted to elucidate the underlying mechanisms and evaluate its therapeutic applications in human skin photoaging.

Keywords: Oral pterostilbene, melanin, photoaging, UVB radiation, pigmentation

ON13|THE IMPACT OF CARVACRYL-2-OXOETHYLGALLATE ON OXIDATIVE STRESS IN DOXORUBICIN-INDUCED CARDIOTOXICITY

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ABSTRACT

Doxorubicin (DOX) is an effective anthracycline chemotherapy drug, however, it can cause cardiotoxicity as a side effect. Carvacrol, a phenolic monoterpenoid compound, has been shown to possess antioxidant and antiapoptotic properties. However, there is still insufficient evidence of its ability to prevent cardiotoxicity. Hence, the aim of this research is to investigate the impact of carvacryl-2-oxoethylgallate, a derivative of carvacrol, on oxidative stress in DOX-induced cardiotoxicity. Thirty-two male Sprague-Dawley rats were divided equally into four groups of rats. Rats for the control group and cardiotoxicity group were given corn oil (vehicle control), meanwhile, carvacryl-2-oxoethylgallate (25 mg/kg and 50 mg/kg) were given, respectively, to the other two groups for a duration of 14 days. On day-15, the rats from the vehicle control group were administered 0.5% DMSO (i.p.), while the other groups were given DOX 15 mg/kg (i.p.) to cause acute cardiotoxicity. The rats were anesthetized and sacrificed for serum and heart collection three days later. ANOVA were used for statistical analysis and $p<0.05$ was considered as significant. The findings showed the elevated systolic blood pressure observed from the tail-cuff method in the cardiotoxicity group which was reduced by carvacryl-2-oxoethylgallate treatment. The treatment also managed to significantly enhance the suppressed amount of reduced glutathione (GSH) and superoxide dismutase (SOD) in the cardiotoxicity group. The increased cardiac injury based on Troponin-

T level from the cardiotoxicity was reduced significantly by the carvacryl-2-oxoethylgallate treatment ($p<0.05$), indicating its protection against doxorubicin-induced cardiotoxicity. This study indicates the potential of cardioprotective properties in carvacryl-2-oxoethylgallate against doxorubicin-induced cardiotoxicity.

Keywords: Doxorubicin, carvacrol, cardiotoxicity, oxidative stress, cardioprotective.

PC1|CHARACTERIZATION OF *Candida albicans* STRAIN (COCRII-AC01) ISOLATED FROM AUTISTIC CHILD WITH CARIES AND ITS SUSCEPTIBILITY TOWARDS GOLD, SILVER AND BIMETALLIC GOLD-SILVER NANOCLUSTERS

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ABSTRACT

Caries is a global dental issue including in autistic children. The disease is caused by microbial infection, including *Candida albicans.* Advanced materials such as nanoclusters are suggested to overcome the side effect. Thus, this study aimed to characterize autistic child caries-isolate *Candida albicans* strain COCRII-AC01 (AC01) and its susceptibility towards gold nanocluster (AuNC), silver nanocluster (AgNC) and bimetallic nanoclusters (AuAgNC). *C. albicans* AC01, normal child caries-isolate *C. albicans* C36T and reference strain *C. albicans* ALT5 were used in the study. Generation time (GT) and specific growth rate (GR) of all strains were determined in yeast peptone dextrose (YPD) broth and RPMI-1640. The inhibition zones of *C. albicans* isolates were measured using the disc diffusion test method on Mueller Hinton agar. The susceptibility of *C. albicans* ALT5, AC01 and C36T was assessed towards 0.12% (w/v) chlorhexidine (CHX), 2 mM gold nanocluster (based on Au atom), 2 mM silver nanocluster (based on Ag atom) and 2 mM bimetallic nanocluster (based on AuAg atom). The GR and GT of all *C. albicans* are strains and media dependent, with *C. albicans* C36T having the highest GR (0.31 ± 0.01 h^{-1}) when grown in YPD broth. Meanwhile, the highest GT was observed in *C. albicans* ALT5 (3.25 ± 0.02 h). In RPMI-1640, *C. albicans* ALT5 had the highest GR (0.12 ± 0.01 h^{-1}), and the highest GT was observed in *C. albicans* ALT5 (1.49 ± 0.00 h). Furthermore, all *C. albicans* strains were susceptible towards all nanoclusters. In conclusion, AC01 exhibited different phenotypes and susceptibility towards AuNC, AgNC and AuAgNC compared to the normal child caries-isolate and reference strains.

Keywords: Gold Nanoclusters, Silver Nanoclusters, Bimetallic Gold-Silver Nanoclusters, *Candida albicans.*

PC2 | *In Silico* Identification of New Anti-SARS-CoV-2 Main Protease (M^{pro}) Molecules from *Datura fastuosa*

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ABSTRACT

SARS-CoV-2 main protease (M^{pro}) plays a crucial role in regulating the viral life cycle, making it an attractive target for anti-COVID-19 therapies. In this study, we present the first report on the identification of potential anti-COVID-19 agents from *Datura fastuosa*, a plant known for its anti-inflammatory and wound-healing properties. The aim of this study is to identify the potential of bioactive compounds in *Datura fastuosa* that inhibits SARS-CoV-2 main protease (M^{pro}) using computational approach. Three-dimensional structures of M^{pro} (PDB ID: 6lu7) and eighteen bioactive compounds from *Datura fastuosa*, were obtained from Protein Data Bank and PubChem, respectively. These compounds were docked against modified targeted protein (M^{pro}) to examine the binding affinity and protein-ligand interactions using PyRx and BIOVIA Discovery Studio. The top eight were selected for further analysis on the pharmacokinetic properties through SwissADME and pkCSM web servers. From the molecular docking simulation, a total of six exclusive bioactive compounds, namely; daturaturin A (-8.6 kcal/mol), daturametelin J (-8.6 kcal/mol), baimantuoluoside B (-8.5 kcal/mol), 12-deoxywithastramonolide (-8.4 kcal/mol), baimantuoluoside A (-7.9 kcal/mol) and daturaolone (-7.6 kcal/mol) showed stronger inhibitory activity against M^{pro} of SARS-CoV-2, than N3 inhibitor (positive control, -7.4 kcal/mol). The drug-likeness properties and ADMET analysis showed that these compounds are still lacking in bioavailability, which implies the need for further optimization. Taken together, our findings identified 6 exclusive bioactive compounds (daturataturin A, daturametelin J, baimantuoluoside A, baimantuoluoside B, 12-deoxywithastramonolide, and daturaolone) from *Datura fastuosa*, may be promising natural resources for developing anti-COVID19 agent, specifically target M^{pro} protein.

Keywords: *Datura fastuosa*, M^{pro}, SARS-CoV-2, *in silico*, docking

PC3| ASSESSMENT OF KNOWLEDGE, ATTITUDE, AND PREVENTION PRACTICES TOWARDS MELIOIDOSIS AMONG FARMERS IN SELANGOR: A CROSS-SECTIONAL STUDY

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ABSTRACT

Melioidosis is an infectious disease caused by the gram-negative bacteria *Burkholderia pseudomallei* which can mainly be found in contaminated soils and waters, prevalently in areas with tropical climates. Farmers are among one of the high-risk groups susceptible towards this disease as they are likely to be exposed to contaminated soils and water. This study aimed to measure the knowledge, attitude, and preventive practice (KAP) levels among farmers towards melioidosis and determine the significant associations

between these parameters. A total of 133 farmers participated in this study, comprising 70.7% males and 29.3% females, in which 71.4% claimed to have never heard of melioidosis. Attitude levels was found to have a significant association with education levels (p = 0.044) while preventive practice levels were significantly associated with education levels (p = <0.001) and years of experience in agriculture (p = 0.001). There was a significant positive correlation between the farmers' knowledge with attitude (r = 0.180; p = 0.038) and knowledge with preventive practices (r = 0.189; p = 0.030) although the association may be deemed almost negligible. Most farmers had positive levels of attitude and preventive practices despite having poor levels of knowledge on melioidosis, as general hygienic practices and beliefs help in the prevention of most diseases. Overall, awareness of melioidosis among farmers in Selangor is very poor despite being one of the high-risk groups. Thus, public health authorities may consider taking the next steps in raising more awareness towards this disease.

Keywords: Melioidosis, Farmers, Knowledge, Attitude, Preventive practices

PC4| Nano-architecture of Multiadjuvants Amphiphilic Chitosan Nanoparticles as a Delivery Platform for Lipopeptide-Based Vaccine against Group A Streptococcus: Synthesize, Formulating and Physicochemical Analysis

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ABSTRACT

Effective vaccination against group A streptococcal (GAS) infections is particularly desirable for managing GAS infections. Antigenic peptides are an appealing strategy for developing a GAS vaccine, as using the entire organism or virulent M protein GAS may cause autoimmunity. Nevertheless, using peptide-based vaccines necessitate the need for co-delivery with potent immunoadjuvants due to poor immunogenic on its own. This study aimed to develop an efficient delivery platform for lipopeptide vaccines integrated with other immunostimulating properties. Modification of amphiphilic chitosan was successfully done through a carbodiimide reaction. Two nanoparticle-based GAS vaccines candidates were developed, composed of encapsulated KLH protein (a source of T helper cell epitopes) and lipidated M-protein derived B cell peptide epitope (lipoJ14) cum as ACNs-J14-KLH, and further functionalized with poly (I: C) ACNs-lipoJ14-KLH-(poly I: C). Physicochemical analysis was done for both formulated vaccines. Optimization concentrations of TPP (5, 10, 15, 20, and 50 µg/mL) were done followed optimization by using poly I: C (5, 10, 25, 50, 75, 100, and 150 µL) to get the optimum size of ACNS nanoparticles and ensure the successfulness of coating strategy respectively. Both vaccine formulations exhibited nanosized dimension within the range of 220 – 240 nm (P>0.05), Pdi value (< 0.3), higher encapsulation efficiency (> 86% for lipoJ14 antigen) and (> 50% for KLH). Next, a stability study revealed that vaccine formulation without Poly I: C demonstrated more stability properties at temperature (4°C and Room temperature) for 1 month. Both vaccine formulations were designed with multiadjuvanting properties and possess a good physicochemical profile.

Keywords: Amphiphilic chitosan; Multiadjuvants; Nanoparticles; Peptide vaccine; Group A Streptococcus

PC5! NEUTROPHIL OXIDATIVE BURST ACTIVITY RESPONSE TO *STAPHYLOCOCCUS AUREUS* OF CARRIAGE ORIGIN

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ABSTRACT

Staphylococcus aureus has been identified as one of the pathogens that leads to serious threat in human health. One of the mechanisms to evade and cause infection is via direct interaction with neutrophil. Oxygen dependent intracellular killing mechanism employed by neutrophil is carried out by generating the production of reactive oxygen species (ROS) or also known as oxidative burst. However, the potential of *S. aureus*, especially carriage origin isolates, to evade and cause infection to the host is not clear. Thus, the production of ROS upon the phagocytosis process of neutrophil, from a healthy individual, engulfing *S. aureus* of carriage origin were measured in this study. This study aims to compare (i) the neutrophil oxidative burst activity upon phagocytosis process, and (ii) the neutrophil phagocytic activity of methicillin-resistant *S. aureus* (MRSA) and methicillin-susceptible *S. aureus* (MSSA). Prior to phagocytosis assay, bacteria were grown to mid exponential phase (OD=0.75). Then, the production of oxidative burst and the phagocytic activities by neutrophil were measured using a kit, PHAGOBURST™ (Glycotupe Biotechnology, Germany) according to the manufacturer's instruction. Although high oxidative burst and phagocytic activities were observed in MSSA compared to MRSA ($p<0.05$), the differences were not statistically significant when compared to control ($p>0.05$). Collectively, the present study demonstrated that MRSA and MSSA of carriage origin are not sufficient to induce oxidative burst in the neutrophil of a healthy individual.

Keywords: *Staphylococcus aureus*, carriage origin, oxidative burst

PC6 | MEDICINAL PROPERTIES OF COASTAL MEDICINAL PLANT *Ipomoea pes-caprae* STEM AND ROOTS AS ANTIOXIDANT AND ANTIBACTERIAL

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ABSTRACT

Ipomoea pes-caprae or known as Pokok Tapak Kaki Kuda, is a perennial coastal plant from the Convolvulaceae family. It is widespread in tropical region including Malaysia's coastal areas. Traditionally, the leaves of the plant have been used to treat jellyfish sting, stonefish pain, and diarrhoea. However, the utilisation of its stem and roots are still lacking. Therefore, the purpose of this study is to evaluate the antioxidant and antibacterial activity of the stem and root of *I.pes-caprae* extracted with hexane, ethyl acetate, and methanol, as well as its toxicity. The antioxidant content was determined using the DPPH radical scavenging assay, and the total phenolic content (TPC) was determined using the Folin-Ciocalteau reagent. The antibacterial activity was determined using the well diffusion method against *Staphylococcus aureus, Staphylococcus epiderdimis, Escherichia coli,* and *Pseudomonas aeruginosa*, while the toxicity was determined using brine shrimp lethality assay (BSLA) for 24 hours. The 10 mg/ml stem extracts had the highest antioxidant activity and phenolic content compared to root extracts, as determined by the antioxidant assay and the TPC assay. In the meantime, the antibacterial test revealed that 10 mg/ml of extracts responded differentially to pathogens. The stem hexane and ethyl acetate extract inhibited *S.aureus* and *S.epiderdimis* the most effectively. However, no inhibition was observed in *E. coli* for all the extracts. The BSLA revealed that the extract of stem and root are non-toxic (LC_{50}>5mg/mL). This demonstrated that

I. pes-caprae has the potential to be further developed into an antibacterial and antioxidant drug or treatment.

Keywords: Beach morning glory; *Ipomoea pes-caprae*; Antioxidant, Antibacterial, Toxicity.

PC7|QUALITY OF LIFE STATUS AND RISK FACTORS AMONG HOSPITAL CANSELOR TUANKU MUHRIZ (HCTM) STAFF WHO HAVE RECOVERED FROM COVID-19

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ABSTRACT

This study is aimed to determine the status of the quality of life of patients who recovered from COVID-19 among the staff of Hospital Canselor Tuanku Muhriz (HCTM) and the risk factors that may affect them. This cross-sectional study involved a total of 328 COVID-19 patients who were infected between June 2021 and February 2022. The WHOQOL-BREF questionnaire was used to assess the quality of life. The process of obtaining data was carried out online through a Google Form questionnaire Overall, the respondent's quality of life score showed that the majority was good (68.62 ± 11.63). The psychological domain score was significantly higher ($p<0.05$) for respondents aged between 20-29 years. Respondents with heart problems and long COVID showed the lowest psychological health domain scores significantly ($p<0.05$). Married respondents scored significantly higher ($p<0.05$) in the social relationship domain. Doctors have the highest environmental domain score significantly ($p<0.05$) compared to other positions. Overall, the quality of life was significantly lowest ($p<0.05$) in respondents aged between 50-59 years and suffering from heart problems. The absence of comorbidities, position as a doctor and stages of COVID-19 infection have a significant impact on quality of life, with positive beta values, while long COVID, marital status and age have a negative impact on quality of life. The findings from this study may be beneficial to HCTM if they want to strategize or plan to improve the quality of life of their staff who have recovered from COVID-19.

Keywords: COVID-19, comorbidities, HCTM, long COVID, quality of life

PC8 | UNCOVERING THE LINK: MOBILE PHONES AS POTENTIAL FOMITES TO BACTERIAL TRANSMISSION - A CASE STUDY FROM UNIVERSITI KEBANGSAAN MALAYSIA

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ABSTRACT

Introduction: The majority of university students use mobile phones (MPs) due to their versatile applications and educational benefits. However, it is crucial to acknowledge that despite the advantages they offer, MPs can also potentially serve as breeding grounds for infectious pathogens.
Aim: This study aimed to determine the prevalence of bacterial contamination and assess the antimicrobial susceptibility patterns of *Staphylococcus aureus* isolated from MPs among Biomedical Science students of Universiti Kebangsaan Malaysia (UKM).
Result: The overall prevalence of mobile phone contamination with one or more bacteria was 98.8% (n=82/83). *Staphylococcus aureus (S. aureus)* (85.5%), negative coagulase *Staphylococcus* (80.7%) and *Streptococcus* spp. (65.1%) were the most predominant bacterial isolates while *Bacillus* spp. (19.3%) and *Escherichia coli* (1.2%) were the least isolates in this study. Penicillin resistance (26.8%) was the highest in *S. aureus* isolates and is most sensitive towards Streptomycin (84.5%). A comparison of bacteria type and the frequency of MPs utilization showed a significant difference with *Streptococcus* spp. (P = 0.025) and the usage in the bathroom (P = 0.043). Another comparison with the usage of MPs in the laboratory (P = 0.011) and before sleep (P = 0.004) showed a significant difference in the prevalence of *S. aureus*.
Discussion: *Staphylococcus aureus* and negative coagulase *Staphylococcus* isolates were the highest as they are parts of the normal flora of the skin. The reason for *S. aureus* prevalence as a bacterial contaminant on MPs could be attributed to its ease of transmission through various human activities, including sneezing, coughing, and actions involving skin contact. The presence of *Escherichia coli* indicates the probability of faecal contaminants on MPs.
Conclusion: There is high bacterial contamination from MPs of Biomedical Science students at UKM. Regular disinfection of MPs and hands is essential to prevent any potential disease transmission.

Keywords: Mobile phone, bacterial contamination, *Staphylococcus aureus*, infection, university.

PC9 | ISOLATION AND CHARACTERIZATION OF BACTERIOPHAGE AGAINST *Pseudomonas aeruginosa*

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ABSTRACT

The World Health Organization has classified *Pseudomonas aeruginosa* as a 'Priority One and Critical Pathogen' for which research and design of new antibiotics are urgently needed due to its high rate of antimicrobial resistance. Phage therapy, which uses bacteriophages (phages), has been proposed as an antibacterial agent and shows potential in combating this issue. This study aimed to isolate and characterise a bacteriophage that acts specifically against *P. aeruginosa*. The phage was obtained from a water sample, and a spot test was used to determine its ability to lyse *P. aeruginosa*. Transmission electron microscopy (TEM) was employed to determine the phage family, while specificity and sensitivity tests were conducted using six different bacterial species and 20 clinical *P. aeruginosa* isolates, respectively. Phage PA1 was isolated from Sungai Ayam, Johor and using a spot test, PA1 could form clear plaques against *P. aeruginosa*. PA1 was present in a high titer of 1.06 (± 32.2) x 10^{10} PFUs/ml. Based on TEM analysis, PA1 was classified as a member of the *Myoviridae* family. Host-range analysis displayed that PA1 had 100% specificity towards *P. aeruginosa* and only 45% sensitivity towards different *P. aeruginosa* clinical isolates. Phage PA1 demonstrated lysis of *P. aeruginosa* but exhibited a narrow host range, presenting a challenge for phage therapy. A promising approach to overcome this limitation involves using phage cocktails containing multiple strains of phages to broaden the host range and enhance the overall efficacy of phage therapy.

Keywords: *Pseudomonas aeruginosa*, bacteriophage, antimicrobial resistance, phage therapy, host-range

PC10 | Prevalence and demographic risk factors of active tuberculosis (TB): Study of Retrospective Data in Premier Integrated Labs

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Tuberculosis (TB) remains a major health concern worldwide, infecting approximately a quarter of the population globally. In Malaysia, the incidence rate of TB in 2021 is 92 cases per 100,000 population. Active TB commonly affects the lung, known as pulmonary tuberculosis (PTB), and other anatomical sites known as extrapulmonary tuberculosis (EPTB). Culture remains a gold standard despite being a time-consuming method in active TB detection. The introduction of polymerase chain reaction (PCR) can minimize the time taken to detect active TB infections, thus enabling prompt treatment and management of affected individuals. This study aims to determine the prevalence and risk factors of active TB cases as detected via PCR technique. A cross-sectional study was conducted analyzing retrospective data retrieved from the archive of Premier Integrated

Labs involving 1522 patients attending and undergoing PCR testing in Pantai Hospital Kuala Lumpur from June 2018 to May 2023. This study revealed that active TB has a prevalence of 168/1522 (11%) with a male predominance (92/168, 54.8%). Both risk factors of 1) age between 20-41 (65/168, 38.7%), and 2) Chinese ethnicity (56/168, 33.3%), show a higher risk of having active TB. The risk factor of age is significantly associated with active TB cases ($p<0.001$). No significant association between gender and ethnicity suggests that the factors are less likely to influence active TB prevalence. In conclusion, the prevalence of active TB as revealed in the study is low (11%), as compared to WHO's global TB prevalence (23%). However, to achieve the target of zero TB cases in 2035, Malaysia's TB management strategy and policy must evolve.
Keywords: Tuberculosis, prevalence, active tuberculosis, pulmonary tuberculosis, polymerase chain reaction, demographic risk factors

PD1 | GABAergic Circuit of Brain Circadian Clocks: Theoretical Framework of a Network Simulation

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ABSTRACT

The study of chronobiology, how humans interpret and interact with time, has been no less fascinating and astounding. There are so many questions with so little answers on how the human brain can adapt and integrate the organism's physiology to natural 24-hour day/night cycles so that we work at certain times of the day and rest at others. Research over the past few decades have uncovered the suprachiasmatic nucleus (SCN), located within the hypothalamus, to be the central circadian clock. It regulates biological timing by integrating photic and non-photic information, processing and then delivering integrated outputs into multiple peripheral clocks of the body. This study sets out to explore the SCN, its electrophysiology and neurochemical makeup and how they could play a role in mammalian timekeeping. Notably, gamma-aminobutyric acid (GABA), found in almost all SCN neurons, has well-documented roles in synchronization and entrainment of the SCN. Hence, the viability of simulating an *in silico* model of a GABAergic network within the SCN was tested using Python within the brain modelling toolkit (BMTK) environment. It was theorized that a simple but less than accurate model could be developed to study changes in GABAergic neuron firing throughout different time periods. To create a functional model, significant expertise in programming is required to integrate available datasets with biophysical properties of neurons, e.g. the Allen Cell Types Database. Further advancements in computational neuroscience are promising to visualize anatomy and electrophysiology of SCN neurons as a supplement to conventional approaches in brain science research.

Keywords: GABAergic circuit; Brain; Circadian clock; Network simulation; Theoretical framework.

PD2| BIOLOGICAL ACTIVITIES OF *Cordyceps Militaris* & *Yerba Santa* AS ACETYLCHOLINESTERASE INHIBITORS

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ABSTRACT

In the cholinergic nerve system, Acetylcholinesterase (AChE) is a crucial enzyme. In progression of Alzheimer's Disease (AD), eventual decline of Acetylcholine (ACh) occurs in addition to degradation of several neurons. AChE inhibitors prevent the cholinesterase enzyme from degrading ACh, hence extending neurotransmitter action level and duration. Medicinal mushroom, *Cordyceps militaris* has been used as part of traditional medicine since ancient times, having various health benefits from its bioactive constituents, such as Cordycepin. In addition, many studies demonstrated the traditional application of herbs such as *Eriodictyon californicum* or Yerba santa among indigenous tribes over California. Research evidence has identified neuroprotective capabilities of the flavanone, Sterubin, a primary active compound in Yerba santa. This study investigates the AChE inhibition properties of *C. militaris* & Yerba Santa with focus on ligand-receptor interactions using molecular docking software. Results showed Eriodyctiol exhibiting lowest binding affinity (-10.4 kcal $\cdot$mol^{-1}) upon binding with human AChE protein. Highest binding affinity among binding results was observed in binding cordycepin with Human Adenosine A1 receptor protein (-6.4 kcal $\cdot$mol^{-1}). Cordycepin, eriodyctiol, and sterubin show good binding interactions with AChE, especially at its active site, the catalytic triad. Optimized conformations between ligand and receptors are stipulated, resulting in minimum binding affinity scores. Eriodyctiol displays the most significance in its biological activities by affecting various fundamental catalytic functions of AChE, highlighting the untapped potential of Yerba santa as a valuable herb in AChE inhibition.

Keywords: Acetylcholinesterase, Alzheimer's Disease, Cordycepin, Eriodyctiol, Sterubin

PD3 | IN-SILICO SEQUENCE AND PHYLOGENETIC ANALYSES OF HEMAGGLUTININ (H) AND FUSION (F) GENES OF CANINE DISTEMPER VIRUS (CDV) TOWARDS PREDICTION OF ITS ZOONOSIS POTENTIAL

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ABSTRACT

The Canine Distemper Virus (CDV) is related to infections of primarily the canine species worldwide. Recently, CDV caused catastrophic outbreaks among non-canine species of carnivores and nearly caused extinction in some endangered wildlife species such as Siberian Amur tiger and Serengeti African lions. More worrisome, CDV infection recently reported in non-human primate's species, due to the mutation of the genome sequence, which makes it susceptible to cross-species transmission and zoonosis. CDV consists of six gene, namely fusion (F), hemagglutinin (H), matrix (M), nucleocapsid (N), large (L) and phosphoprotein (P) proteins. This study investigated the evolution of Hemagglutinin (H) and Fusion (F) gene of CDV and predicted their similarities with the closest *Morbilivirus* human pathogen, the Measles Virus (MeV) by using bioinformatic tools for multiple sequence alignment and phylogenetic analyses in BioEdit and MEGA softwares. Throughout the datasets used, several sequences with non-synonymous insertion and deletion mutations were detected. In addition, the phylogenetic analyses between CDV and MeV revealed close similarity within the context of F gene but not the H gene. This study contributes to the analysis of CDV evolution through various species and geographical locations using the available curated

records in the GenBank database. Thus, this warrant further study on the possibility of continuous mutation of the CDV genes, which may lead to the ability to infect humans. Moreover, this study is beneficial for preparing for the possibility of an emerging pandemic threat due to the CDV evolution, which would require effective surveillance, response, and clinical functions.

Keywords: Canine Distemper Virus, Phylogenetic Analysis, Emerging Disease Prediction, Zoonosis

PD4|DETERMINATION OF KNOWLEDGE, ATTITUDE AND PRACTICE QUESTIONNAIRES ON E-HUFFAZ PROHEALTH: DEVELOPMENT AND VALIDATION

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e-Huffaz ProHealth is a multicomponent lifestyle intervention module developed specifically for Tahfiz students. It consists of physical health, nutritional and psychological components. This study aimed to determine the knowledge, attitude and practice (KAP) questionnaires on e-Huffaz ProHealth among Tahfiz students. This cross-sectional pilot survey involved 3 phases. A total of six experts participated in the initial evaluation stage to assess validity while five experts were involved in the second stage. Thirty-three and 41 respondents from Madrasah Tahfiz Al-Amani and Pondok Moden Tahfiz Saadah Addaarain were involved for the face validity and reliability evaluation, respectively. The findings demonstrated that the Item Content Validity Index (I-CVI) for physical health, nutritional and psychological components of the KAP questionnaires at the second stage of evaluation was high (1.0). The scores for the Scale Face Validity Average Index (S-FVI/Average) in assessing the level of clarity and understanding for the three components were 0.89 and 0.88, 0.92 and 0.90, and 0.88 and 0.9, respectively. Meanwhile, the reliability of KAP for physical activity was moderate (0.43), very high (0.91) and high (0.7), respectively. For nutrition, the reliability of KAP was good and acceptable with the values of 0.63, 0.83 and 0.65, respectively. The results of reliability of KAP for psychological well-being was good with the values of 0.54, 0.56 and 0.84, respectively. The KAP questionnaires of e-Huffaz ProHealth were successfully developed with high content validity, good face validity and acceptable reliability. Hence, it can be used for future study to evaluate the effectiveness of e-Huffaz ProHealth among Tahfiz students.

Keywords: KAP, Tahfiz, Validity, Reliability, Health module

PL1|*CANARIUM ODONTOPHYLLUM* MIQ. LEAVES EXTRACT AS NEW DRUG ALTERNATIVE FOR MALARIA TREATMENT

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ABSTRACT

Malaria belongs on the list of the world's infectious diseases that have caused many deaths. Therefore, this study was conducted to investigate the antimalarial activities in vitro of *Canarium odontophyllum* leaf extract on erythrocytes infected with *Plasmodium falciparum* 3D7. A 5% level of parasitemia in infected erythrocytes was treated in vitro using four types of different polarity extracts: acetone, methanol, hexane, and aqueous. This experiment was conducted to determine the concentration at 50% inhibition of Plasmodium's activity (IC_{50}) for each extract at different concentration doses, from the highest dosage of 10 mg/mL to the lowest concentration; 0.000001 mg/mL, via the plasmodium lactate dehydrogenase (pLDH) assay at 5% parasitemia level and the synchronization stages. One-way ANOVA was used to obtain the average differences in activity inhibition for different treatment groups. pLDH assay test on methanol leaf extract of *Canarium odontophyllum* showed the lowest IC_{50} value (0.001051mg/mL) with the lowest concentration compared to other extracts and even both positive controls; chloroquine; 0.002680 mg/mL and artemisinin 2.521 mg/mL. Methanol leaf extract was chosen for synchronization, where it was more potent on trophozoite stage, 5.463×10^{-5} mg/mL. At 5% parasitemia level, the IC_{50} reading of methanol leaf extracts showed to be the most potent among other extracts, and showing effectiveness on trophozoite stage, proving it antimalarial properties. In conclusion, *Canarium odontophyllum* methanol extract has the potential to be develop as an antimalarial drug in the future.

Keywords: Antimalaria activity, *Canarium odontophyllum*, *Plasmodium falciparum*, pLDH assay, synchronization

PL2|EFFECTS OF ANTIBACTERIAL ACTIVITY IN EXTRACTS ORGAN OF COCKROACH (*PERIPLANETA AMERICANA*) AGAINST *ESCHERICHIA COLI, STAPHYLOCOCCUS AUREUS, VIBRIO CHOLERA, STREPTOCOCCUS PYOGENES*

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ABSTRACT

Current work demonstrates antibacterial action against *Escherichia coli, Staphylococcus aureus, Vibrio cholera* and *Streptococcus pyogenes* in the extract organ of cockroaches.Survival lifestyle of cockroach in unhygienic environment associated bioactive compound presence in the gut of cockroaches might be the reason causes inhibitory effects against selected bacteria. Two groups of *P. americana* cockroaches were used in this investigation, with one group coming from an external source and the other from an internal source—an insectarium laboratory. Extract organ of cockroaches were used in this research showing inhibitory effects in antimicrobial susceptibility testing (AST) for both groups of cockroaches. Mean diameter of inhibition zones for test group of cockroach from Chow Kit ranging from 9 - 12 mm against *Escherichia coli, Staphylococcus aureus, Vibrio cholera* and *Streptococcus pyogenes* using concentration of extracts at 400 mg/ml indicate extract exhibited some inhibitory activity against selected bacteria. Furthermore, minimum inhibitory concentrations (MIC) and bactericidal concentration (MBC) values appeared on selected test bacteria for extract of control group of cockroach at 400 mg/ml and 800 mg/ml. Correspondence to other group which test group showed MIC value inhibit growth at 200 mg/ml against all selected test bacteria. Moreover, MBC value of test group of cockroach display bactericidal effect for *Escherichia coli, Vibrio cholera, Staphylococcus aureus* and *Streptococcus pyogenes* showing bactericidal effects at 200 mg/ml. Based on these findings, it is suggested that antibacterial activity showing in the extract organ of cockroach can be further investigated as a novel therapeutic agent in health medicine.

Keywords: *Periplaneta americana*, *Escherichia coli, Streptococcus pyogenes*, MIC, MBC

PL3 | HISTOLOGICAL STUDY OF THE EFFECTS OF DABAI LEAF (*CANARIUM ODONTOPHYLLUM*) IN METHANOL EXTRACT ON ICR MICE INFECTED WITH *PLASMODIUM BERGHEI* NK65

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ABSTRACT

Malaria is a devastating disease caused by the Plasmodium parasite. Drug-resistant Plasmodium strains have appeared, endangering ongoing control measures. As a result, natural compounds derived from plants are now significant sources of potential antimalarial drugs. *Canarium odontophyllum* renowned

locally as "dabai," is an endemic plant in Sarawak, Malaysia and it demonstrates various medicinal properties. This was done by evaluating the antimalarial activity of *Canarium odontophyllum* leaves alongside biochemical alterations such as liver function tests, renal profiles, and lipid profile tests, as well as alterations in the organ's histology in *Plasmodium berghei* NK65-infected ICR mice. The efficiency of *Canarium odontophyllum* was tested to evaluate the parasitaemia level, percentage of suppression of parasitaemia, and mean survival time of the mice after 4 days of the methanol extract of *Canarium odontophyllum*. Blood samples were taken after 21 days for lipid, renal, and liver function tests, and organ histology was examined by using light microscopy in H&E staining. Histological studies in the kidney showed glomerular proliferation, and absorption of parasitic red blood cells (PRBC) in glomerular capillaries at a treatment dose of 100 mg/kg. No infiltration of inflammatory cells and PRBC in the liver in 500 mg/kg dose. The brain showed adhesion of leukocytes at endothelium and PRBC sequestration at 100 mg/kg dose. The 500 mg/kg concentration of the methanol extract demonstrated significant potential for antimalarial action. In conclusion, these findings highlight *Canarium odontophyllum* as a promising source of antimalarial compounds.

KEYWORDS: H&E stain, Histology, *Plasmodium berghei* NK65, *Canarium Odontophyllum*, Antimalarial drugs

PL4 | THE HISTOLOGICAL EFFECTS OF HEXANE EXTRACT *CANARIUM ODONTOPHYLLUM* MIQ. LEAVES TOWARDS ICR MICE INFECTED WITH *PLASMODIUM BERGHEI* NK65

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ABSTRACT

This purpose of the study is to evaluate the effects of therapeutic doses of *Canarium odontophyllum* hexane extract on histology of liver, kidney and brain of mice infected with *Plasmodium berghei.* The histopathology changes of kidney when 100 mg/kg doses given is accumulation of hemozoin and sequestration of PRBCs however with a 300mg/kg dose no sequestration of PRBCs observed with mild hemozoin accumulation and with 500mg/kg doses, mild presence of PRBCs seen with mild hemozoin accumulation. Brain histology changes is diffusion of inflammatory cells and mild hemorrhagic foci when 100 mg/kg doses given, no inflammatory cells and hemorrhagic foci when 300 mg/kg doses given and mild hemorrhagic perivascular and lymphocyte presence intravascular when 500mg/kg doses given. While for liver histology changes when 100 mg/kg,300 mg/kg and 500 mg/kg doses are given is accumulation of PRBCs in microvascular and inflammatory cellsin the vein. Malaria infection exhibits leukocyte adherence on the endothelium wall, intravascular bleeding, and sequestration of PRBCs in microvascular of the brain organ. In the liver, inflammation cells and macrophage feeding PRBCs leading to blood cell lysis and collection of hemozoin can be seen. Inflammation on the microvascular and interstitium can be observed in the kidney. Next, focal bleeding inmedulla and cortical bleeding in the kidney. Parasitemia has been reduced after treatment with hexane extract for 300mg/kg and 500mg/kg in the liver, kidney and brain.

Keyword: Histology, *Plasmodium berghei* NK65, *Canarium odontophyllum,* Malaria, Hexane extract

PL5 | CLONING OF RECOMBINANT FCAR RECEPTOR (CD89) GENE INTO THE *E. COLI* VECTOR

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ABSTRACT

IgA-Fc receptor (FcAR) or CD89, has limited information known about its expression in vivo as most of the studies were done on the high-cost mammalian cells. Thus, the current study has explored the feasibility of cloning the recombinant CD89 gene into the *E.coli* vector (pQE-60) to be used as a potential subcloning intermediate vehicle for site-directed mutagenesis before transferring it into eukaryotic vectors. The project aims to transform the recombinant CD89 gene into an *E.coli* vector using the heat-shock method. This is followed by a subsequent objective to verify the successful cloning by colony Polymerase Chain Reaction (PCR), gel electrophoresis, and gene sequencing. As a result, the recombinant CD89 was successfully transformed into the pQE-60 plasmid. The transformed culture was plated onto a Luria Bertani (LB) agar containing Ampicillin to ensure only the pQE-60 vector grows as it is resistant to Ampicillin. The colony PCR and gel electrophoresis conducted showed the band size at 879 base pair (bp) which was the expected band size of the recombinant CD89. Furthermore, the new recombinant pQE-60_CD89 DNA was sequenced. BLASTn homology search of the sequence and multiple sequence alignment performed using the Clustal Omega showed that the sequence was identical to the pQE-60 plasmid, and CD89 DNA. The percent identity matrix was more than 90% which further confirmed the successful cloning. The present study showed that recombinant human protein, CD89 can be cloned into prokaryotic organisms such as *E.coli*. The cloned pQE-60_CD89 may be used as a base for subsequent easy genetic manipulation.

Keywords: IgA Fc Receptor, *E.coli* vector, cloning, colony PCR, gene sequencing

PL6 |LABELLING ACCURACY AND MICROBIOLOGICAL QUALITY OF PROBIOTIC DIETARY SUPPLEMENTS SOLD IN MALAYSIA

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ABSTRACT

Probiotics provide health benefits to the human body when consumed in adequate amounts. Several studies have shown that the contents of commercial probiotics for both human and animal usage may not be accurately depicted on their labels. The current study aims to investigate different brands of probiotic supplements that are sold in Malaysia in terms of their labelling accuracy and content quality, specifically their concentrations and genus of probiotics. Five probiotic supplement products were purchased from local drug stores and online platforms. All five products fulfilled most of the labelling requirements by National Pharmaceutical Regulatory Agency (NPRA), such as having product name, pack size and dosage form. However, four products did not display the Meditag hologram security label. For each product, its content was grown in MRS medium and/or Bifidobacterium medium and their concentrations were quantified. Three products had higher colony forming units (CFU) per capsule than their product claims (42.1%, 72.2% and 41.1% higher), while two products had lower CFU per capsule (67.1% and 76.1% lower) than their claims. Using biochemical tests, the cultured bacteria were shown to match the characteristics of Lactobacillus and Bifidobacterium. These preliminary results showed that some probiotic products in the market are not registered, and their active ingredients may be less than the product claims. For future studies, more products should be included in the investigation to obtain a clearer picture of the quality of

probiotic supplements in the market. Consumers should be educated to make informed decision in their choice of probiotic purchase.

Keywords: Probiotic supplements, probiotic label, probiotic content, National Pharmaceutical Regulatory Agency (NPRA) , colony forming units (CFU)

PL7 |THE DEVELOPMENT OF 3D-PRINTED HEMORRHOID MODEL FOR EFFECTIVE CLINICAL HEMORRHOIDAL LASER ABLATION TRAINING

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ABSTRACT

Due high prevalence of hemorrhoid worldwide and its significant discomforting symptoms, laser ablation is a recommended treatment for hemorrhoid. It is minimally invasive, with the lowest patient discomfort rate and highest recovery rate. Currently, there is a lack of hemorrhoid model for colorectal surgeons/trainees to practise on before they perform the actual surgery on patients. Hence, this study was conducted to create a novel and cost-effective hemorrhoid model. Two 3D hemorrhoid models were also created; a silicon model created from 3D-printed hemorrhoid moulds and a 3D-printed polyurethane photopolymer resin model, then assembled on the rectum model using magnets. The models and a questionnaire were distributed to relevant parties within the industry for preliminary evaluation. Seven respondents participated in the questionnaire. They were neutral when asked if the hemorrhoid model was similar to actual human anatomy and if the model was suitable for training purpose. Similarly, they were neutral when asked if it is useful to have a model with flexible placement of hemorrhoids. All participants preferred the silicon hemorrhoid model compared to the polyurethane photopolymer resin model. 57% of the participants commented on the need to improve the magnets quality used to attach hemorrhoid models to the rectum model. Based on the questionnaire, several room for improvements were identified, such as having all grades of hemorrhoids in one model and improving on the hemorrhoid assembly method onto the rectum model. In addition, other more flexible and realistic materials should also be considered in the production of the hemorrhoid models.

Keywords: Hemorrhoids, 3D Model, Laser Ablation, Simulation Training, Preliminary Evalution

PL8|EFFECTS OF LOW PROTEIN DIET ON OXIDATIVE STRESS AND LIVER FUNCTION IN WEANING SPRAGUE DAWLEY RAT

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ABSTRACT

Malnutrition is defined as a lack of, excess, or imbalance in an individual's intake of energy macronutrients and micronutrients. A low-protein diet is associated with energy health management, and a lower-than-

normal rise in protein is associated with energy management to boost the body's metabolism. The function of oxidative stress in the creation of tissue damage is examined. Oxidative stress is defined as a disruption in the equilibrium between the formation of reactive oxygen species and antioxidant defences. A total of 12 three-week-old male Sprague-Dawley rats (230-250g) will be divided into a low-protein diet group, n=6 and a normal protein diet group, n=6. All diet groups will have free access to water and respective food regime throughout the experiment for 3 weeks duration. At the end of the study period, liver was taken to measure oxidative stress and blood will be taken to measure biochemical test for liver profile. Lastly liver tissue was excised for analyse histological changes. All tests will be carried out using GraphPad Prism to analyse liver changes. Malondialdehyde (MDA), glutathione (GSH), superoxide dismutase (SOD) and advanced oxidation protein product (AOPP) showed no significant changes in both diet group ($p > 0.05$). Alanine aminotransferase (ALT), aspartate aminotransferase (AST), total bilirubin and albumin level does not show any significant different for both groups. Histological changes show mild steatosis in low protein diet. A low protein diet does not cause oxidative stress and changes in liver profile in a short period of time but indicate the onset of mild steatosis.

Keywords: Low protein diet, Oxidative stress, Antioxidant, Tissue damage, Steatosis

PL9|LINEAGE-SPECIFIC TOXICITY IN MATERNAL MICE HEMATOPOIETIC STEM/PROGENITOR CELLS INDUCED BY HYDROQUINONE

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ABSTRACT

Benzene is an environmental pollutant that is hematotoxic and carcinogenic to humans including during maternal exposure. After benzene metabolism, reactive metabolites such as hydroquinone (HQ) are produced. Previous studies have shown that benzene can act through various ways that target hematopoietic stem/progenitor cells (HSPCs). However, not much is known about the response affecting lineage-committed progenitors for myeloid, erythroid, and lymphoid in bone marrow during maternal exposure. This study is done to investigate the clonogenicity and lineage-specific toxicity in maternal bone marrow HSPCs. HQ altered the clonogenicity profile of HSPCs by significantly reducing colony counts for lymphoid progenitors (colony forming unit) at all HQ-exposed groups at 25 and 50 mg/kg and erythroid progenitors (CFU-E) only at 50 mg/kg dosage ($p<0.05$). However, the clonogenicity of myeloid progenitors (CFU-GM, CFU-M, CFU-G) is not significantly affected ($p>0.05$) despite notable reduction of colony counts in HQ-exposed groups. Moreover, the comparative analysis between HSPCs lineage shows that erythroid progenitors are the most affected by HQ exposure as compared to notable differences between the control group and HQ-treated groups. Discussion: The decrease of clonogenic potency of Pre-B lymphoid progenitors and erythroid may suggest that benzene toxicity does have lineage-specific toxicity and may also suggest that erythrocytic and lymphocytic cells to be more susceptible to benzene during maternal exposure. Conclusion: Conclusively, HQ does cause significant effects towards maternal HSPCs suggesting that benzene can cause hematological disorders by promoting lineage-specific toxicity targeting HSPCs.

Keywords: Benzene, maternal, hematopoietic stem/progenitor cells, hematotoxicity, lineage-specific

PL10 ANALYSIS | OF OXIDATIVE STRESS AND HEPATOTOXICITY IN MATERNAL MICE EXPOSED TO HYDROQUINONE

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ABSTRACT

Benzene is a ubiquitous environmental pollutant that causes hematotoxicity and leukemiasin humans. Benzene mediates its toxicity through the formation of reactive metabolites such as hydroquinone (HQ). HQ is one of the most toxic metabolites and has been reported to cause hepatotoxicity. However, such an effect in the maternal system where liver enzyme and morphology of liver is compromised remains unclear. To investigate the effect of HQ in vivo exposure on liver enzyme and histopathological changes of maternal mice liver. There is no significant difference($p>0.05$) in the level of liver enzyme alanine aminotransferase (ALT) and aspartate aminotransferase (AST) of maternal mice liver exposed to HQ despite a notable increase of the enzymes in HQ-exposed group as compared to control. Meanwhile, histopathological changes such as necrotic alterations of hepatocytes can be seen in HQ-exposed groups at 25 mg/kg and 50 mg/kg as compared to control groups. No significant increase shows that there is a risk that HQ exposure can indeed causehepatotoxicity if higher dose and prolonged exposure is given. Besides, there are also histological changes indicated by the presence of necrotic alterations of hepatocytes in the HQ-treated group as compared to the control group which indicates that the liver has been damaged. **Conclusion:** HQs are able to induce risk of hepatotoxicity in pregnant mice. However, further research is needed to confirm this finding.

Keywords: Benzene, maternal, hepatotoxicity, liver enzymes, histopathology

PL11 | EFFECTS OF IN UTERO HYDROQUINONE EXPOSURE ON OXIDATIVE STRESS AND HISTOPATHOLOGICAL CHANGES IN MATERNAL MICE KIDNEY

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ABSTRACT

Benzene mediates its nephrotoxicity through the formation of toxic metabolites such as hydroquinone and 1,4-benzoquinone. Hydroquinone has been known to cause nephrotoxic effects through direct acting or through the formation of oxidative stress. However, such effect in maternal system where oxidative balance is compromised especially on kidney remains unclear. This study aims to investigate the effect of hydroquinone in utero exposure on oxidative stress and histopathological changes of maternal mice kidney using H&E and Congo red staining. Nine male and 18 female mice from Imprinting Control Region (ICR) were used. There is no significant effect ($p>0.05$) of hydroquinone exposure on oxidative stress markers for

lipid peroxidation (malondialdehyde) and protein oxidation (AOPP) along with antioxidant status (glutathione and superoxide dismutase) of maternal mice kidney. Meanwhile, histopathological changes such as glomerular and tubular abnormality can be observed in HQ-exposed groups at 25 and 50 mg/kg as compared to control group in both staining. No significant differences of oxidative stress between control and HQ exposed groups as observed in this study may suggest that benzene toxicity is not mediated through oxidative stress pathway targeting kidney. It is possible that hydroquinone causes direct damage to kidney tissue as an alkylating agent instead of mediating its toxicity through oxidative stress formation which might explain the abnormality observed in histopathological assessment. In conclusion, hydroquinone does not cause significant effect towards oxidative stress in maternal kidney, but it causes some histopathological changes suggesting potential risk of nephrotoxicity during maternal stage following exposure to benzene.

Keywords: Kidney, nephrotoxicity, benzene, maternal, oxidative stress, histopathology

PL12 | INVESTIGATING THE EFFECT OF IN UTERO HYDROQUINONE EXPOSURE ON OXIDATIVE STRESS AND HISTOPATHOLOGICAL CHANGES IN SPLEEN OF MATERNAL MICE

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ABSTRACT

Despite of emerging reports on maternal toxicity related to benzene exposure, oxidative stress-mediated mechanism of benzene-induced splenic toxicity, especially its reactive metabolite, hydroquinone (HQ) remains obscure. This study aimed to elucidate the effects of in utero HQ exposure on oxidative stress and histopathological changes in spleen of maternal mice. Twenty-seven Imprinting Control Region (ICR) mice weighing from 30-40 g were used in this study. One male mouse was mated with two fertile female mice overnight. Then, the pregnant female mice were distributed equally into three groups namely Control, HQ-25 and HQ-50. HQ was administered (25 and 50 mg/kg body) via oral force feeding on gestational day (GD) 12, 14 and 16 followed by spleen extraction on GD 18. Results showed no significant effects ($p>0.05$) were observed in oxidative stress markers such as malondialdehyde (MDA) and advanced oxidative protein product (AOPP) along with antioxidant status, glutathione (GSH) and superoxide dismutase (SOD) in spleen of maternal mice in all groups following HQ exposure. Histopathological changes by using Hematoxylin and Eosin (H&E) staining revealed aggregations of lymphocytes in lymph node and increased in spleen cellularity in HQ-treated groups. Tissue toxicity can be a result of direct action of HQ or immunological responses to splenic injury. For instance, extramedullary hematopoiesis (EMH) in spleen leads to development of hematological disorder triggered by HQ exposure. The present study demonstrates some histopathological changes despite no effects were observed in oxidative stress of maternal spleen, proposing potential risk of splenic injury following benzene exposure during maternal stage.

Keywords: Hydroquinone, in utero, spleen, oxidative stress, histopathology

PL13 | The effect of Inflammation and Heart failure biomarkers in *Porphyromonas gingivalis*-induced Zebrafish Hearts

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ABSTRACT

Background : Periodontal disease, which is induced by *Porphyromonas gingivalis* (PG), has been found to increase the risk of heart attack, but the study of the relationship between periodontal disease and heart failure, another cardiovascular disease, is limited. **Aim**: To study the effect of inflammation and heart failure biomarkers in *Porphyromonas gingivalis*-induced zebrafish hearts. **Method**: The zebrafish were divided into 2 groups (n=4 / group): a control group treated with normal saline (C) and a group treated with 400µg Porphyromonas gingivalis OMV (OMV). The zebrafish is treated intraperitoneally and left for 24 hours in the fish tank, with access to light and darkness for 12 hours each. The zebrafish were sacrificed, and the hearts were dissected for real-time quantitative polymerase chain reaction (RT-qPCR) analysis targeting inflammation (TNF-α, IL-1α) and heart failure (ANP) mRNA markers. **Result**: The analysis of TNF-α mRNA expression has shown no significant difference ($p > 0.05$) between the control group and treatment group, but there was an increasing trend in TNF-α mRNA expression-fold in the treatment group. The expression of IL-1α mRNA exhibited no significant difference ($p > 0.05$) between the control group and treatment group, and no trend was observed. The expression of ANP mRNA has shown no significant difference ($p > 0.05$) between the control group and treatment group, however there was an increasing trend of ANP mRNA expression in the treatment group. **Conclusion:** Although no significant differences were found in this study, the expected increasing trend of inflammation (TNF-α) and heart failure (ANP) markers were promising which suggest a relationship between *Porphyromonas gingivalis* and heart failure which needs further investigation.

Keywords: *Porphyromonas gingivalis*,periodontal disease, heart failure, inflammation, zebrafish model

PL14 | THE ASSOCIATION BETWEEN CYTOGENETICS ABNORMALITIES WITH PROGNOSIS OF ACUTE MYELOID LEUKEMIA (AML) IN PANTAI PREMIER PATHOLOGY (PPP)

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ABSTRACT

Acute Myeloid Leukemia (AML) is a blood cancer, which happened due to genetic abnormalities that occur during the hematopoiesis process in the bone marrow, resulting in overproduction of leukemia blast. These abnormalities involve aberration in chromosomal number, structure, or both. Cytogenetic abnormalities can be identified by cytogenetic approaches such as karyotyping and FISH. The results could determine the diagnosis, prognosis, treatment, and management of the patients. Thus, this study was conducted to investigate the association between cytogenetics abnormalities with the prognosis of AML from Pantai Premier Pathology (PPP, Bangsar). Data were retrieved from the archived files (January until December 2022). A total of 70 AML patients: male (64%), and female (36%) were identified, comprising ethnic groups: Malays (24.3%), Chinese (52.83%), Indian (12.85%), and others (10%). Of 37 patients with abnormal karyotypes, cytogenetic abnormalities were identified into (i) numerical abnormalities: pseudodiploidy (51.35%), hypodiploidy (29.73%), and hyperdiploidy (18.92%), and (ii) structural abnormalities: deletion (37.84%), translocation (35.14%), addition and inversion (13.51%). European Leukemia Net (ELN) 2022 risk-stratification referred to these 37 abnormal patients as prognosis guidelines, and 13% were classified as favourable, 30% as intermediate, and 57% as adverse groups. The association between demographic factors and cytogenetic abnormalities with prognosis were analysed using Pearson's Correlation. Age ($r = 0.519$) and structural abnormalities ($r = 0.594$) exhibited a significant correlation ($p<0.05$) with the prognosis, but not among gender, ethnicity, and numerical abnormalities. This study demonstrated the pattern of chromosomal abnormalities in AML patients, hence it should be focused on for future treatment and management.

Keywords: Chromosomal abnormalities, FISH, Karyotype, Leukemia, Risk-stratification

PL15|*IN-VITRO* VASORELAXATION EFFECT OF HAB10R12 ENDOPHYTIC EXTRACT ON ISOLATED AORTA RINGS FROM SPRAGUE DAWLEY RAT

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ABSTRACT

Hypertension (HTN) is one of the leading causes of death among adults. The need for new anti-hypertensive drugs arises because most existing agents are associated with adverse effects and still cannot resolve the death statistic due to HTN. Endophytic fungi have been previously proven for their remarkable phytochemical composition and various properties. Hence, this study aimed to determine the effect of HAB10R12 endophytic extract on the vasorelaxation activity of the aorta muscle isolated from the Sprague Dawley rat. HAB10R12 was isolated from *Garnecia scortechinii* and extracted using ethyl acetate. The rat's aorta was isolated and used in the functional myograph study (*in-vitro*) to determine the contractility and relaxation of the aorta muscle. The endophyte extract was shown to partially relax the phenylephrine-induced (EC50) contraction of the isolated aorta at a concentration 100 mg/ml (n=9). In contrast, the confirmatory control drug used, N-ω-nitro-l-arginine methyl ester (L-NAME, 100 µM), Methylene blue (10 µM) and Indomethacin (10 µM) were able to relax the phenylephrine-induced contracted aorta fully (n=9). In conclusion, HAB10R12 extract was able to partially vasorelaxed the effect on the pre-contractile aorta, thus holding a promise as a blood pressure lowering agent. Further studies such as to identify the receptor/s involve in mediating the relaxation to explore the biochemical pathway/s and to use the pure compound isolated from HAB10R12 are needed to reinforce the present data.

Keywords: *Garnecia scortechinii;* HAB10R12; blood pressure; myograph; vasorelaxation

PL16 | ASSOCIATION BETWEEN TRADITIONAL CHINESE MEDICINE BODY CONSTITUTIONS AND POLYMORPHISM OF *CYP11B2* GENE IN RELATION TO HYPERTENSION IN MALAYSIA

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ABSTRACT

Metabolic syndrome (MetS) reported at 25 to 40% prevalence among Malaysians. Hypertension is diagnosed when blood pressure persistently higher than normal range. From past to present, TCM practitioners maintaining balanced body state by emphasising the equilibrium between Yin and Yang energies, in providing individualised healthcare. Attention of this study was to investigate between MetS with body constitution (BC). A total of 99 subjects (87 non-hypertensive, 12 hypertensive) were recruited. BC was evaluated using Constitution Chinese Medicine Questionnaire (CCMQ). Polymorphism at hypertension-related regulatory gene, *CYP11B2* with rs3802228 was genotyped. DNA was extracted from buffy coat layer, followed by tetra-primer ARMS PCR to genotype rs3802228. Statistical analysis examined the association between BC, *CYP11B2* polymorphism, and risk factors of hypertension. Independent t-tests revealed no significant differences ($p>0.10$) between systolic blood pressure (SBP) and diastolic blood pressure (DBP) with gender, ethnicities. One-way ANOVA showed no significant differences in SBP and DBP among geographical regions, but significant differences ($p<0.10$) present in SBP and DBP among age

groups. Chi-square analysis indicated no association between rs3802228 and BC or between rs3802228 and blood pressure. Results depicted male, age ≥58 years, non-Chinese ethnicities, subjects from east-coast and East Malaysia, subjects with BCs of "Gentleness" or "Blood-stasis" exhibited a higher prevalence of hypertension, suggesting increased susceptibility to hypertension. However, BC and rs3802228 were no association with hypertension amongst Malaysians.

Keywords: Metabolic syndrome, hypertension, TCM, body constitution, *CYP11B2* gene polymorphism.

PN1 | EVALUATION OF CANCER STIGMA AND CANCER AWARENESS AMONG PRIVATE UNIVERSITY STUDENTS IN KLANG VALLEY

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ABSTRACT

The cancer incidence in Malaysia is rising and expected to double by 2040. Early screening of cancer can dramatically improve the issue. However, cancer stigma remains a huge barrier, especially among private university students, which has not been previously evaluated. Cancer awareness within Malaysians were reported to be relatively low and there is a lack of research specifically in assessing cancer awareness among private university students. Therefore, a cross-sectional study was conducted to evaluate cancer stigma and cancer awareness among private university students in Klang Valley, recruiting 388 students from private universities. Data was collected from September 2022 to December 2022 through an online questionnaire. The Cancer Stigma Scale (CASS) and Cancer Awareness Measure (CAM) were utilized in assessing students' cancer stigma and awareness, respectively. Statistical analysis was performed using SPSS (version 23). Results indicated that cancer stigma was significantly higher within male students, non-health science students, and those without family history of cancer ($p<0.05$). Students reported the highest CASS mean score for items related to severity of cancer diagnosis (3.61±1.06), while the lowest mean score was for items related to avoiding someone with cancer (1.80±0.70). Additionally, cancer awareness was significantly higher within health science students and students with family history of cancer ($p<0.05$). Items regarding Close Warning Signs (2.46±0.37) had a higher CAM mean score compared to items regarding Barriers to Seeking Help (2.29±0.25). Notably, no correlation was reported between cancer awareness and cancer stigma ($p>0.05$). These findings contribute to addressing cancer stigma among private university students.

Keywords: Cancer stigma, cancer awareness, cancer stigma scale, cancer awareness measure, private university students.

PN2 | Assessing The Effect of *Abelmoschus Esculentus* (L.) Moench Seeds on Cardiac Oxidative Stress in An Obese Mouse Model

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ABSTRACT

Background: Cardiovascular disease has been a worldwide concern due to the increasing mortality with multiple health factors as its development risk. A global epidemic, obesity is recognized as one of the causes of cardiovascular disease development. *Abelmoschus esculentus* (L.) Moench seed is known to have cardioprotective agents with bioactive compounds such as flavonoid and phytosterol that act towards cholesterol reduction and

lipid peroxidation. This study will evaluate the effect of *Abelmoschus esculentus* (L.) Moench seed powder on oxidative stress markers and cardiac antioxidants in an obese mice model. **Method:** Oxidative stress biomarkers malondialdehyde (MDA), and antioxidants superoxide dismutase (SOD), and glutathione (GSH) were measured to evaluate the oxidative stress activity towards cardiovascular disease in obese mice model. **Result:** There is significant ($p<0.05$) decreased of MDA on *Abelmoschus esculentus* (L.) Moench seed powder treatment towards obese mice model involves (HFD-OS1, HFD-OS2, and HFD-OS3) groups towards control group HFD. Enzymatic antioxidant SOD showed a significant ($p<0.05$) decreased that involves treatment group HFD-OS2 and HFD-OS3 towards HFD groups. Whilst, as for GSH, there is no significant difference ($p<0.05$) found on *Abelmoschus esculentus* (L.) Moench seed powder treatment in any groups, however there was an increase in trend observed. **Conclusion:** This study shows that *Abelmoschus esculentus* (L.) Moench seed powder significantly lowers lipid peroxidation and possible might increase non enzymatic antioxidant activities.

Keywords: Cardioprotective, obesity, *Abelmoschus esculentus* (L.) Moench, okra seed, malondialdehyde (MDA), superoxide dismutase (SOD), glutathione (GSH).

PN3 | Evaluating the effect of *Abelmoschus esculentus* (L.) Moench peel on cardiac oxidative stress in obese mice model

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ABSTRACT

Background: The impact of *Abelmoschus esculentus* (L.) Moench (Okra), a plant with antioxidant properties, on cardiac oxidative stress in the context of obesity remains unclear. This study aims to assess the impact of okra peel on cardiac oxidative stress in obese mice model. **Method:** In this study, 30 male mice were divided into six groups, (n=5/group): a control group fed a normal diet, a high fat diet (HFD) group, a positive control group treated with Simvastatin (20 mg/kg/day), and three HFD groups treated with different doses of okra peel (200 mg/kg/day, 400 mg/kg/day, and 800 mg/kg/day). The mice were fed their respective diets for a duration of 10 weeks. After the study period, the mice were sacrificed, and their hearts were isolated for the evaluation of malondialdehyde (MDA), superoxide dismutase (SOD), and glutathione (GSH) levels. **Result:** The analysis of MDA levels revealed a significant difference ($p < 0.05$) between the HFD - SIM group and both control and HFD groups. The levels of SOD enzyme showed a significant difference ($p < 0.05$) in the HFD - SIM group, HFD - OP 1 group, and HFD - OP 2 group compared to both the control and HFD groups. The levels of the GSH showed no significant difference between the control group and treatment group, but there was an increasing trend in GSH levels in the treatment group. **Conclusion:** The study demonstrates that okra peel treatment effectively reduces oxidative stress levels, although no significant impact was observed on the specific biomarker evaluated.

Keywords: *Abelmoschus esculentus* (L.) Moench, obese mice model, oxidative stress, antioxidant, obesity

PN4|THE EFFECT OF HIBISCUS SABDARIFFA LINN. (ROSELLE) POLYPHENOL-RICH EXTRACT (HPE) ON RENAL OXIDATIVE DAMAGE IN DIABETIC RATS

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ABSTRACT

Hyperglycemia increases reactive oxygen species (ROS) production, triggering oxidative stress (OS). This OS leads to mitochondrial dysfunction, DNA damage, protein oxidation, and lipid peroxidation, causing cell damage in the kidney. *Hibiscus sabdariffa Linn.* (roselle) contains polyphenols that enhance antioxidants, reducing renal damage from OS. This study aimed to determine the effect of HPE supplementation on renal oxidative damage in diabetic rats. DM was induced in adult male rats, and the rats were then divided into three groups: untreated DM (DM); DM with HPE supplementation (DM+HPE); DM with metformin (DM+MET); and non-diabetic rats (NDM). The rats were left untreated for four weeks after induction of diabetes, followed by four weeks of treatment with HPE supplements (100 mg/kg) and metformin (150 mg/kg) for the treated group. or the NDM and DM groups, the rats will be left untreated throughout the study. At the end of the study, the rats were sacrificed, the kidneys were excised for OS tests, and serum was used for creatinine evaluation. The result shows that DM+HPE is significantly lower ($p<0.05$) than the DM group for malondialdehyde (MDA) and advanced oxidation protein products (AOPP), while significantly increasing ($p<0.05$) for superoxide dismutase (SOD). Meanwhile, HPE treatment exhibited a considerable improvement in the activities of antioxidants found to reverse Glutathione (GSH). Moreover, DM+HPE shows a significant decrease ($p<0.05$) compared to the diabetic group. In summary, these results indicated that HPE is an effective antioxidant against oxidative damage in renal.

Keywords: Diabetes mellitus, oxidative stress, reactive oxygen species, polyphenols, roselle.

PN5| EXPRESSION STUDY OF GLIAL CELL-DERIVED NEUROTROPHIC FACTOR (GDNF) IN AB WILDTYPE (WT) ZEBRAFISH (*DANIO RERIO*)

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ABSTRACT

Parkinson's disease (PD) is a progressive neurodegenerative movement disorder characterized by cardinal motor manifestations like tremors, dyskinesia, bradykinesia, and postural instability. The accumulation of Lewy bodies, primarily involving alpha-synuclein aggregation within dopaminergic neurons leads to prominent loss of dopaminergic neurons in the substantia nigra par compacta, resulting in PD. Glial cell-line derived neurotrophic factor (GDNF), a neurotrophic factor, is perturbed during neurodegeneration. *In vitro* and *in vivo* studies have suggested that GDNF could provide neuroprotective and neurorestorative effects in PD animal models. Zebrafish is a translational model to study neurogenerative disorders as it shares 70% homology with the human genome, and about 84% of genes implicated in human disease are present in zebrafish as orthologs. The GDNF ortholog in zebrafish is *gdnfa* but the role and function of *gdnfa* are not well documented. In this study, we aimed to determine whether *gdnfa* is involved with zebrafish development. AB wildtype zebrafish were bred to obtain embryos which were grown in E3 media at 28°C. RNA was extracted from pooled samples of whole embryos/larvae (n=100) at the 0-hour post-fertilization (hpf) and 1-, 2-, 3-, 4-, 5-, 6-, 7-, 10-, and 14-day post-fertilization (dpf). The RNA samples were subsequently converted into complementary DNA (cDNA) for polymerase chain reaction (PCR) analysis to assess the expression levels of the *gdnfa* gene at the designated time points. *Beta-actin* served as the housekeeping

gene. Results showed *gdnfa* was continually expressed across the specified timepoints, suggesting a developmental role for *gdnfa* during early zebrafish development.

Keywords: Parkinson's disease, zebrafish, GDNF, development, gene expression

PN6 | BISPHENOL F CAUSES PROSTATE HYPERPLASIA VIA ITS ENDOCRINE DISRUPTING EFFECTS

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ABSTRACT

The toxicity of Bisphenol A (BPA) has led to the prohibition of its usage worldwide. Therefore, manufacturing industries replacing this BPA with its analogues such as Bisphenol F (BPF). Even though the structure of BPF shows that this BPA analogues had potential to have endocrine disrupting chemical (EDC) properties, to date no data was found regarding the effects of BPF on the prostate due to its EDC properties. Therefore, this study was carried out to evaluate the effect of BPF on the male reproductive hormones and prostate morphology in Sprague Dawley rats. Male Sprague Dawley rats (n=32) weighing between 230 – 250 g were divided into four groups: control (corn oil, 1mg/kg), BPF1 (BPF, 1 mg/kg), BPF5 (BPF, 5 mg/kg) and BPF10 (BPF, 10 mg/kg). The BPF was given orally via force-feed needle for 60 days. At the end of experimental periods, blood was taken for determination of testosterone (T) and estradiol (E2) levels and prostate for histological observation. The results showed BPF had significantly decreased the T and increased the E2 levels in dose dependent manner ($p<0.05$). Increasing concentration of BPF had increased the epithelial cell proliferation causing infolding of epithelial layer of the prostate. Nevertheless, estrogen receptor α (ERα) had found to be increased in BPF10 group as compared to the control and BPF1 groups showing of potential in increasing the risk of prostate cancer. In conclusion, BPF causes hyperplasia of prostate epithelial cell and increase the ERα expression via its endocrine disrupting properties.

Keywords: Bisphenol Analogues; Prostate; Testosterone; Estradiol; Hyperplasia

PN7 | Nanoscale Measurement of Collagen Dysregulation in Dual-stage Carcinogenesis of Lung Squamous Cell Carcinoma in vivo: an Atomic Force Microscopy Approach.

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ABSTRACT

Collagen is one of the main extracellular matrix proteins found to be over-synthesized in cancer, including lung squamous cell carcinoma (LUSC). This protein is responsible for increasing tissue stiffness, which can promote multiple hallmarks of cancer. However, the characterization of LUSC collagen architecture and stiffness at nanoscale level remains poorly investigated, especially during cancer progression. Therefore, this study aims to determine the structure, diameter, and stiffness of pre-malignant (PM) and malignant (M) LUSC tissue samples by using an atomic force microscopy in vivo. For the result, the collagen fibril structure in LUSC was observed to be highly cross-linked, without an orderly arrangement, especially in the M stage. For the diameter of collagen fibrils, there was no significant difference (p>0.05) between the diameter of LUSC and normal lung tissues from both stages of carcinogenesis. However, for the collagen stiffness, both stages of LUSC carcinogenesis were found to have a significantly higher (p<0.05) collagen stiffness as compared to normal tissues. The stiffness of collagen fibrils of PM LUSC is 139 ± 11.3 MPa as compared to the normal lung tissue which is 66.01 ± 11.9 MPa. Whereas the stiffness of collagen fibrils of M LUSC is 158.8 ± 22.2 MPa as compared to the normal lung tissue which is 61.23 ± 11.76 MPa. In conclusion, the structure and stiffness of LUSC tissues were suggested to be dysregulated and increased, respectively. Thereby, targeting factors that promote collagen cross-linking and stiffness may be interesting and promising targets to treat LUSCC effectively.

Keywords: Lung squamous cell carcinoma (LUSC); pre-malignant (PM); malignant (M); collagen; atomic force microscopy.

PN8 | Structural Evidence of Flavonoids as Antitumorigenic Agents against Multiple Targets of Breast Cancer: A Virtual Screening Approach

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ABSTRACT

Breast cancer is the most prevalent form of cancer affecting women worldwide with approximately 70%, are characterized by the presence of estrogen receptors (ER+). However, current treatments are associated with side effects and the development of resistance which hinders the patients to receive effective therapy. Thus, the aim

of this study is to explore multi-target anti-breast cancer agents based on chalcone, flavone, and flavanone scaffolds using computational strategy. A total of 49 patented chalcone, flavone, and flavanone compounds from in-house database were screened and filtered for their drug-likeness properties (Ro5) using QikProp. Among these compounds, three (3) known compounds isolated from *Muntingia calabura* and 40 other compounds passed the Ro5 criteria and were further assessed for docking activity using Glide. X-ray crystal structures of ERα (1GWR and 3ERT conformations), ERβ (1X76 and 1L2J conformations), and aromatase (3S79), were obtained from the Protein Data Bank (RCSB). The docking results revealed successful binding of 37 compounds to 1GWR, 43 compounds to 3ERT, 29 compounds to 1X76, and 39 compounds to 3S79. The docking scores ranged from -9.597 kcal/mol to 3.147 kcal/mol for 1GWR, -9.778 kcal/mol to -0.231 kcal/mol for 3ERT, -10.217 kcal/mol to 2.195 kcal/mol for 1X76, and -6.985 kcal/mol to 4.222 kcal/mol for 3S79. Furthermore, 10 out of the 43 docked compounds demonstrated selectivity as ERα antagonists, 17 compounds acted as ERβ agonists and five (5) compounds effectively inhibited aromatase. These findings suggest that flavonoids possess potential as multi-target agents to inhibit breast cancer cell proliferation.

Keywords: Polyphenols, estrogen receptor, aromatase, mammary carcinoma, molecular docking.

PN9 | THE LEAVES OF *ANNONA MURICATA* AS POTENTIAL IMMUNOTHERAPIES

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ABSTRACT

Annona muricata has gained massive interest from researchers due to its diverse pharmacological aspects, mainly the remarkable anti-inflammatory and anticancer properties. Numerous parts of *A. muricata* have been extensively used by traditional practitioners in treating various diseases including cancer, inflammation, and diabetes. The present study was carried out to investigate the immunosuppressive effects of 80% ethanol extract of leaves of *A. muricata* at 100, 200, and 400 mg/kg on the innate immune responses in male *Wistar* rats. *A. muricata* demonstrated strong immunosuppressive effects on the innate immune parameters by significantly inhibiting the migration of neutrophils, expressions of Mac-1, phagocytic activity, production of reactive oxygen species, and the expressions of lysozyme and ceruloplasmin in the rat plasma in a dose-dependent manner. *A. muricata* leaves extract revealed remarkable inhibitory effects on the innate immune responses. Thus, *A. muricata* has potential to be developed as an agent for the treatment of immune-related disorders.

Keywords: *Annona muricata*, innate immunity, autoimmune, immunosuppressant, phagocytosis.

PN 10 | THE CARDIOPROTECTIVE POTENTIAL OF SAC ON REGIONAL ISCHEMIA-REPERFUSION IN OVARIECTOMIZED RAT'S HEART

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ABSTRACT

Post-menopausal women tend to get ischemic heart disease compared to men due to lack of estrogen. Estrogen is considered as cardioprotective as it regulates vascular function by stimulating the release of nitric oxide (NO). S-Allyl-L-cysteine (SAC), a compound found abundantly in aged garlic, is believed to protect against myocardial ischemia-reperfusion injury (IRI) by stimulating the production of hydrogen sulfide (H_2S), a gasotransmitter with a similar function as NO. Thus, this preliminary study aims to investigate the effect of SAC in myocardial IRI models in ovariectomized rats. Sixteen female Wistar rats were randomly allocated into four groups: Sham, OVX+IR, OVX+IR+PAG (propargylglycine, CSE inhibitor) and OVX+IR+SAC. Rats were subjected to bilateral ovariectomy through a ventral approach, while the sham-ovariectomy rats underwent the same procedure without cutting the ovaries. Estradiol depletion was validated after three weeks of recovery. Ovariectomized rats showed cardiac damage from increased troponin-T in the blood serum. Isolated rat hearts were Langendorff-perfused and underwent 45 minutes of regional ischemia and 120 minutes of reperfusion. SAC was perfused within the first 15 minutes of reperfusion as a treatment. Throughout the experiment, heart function was recorded, and coronary effluent was measured at different time points for lactate dehydrogenase (LDH). The results showed that SAC exhibited the potential to improve the left ventricle developed pressure after ischemic insult. SAC also reduced the total LDH release significantly. The infarct size tended to be reduced by the SAC administration. Overall, SAC showed cardioprotective potential in preventing detrimental effects after myocardial ischemia injury.

Keywords: Ovariectomized, hidrogen sulfide, heart, ischemia-reperfusion injury (IRI), left ventricle developed pressure.

PN11|ANTIOXIDANT ACTIVITIY OF *PLUKENETIA VOLUBILIS*(SACHA INCHI) OIL AND ITS EFFECTS ON THE VIABILITY OF HUMAN KERATINOCYTE(HaCaT)

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ABSTRACT

Skin is the largest organ in human body and susceptible to the detrimental effects of oxidative stress, resulting in various complications such as accelerated skin aging. *Plukenetia volubulis* or more commonly known as Sacha Inchi oil (SIO) is a good natural antioxidant to counter oxidative stress. While SIO has been used traditionally in skincare treatment, not much is known about its cytotoxic effects on skin. 2,2-Diphenyl-1-picrylhydrazyl, DPPH assay was performed to measure the antioxidant activity of Sacha Inchi oil while 3-(4,5-Dimethylthiazol-2-yl)- 2,5-diphenyltetrazolium bromide, MTT assay was performed for cytotoxicity evaluation of serial doses of SIO (2.8%, 5.6%, 11.3%, 22.5% and 45%) on human keratinocytes. The results are presented as the mean ± SEM from six replicate experiments. Findings from DPPH assay demonstrated increasing antioxidant activity with higher SIO concentration, where highest scavenge

activity for SIO was found at the highest concentration of 45% v/v (70.92±1.14%). The results of the MTT assay revealed the viability of HaCaT cells was reduced with increasing SIO concentration. The IC_{50} values for SIO 37.694% v/v. The study showed a significant effect of concentration of SIO in scavenging activity, $F= 13.547$, $p<0.05$.The study also revealed a significant effect of concentration of SIO on viability cells, $F= 42.823$, $p<0.05$. Overall, the greatest antioxidant activity of SIO is observed at 45% v/v but considering its cytotoxicity findings, 20% v/v is suggested as an optimum concentration of SIO for future cosmeceutical application on skin.

Keywords: Sacha Inchi oil, *Plukenetia volubilis,* MTT assay, DPPH assay, keratinocytes,

PN12| EVALUATION OF CYTOTOXIC EFFECT OF HYDROQUINONE ON HUMAN BRAIN ENDOTHELIAL CELLS, HBEC-5i

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ABSTRACT

Hydroquinone (HQ) is a major benzene metabolite that can be closely found in daily life such as in skin-lightening agents, tar in cigarette smoke, oil refinery factory, and petroleum industry. Overexposure to HQ has been proven to induce the NF-kB pathway causing inflammation reaction and associated with adverse effects to the individual who works in the oil and gas industry. Recently, there has been a rising concern about the association of HQ with disruption of blood-brain barrier (BBB) permeability due to inflammation which can lead to cerebral oedema and sepsis-related encephalopathy. However, the effect of HQ on brain endothelial cells remains elusive. To address the effect of HQ in inducing cytotoxicity, a study on HQ targeting HBEC-5i was conducted. In this study, HBEC-5i were exposed to HQ and lipopolysaccharide (LPS) as a positive control for 18H in triplicate. Cytotoxicity assay was conducted with the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) assay to determine the inhibitory concentration (IC) at IC_{50} for HQ. The IC_{50} for HQ was 120 µM meanwhile LPS was recorded at 0.1 µM. The morphological changes observed identified cell shrinkage and loss of cell volume that was prominent at IC_{50} in HQ that also present in the positive control group which may indicate apoptosis. This study showed the cytotoxic effect of HQ on HBECs could lead to cell death which potentially can impair BBB function.

Keywords: Benzene, cell viability, neurotoxicity, inflammation, apoptosis.

PN13 | THE EFFECT OF LYSOSOME INHIBITOR TOWARDS CELLULAR VIABILITY OF HUMAN BRAIN ENDOTHELIUM CELL, HBEC 5i.

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ABSTRACT

Lysosome's role is to degrade complex biological molecules such as proteins into simpler components such as amino acids. This process helps in maintaining normal cellular homeostasis. Lysosome dysfunction will cause defects in the autophagy-lysosomal process. This can lead to the accumulation of amyloid beta-

peptide in the brain which can cause cerebral amyloid angiopathy (CAA). The amyloid deposition can cause fragile vessels and make them prone to bleeding. Thus, this study aimed to identify the IC_{10} and IC_{25} of lysosome inhibitors to establish a future in vitro model to investigate the effect of lysosome inhibition in human brain endothelial cells, HBEC-5i. HBEC 5i was cultured in Dulbecco's Modified Eagle Medium/Nutrient F-12 Ham with 10% Fetal Bovine Serum and 1% penicillin-streptomycin at 37°C, 5% CO_2. MTT assay was conducted on HBEC-5i that was exposed to Bafilomycin A1, V-ATPase inhibitor and Chloroquine (positive control group) for 24 hours in triplicate. IC_{10} and IC_{25} values were determined at 0.85 µM and 1.20 µM. Meanwhile, the morphological changes identified such as cell shrinkage and reduction in cell number may suggest apoptosis and by the observation of positive control. The results of this study showed that Bafilomycin A1 can decrease lysosomal pH able to reduce cellular viability. The values will be used to develop an in vitro model of lysosomal dysfunction in HBEC-5i in future.

Keywords: Amyloid beta-peptide, autophagy-lysosomal process, cerebral amyloid angiopathy, lysosome, lysosome inhibitor.

PN14| *HIBISCUS SABDARIFFA LINN* (ROSELLE) POLYPHENOL EXTRACT (HPE) ATTENUATE AORTA REDOX IMBALANCE IN DIABETIC RATS MODEL

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ABSTRACT

In diabetes mellitus (DM), persistent chronic hyperglycaemia leads to vascular dysfunction, eventually resulting in cardiovascular complications. Redox imbalance is among the main routes for developing diabetic vascular dysfunction, mainly due to oxidative stress of the endothelium cells. Polyphenol-rich extract of *Hibiscus sabdariffa* Linn. (HPE) is a potent antioxidant agent attributable to its active compounds, including hibiscus acid, chlorogenic acid, gallic acid and anthocyanin. Previous studies reported that HPE supplemented at early DM prevented aortic damage development in experimental animals. Therefore, this study aimed to investigate whether the protective mechanism given by HPE is able to limit redox imbalance in the aorta of type 1 diabetic rats model. Male Sprague-Dawley rats were divided into five groups; non-diabetes mellitus (normal), diabetes mellitus without treatment, diabetes treated with 100 mg/kg and 200 mg/kg HPE and diabetes treated with 150 mg/kg Metformin. After four weeks of diabetic induction, HPE and Metformin were given for a period of 4 weeks duration. Results showed that HPE supplementation increased glutathione (GSH) and superoxide dismutase (SOD) status as well as reduced malondialdehyde (MDA) and advanced oxidation protein product (AOPP) level in the aorta of HPE-supplemented rats. In conclusion, the findings of this study suggested that HPE was able to attenuate the redox imbalance of the aorta in diabetic conditions.

Keywords: antioxidants, cardiovascular disease, diabetes mellitus, oxidative stress, vascular dysfunction

PN15 | EFFECTS OF ALUMINUM EXPOSURE TOWARDS COGNITIVE FUNCTIONS IN RATS

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ABSTRACT

Aluminium is a nonessential element with potential risk to human health. Aluminium have been shown to accumulate in the brain and thus have the potential to cause progressive neurological disorders. Thus, the main objective of the study is to establish the role of aluminium exposure in causing cognitive impairment by investigating two different timelines of aluminium exposure (AlCl3 200 mg/kg/day via oral gavage): 14 days (T14) and 28 days (T28). The cognitive function of the rats were assessed via, 1) spatial memory (Y-Maze) and, 2) non-spatial memory (2- Novel Object Recognition (NOR) test). The results revealed that, there is no significant difference in spatial and non-spatial memory between control group and model group (between-subjects) and there is no significant difference on the effects of days of treatment (within-subject) in T14 and T28, however there is significant different in the spatial memory $t(10)= 2.831$, $p<0.05$ and non-spatial memory $t(10)= 2.414$, $p<0.05$ between control group and model group at day 14 in T14, model group is significant lower than control group. In conclusion, aluminium exposure at 200 mg/kg/day causes spatial and non-spatial memory deficits in rats as early as in two weeks of exposure. The mechanism responsible for the observed outcomes warrants further investigation at transcriptomic levels.

Keywords: Aluminium chloride, cognitive impairment, spatial memory, non-spatial memory, behavioural neuroscience.

PN16 | OXIDATIVE STRESS STATUS OF METABOLIC ORGAN IN MATERNAL MICE EXPOSED TO HYDROQUINONE

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ABSTRACT

Introduction: Benzene is a known toxicant to humans including during maternal exposure. Benzene mediates its toxicity through the metabolism that occurs via major metabolic organs namely bone marrow and liver. However, not much is known about the oxidative stress response affecting these organs during maternal exposure**. Aim:** To investigate the oxidative stress status in maternal mice bone marrow and liver following HQ exposure during pregnancy. **Result:** HQ exposure causes selective effects on bone marrow cells (BMCs) and hematopoietic stem/progenitor cells (HSPCs). Notably, HQ significantly decreased ($p<0.05$) the glutathione level (GSH) only in myeloid progenitors while no effect was observed in superoxide dismutase (SOD) level for BMCs and HSPCs. Similarly, oxidative stress markers were also influenced by cell types. Notably, HQ exposure

significantly increased ($p<0.05$) the lipid peroxidation (malondialdehyde) only in erythroid progenitor and showed no remarkable effect on protein oxidation (protein carbonyl) for all cell types. In maternal liver, notable increase in oxidative markers and decrease in antioxidant status for HQ-exposed groups as compared to control were evidenced, although the effect was not significantly difference. **Discussion**: Maternal bone marrow analysis may suggest that benzene exerts its toxicity through lipid peroxidation and inhibition of non-enzymatic antioxidant of which the effects are cell types-dependent. As for maternal liver, results indicate that HQ exposure at current duration and dosages able to induce risk of oxidative stress. **Conclusion:** Hydroquinone exposure has the ability to induce oxidative damage in maternal bone marrow and liver. However, further research is needed to confirm this finding.

Keywords: Hydroquinone, maternal, bone marrow, liver, oxidative stress

PN17 |Antimalarial Activity of Guava Leaf Extracts (Psidium Guajava) Against Erythrocytes Infected with Plasmodium Berghei Nk65 Via Ex Vivo

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ABSTRACT

Malaria is included in the list of the world as an infectious disease that causes many deaths. Thus, ex vivo studies of antimalarial extract of Psidium guajava leaves against Plasmodium berghei NK65 in infected mice is crucial as an initiator to produce a new alternative antimalarial drug. Crude extracts of guava leaves were prepared where its use different solvent polarity gradually which are hexane, ethyl acetate, acetone and methanol. It started with the initial screening test using the 10% parasitemia level and the result of methanol extract showed better reading compared to others with IC50,4.270 mg/ml approximately closer to IC50 values of the gold standard drug; chloroquine drug, 3.080 mg/ml. One way ANOVA statistical test showed no significant differences between them; $F(1, 18) = 1091$, $p>0.05$ (0.310). The methanol extract of guava leaves was picked as the best solvent and studies were conducted on parasitemia 5%, 10% and 30% level. The results showed that malaria inhibitory activities effectively in 10% parasitemia level and it is not significantly different to chloroquine $F(1, 18) = 0797$, $p> 0.05$ (0.384). Through synchronization process, the IC50 reading at the ring (early trophozoite) stages was 0.0001 mg/ml whereas late trophozoite and schizont showed similar IC50 values which were 4.276 mg/ml and 4.295 mg/ml respectively. The methanol extracts of Psidium guajava showed effectiveness at 10% parasitemia level and at mature trophozoite and schizont stages. In conclusion, Psidium guajava leaf extract methanol showed the presence of anti-malarial activity.

Keywords: Malaria, Plasmodium berghei NK65, Psidium guajava, synchronization, pLDH assay

PN18|ABSTRACT NO | THE EFFECTS OF BISPHENOL F ON RED BLOOD CELLS OF SPRAGUE-DAWLEY RATS IN VIVO.

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ABSTRACT

Bisphenol F (BPF) is used in the manufacturing industry as an alternative to bisphenol A (BPA) which has been banned due to its toxicity. Mass substitution in the manufacturing industry has led to under-reporting of BPF toxicity studies. This study was conducted to examine the fragility test and the effects of BPF toxicity on red blood cells *in vivo*. A total of 28 male Sprague-Dawley rats were divided into four groups (n-7); i) control group (corn oil) (1 mg/kg), i) BPF 1 group (1 mg/kg), ii) BPF 5 group (5mg/kg) and iv) BPF 10 group (10 mg/kg). After 60 days of treatment, blood was taken for membrane analysis and oxidative stress of superoxide dismutase (SOD), glutathione (GSH), malondialdehyde (MDA), Advanced Oxidation Protein Products (AOPP) and total protein (TP) as well as morphological. There was no significant difference in all oxidative stress parameters except SOD where the BPF 1 group had significantly higher SOD levels than the control group ($p<0.05$). Analysis of red blood cell membrane fragility showed no significant differences between all study groups. Nevertheless, morphological observations of red blood cells with the presence of abnormal cells were observed in all groups. The percentage of abnormal cell morphology was higher in the BPF 1O group compared to the control & BPF 1 group ($p<0.05$). Exposure to BPF for 60 days does not cause oxidative stress on red blood cells but causes changes in the morphology of red blood cells in male Sprague Dawley rats.

Keywords: Red Blood Cell, Bisphenol F, oxidative stress, osmotic fragility, morphology of red blood cells

PN19 | TOXICITY EVALUATION OF TRIPHENYLTIN(IV) DITHIOCARBAMATE COMPOUNDS TOWARDS CCRF-CEM (CCL-119) CELL LINE

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ABSTRACT

Over the years, compounds with tin structure have been reported to exert effective cytotoxic effects towards many cancers cells and are regarded as promising candidates to be developed as metal based- drugs with lower toxicity towards normal and healthy cells. In this study, a series of organotin compounds known as triphenyltin(IV) diisopropyl dithiocarbamate (TPDI), triphenyltin(IV) diallyl dithiocarbamate (TPDA), and triphenyltin(IV) diethyl dithiocarbamate (TPDE) were assessed for their cytotoxicity effects toward CCRF-CEM (leukemia cells) and WIL2-NS (non-cancerous cells) using MTT assay. It was found that all compounds caused cytotoxic effects with IC_{50}<0.30 and showed selective towards CCRF-CEM cells (selectivity index, SI >2.00). The mode of cell death evaluation using Annexin V FIT-C/PI stain showed that the compounds favoured death via apoptosis. Cell cycle analysis done by RNase/PI stain showed that treatment of TPDI & TPDE caused cell cycle to arrest at G2/M phase while treatment of TPDA arrest the cells at S phase. The genotoxic analysis done using alkaline comet assay showed that the treatment of TPDI, TPDA and TPDE caused DNA damage towards CCRF-

CEM cells. In conclusion, all triphenyltin(IV) dithiocarbamate compounds were able to cause toxic effects toward CCRF-CEM cells and can be a good candidate for a new metallopharmaceutical drug.

Keywords: Leukemia, cytotoxicity, apoptosis, cell cycle, genotoxicity.

PN20|THERAPEUTIC POTENTIAL OF EXOSOME-MEDIATED ROSELLE EXTRACT IN SYSTEMIC AND HISTOLOGICAL ALTERATIONS SEEN IN HYPERCHOLESTEROLEMIA RATS

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ABSTRACT

Employment of exosome-based natural product delivery has attained considerable prominence due to its ability to improve bioavailability. Meanwhile. few studies are still exploring the application of exosome in roselle as a nanotechnology-based treatment. Therefore, this novel study assessed the therapeutic potential of exosome-mediated roselle extract (Aehs-Exo) on systemic and histological alteration seen in hypercholesterolemia (HC) rats. A total of 18 Sprague-Dawley rats (250-300g) were randomly allotted into three groups (Control; HC-MI; Aehs-Exo). Rats were either fed with a self-made high-cholesterol diet (HCD) (4% cholesterol) or standard chow for six weeks and followed up by another four weeks of Aehs-Exo (100mg/kg, p.o) or vehicle as treatment with diet maintained accordingly. At the end of the 10th week, rats were euthanised. As expected, HCD-subjected rats exhibited significantly increased body-mass-index (BMI), total cholesterol (TC), HDL, LDL, and TC/HDL ratio. Furthermore, the liver function test revealed a marked elevation of AST, ALP, and ALT while liver histological observations confirming steatohepatitis and ballooning degeneration, suggestive of non-alcoholic fatty liver disease development. Although, the renal function test revealed no significant alteration in urea, creatinine, and uric acid level despite prominent degeneration of glomeruli and fibrosis seen in renal histology. Nonetheless, supplementation of Aehs-Exo showed marked improvements in both renal and liver histological alterations observed. However, systemic changes seemed to be not much affected by Aehs-Exo supplementation although the trend of reduction was observed. These findings suggest that Aehs-Exo supplementation has the therapeutic potential to target systemic and histological alteration in rat models of HC.

Keywords: Exosome; Roselle, Hypercholesterolemia, Non-alcoholic Fatty Liver Disease, Renal

PN21 | CHEMOPREVENTIVE EFFECTS OF ORAL PTEROSTILBENE ON INITIATION AND PROMOTION OF MULTISTAGE CARCINOGENESIS IN DMBA/TPA INDUCED SKIN SQUAMOUS CELL CARCINOMA MOUSE MODEL.

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ABSTRACT

Skin squamous cell carcinoma (SCC) is classified under non-melanoma skin cancer and is the second most common type of human skin cancer. Pterostilbene is a natural compound proven to exhibit various pharmacological properties that are related to its chemopreventive effects such as antioxidants, anti-inflammation, and anti-proliferation. Our study aimed to explore the chemopreventive effect of oral pterostilbene during initiation, promotion, or continuous on multistage skin SCC mouse model induced by 7,12-dimethylbenz(a)anthracene(DMBA)/12-O-Tetradecanoylphorbol-13-acetate(TPA). The experimental design consists of five groups of female Institute of Cancer Research (ICR) mice which are the vehicle and cancer control groups and three oral pterostilbene (PT) groups consisted of orally administered PT (50 mg/kg) during initiation, promotion, or continuously. Three oral PT groups significantly reduced the number and volume of tumours. Skin histology observation showed that cancer groups developed SCC histologic features including the formation of keratin pearls, mitotic bodies, and invasion of the basement membrane into the dermis. The oral PT treated groups displayed less invasive tumours with fewer pleomorphic cells and nuclei, and the basement membrane remained intact. The expression level of the cell proliferation marker (Ki-67) was significantly reduced in orally treated groups compared to the cancer control group ($p<0.01$) In conclusion, oral pterostilbene is a promising chemoprevention agent due to its anti-initiation and anti-promotion effect against skin carcinogenesis. Hence, the molecular mechanisms of oral pterostilbene as a chemopreventive agent against skin SCC should be explored.

Keywords: skin cancer, pterostilbene, chemoprevention, Ki-67, and histopathology.

PN22|THE EFFECT OF A SHORT-TERM LOW PROTEIN DIET ON THE OXIDATIVE STRESS, BIOCHEMICAL PROFILE AND HISTOLOGICAL CHANGES IN THE RENAL OF WEANING SPRAGUE DAWLEY RAT

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ABSTRACT

Protein-energy malnutrition usually manifests with early weaning and a low-protein diet. Low dietary protein will cause low plasma protein and insufficient building blocks for normal kidney development. A long-term low-protein diet facilitates oxidative damage and the development of renal injury in childhood. This research aimed to evaluate the effect on renal oxidative stress, such as malondialdehyde (MDA) level, advanced oxidation protein product (AOPP), total superoxide dismutase (SOD) activity and reduced glutathione (GSH) level in weaning Sprague Dawley rat model. Renal profile was measured which included serum urea and serum creatinine. Hematoxylin and Eosin (H&E) and Masson's Trichrome staining were performed. All analyses were carried out using Independent-T Test in SPSS. Significance was established at the level of $p < 0.05$. The Low Protein Diet (LPD) group showed significantly lower body weight and kidney weight compared to the Normal Protein Diet (NPD) group. MDA, GSH, SOD and AOPP showed no significant changes in both groups. Serum urea in LPD was significantly higher than the NPD however serum creatinine showed no significant changes in both diet groups. In H&E staining, the mean glomerular tuft area (GA) and volume (GV) were significantly smaller in LPD compared to NPD. In Masson's Trichrome, fibrosis was found in LPD. Body and kidney mass reduction were observed in a short period of a low protein diet, with evident organic losses. The antioxidant defence system minimised the levels of most harmful ROS, and the cells usually tolerate mild oxidative stress. There was no renal damage but the rats were dehydrated due to low water intake, causing high serum urea but average creatinine level. A reduction in GA may lead to sodium retention in the bloodstream and elevation in blood pressure; with further loss of glomeruli and tissue fibrosis. The low protein diet protocol was able to induce a malnutrition condition based on the basic body and kidney mass but did not cause oxidative damage and biochemical changes in the renal profile. This study imposed on the rats was sufficient to cause histopathological changes in the kidneys.

Keywords: Low Protein Diet, Malnutrition, Weaning Rat, Renal Oxidative Stress, Renal Function

PN23| DOES CHRONO-RESISTANCE TRAINING IN RAT INFLUENCE ITS COGNITIVE PERFORMANCE AND OXIDATIVE STATUS IN HIPPOCAMPUS?

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ABSTRACT

The body's circadian rhythm, influenced by light, regulates various functions throughout 24-hour cycle. This study aims to examine the effects of early active versus late active resistance training on neurobehavioral changes and oxidative status in rats. This study used Wistar rats (N=32), aged and weight between 10 - 12 weeks and 200 - 250g respectively. They were equally divided into 4 groups. Two groups were subjected to 8 weeks resistance training either during early or late actively. Another two underwent sham training to serve as control for respective training counterpart. Neurobehavior was assessed via Y-maze and NOR while MDA and GSH were measure for oxidative status from hippocampus sample. Cognitive performance was not significantly improved in all groups since no different was overserved between groups after the training. MDA levels were significantly different between training groups but not between control groups. A significant different were observed for GSH activity in all groups. In improving the cognitive function, resistance training does not increase the cognitive performances as many previous studies mentioned it increased the blood flow into brain thus promote better blood circulation and neurogensis. Also, the MDA levels reduced after training aligned with most study as it increases the body's ability to scavenge and neutralise free radicals, which lower the MDA production and changes in GSH levels since resistance training can improve the body's antioxidant defense system. In conclusion, chrono-resistance training improves cognitive performances and MDA level and GSH level.

Keywords: circadian rhythm, chrono-resistance training, cognitive performance, oxidative status, neurogenesis