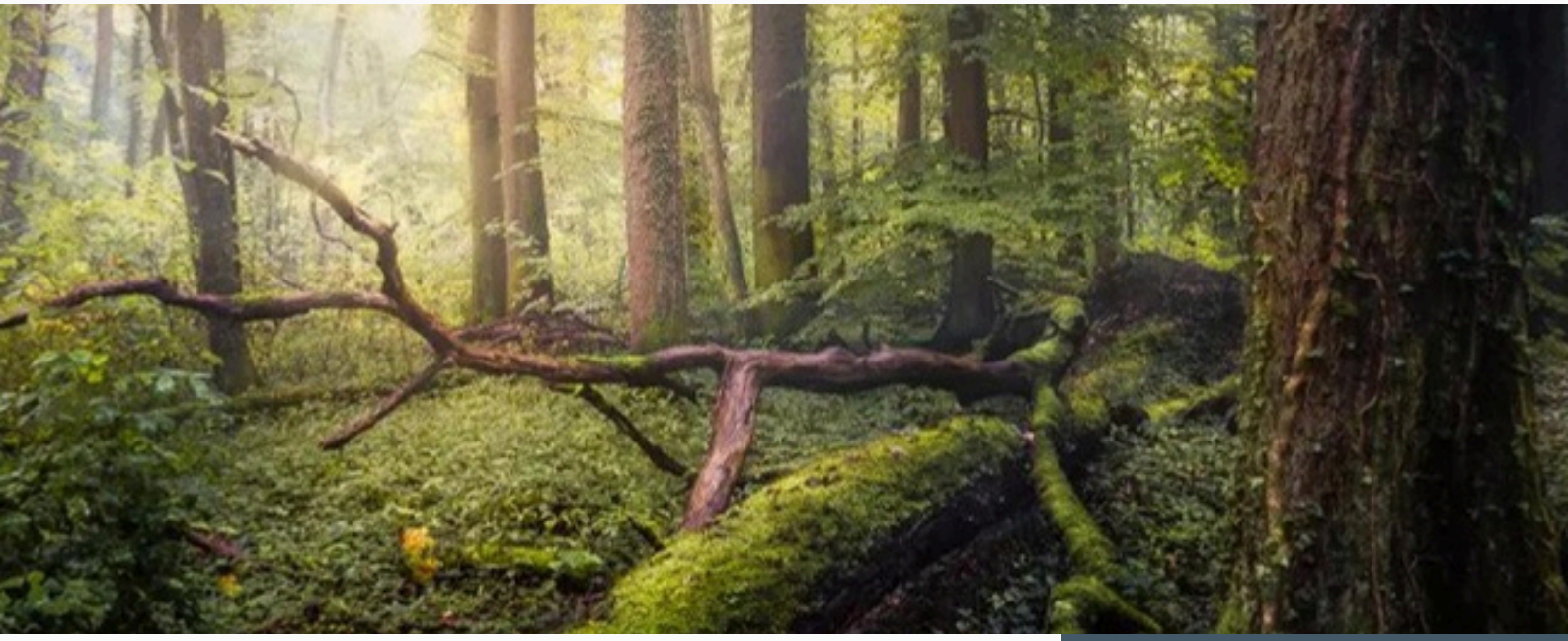
ISSUE 04/2024

APRIL 2024

PRESCRIPTION

Latest news and updates from the Faculty of Pharmacy



PSYCHROTOLERANT AND PSYCHROPHILIC FUNGI FERMENTATION: GREAT POTENTIAL FOR PHARMACEUTICAL EXPLORATION THROUGH NATURAL SOURCES

The Evolution of Fermentation Throughout History

Natural products account for 60% of the total market, making them a major source of drug discovery. Some of these are sourced from the cultivation of microorganisms. This approach started with Fleming's serendipitous discovery of penicillin from the filamentous fungus, Penicillium notatum in 1929. His findings have raised the intensive investigation of nature as a source of novel bioactive agents. The broad chemical diversity of natural products, in addition to their strong correlation to biological functionality, is the justification for the necessity to constantly nurture natural products in today's discovery efforts.

Fermentation is broadly defined as the biochemical changes in organic substances carried out by enzymes produced by microorganisms or other living cells. For thousands of years, traditional biological processes have been used. Early civilizations keenly observed the decay of trees, the decomposition of deceased organisms, and the spoilage of food, leading to the development of innovative methods for producing a diverse array of fermented products. This includes the age-old techniques employed in creating bread, wine, beer, vinegar, cheese, pickles, and other fermented products. The history of the use of fermentation for the fulfilment of human needs can be traced back to approximately 10,000 B.C., during a time the underlying mechanism of fermentation remained largely unknown. However, around 4,000 B.C., the ancient Egyptians made a significant breakthrough by discovering the role of carbon dioxide, which is generated by brewer's yeast, in bread leavening.

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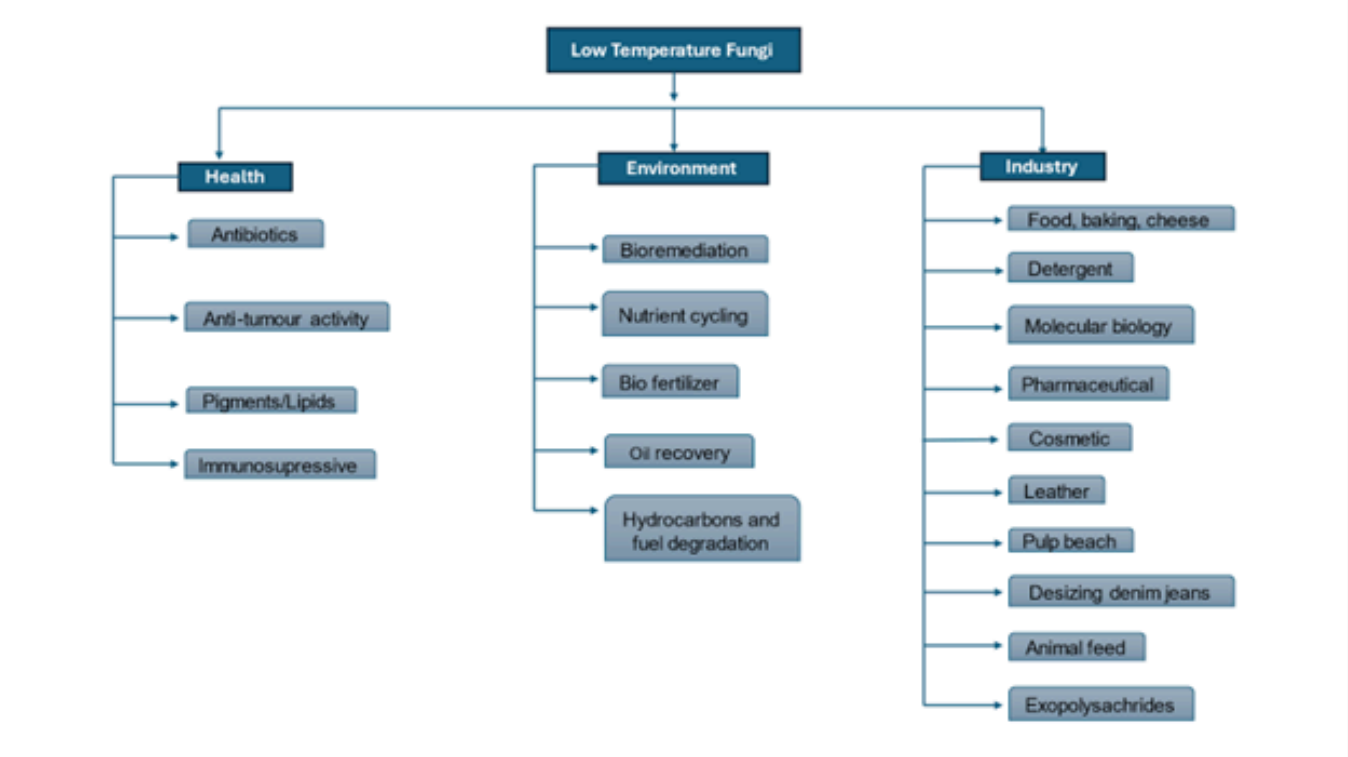
Prior to 3,000 B.C., individuals had already achieved the remarkable feat of fermenting juices into alcoholic beverages by realising the fact that fruits containing sugar spontaneously fermented during storage. Ancient Assyrian records dating back to before 2,000 B.C., provide evidence of wine production in that region. It was around 1150 B.C. that the process of distilling alcoholic beverages yielded ethanol for the first time. It is called the “spirit of wine”, as it is frequently obtained from wine. In 1676, Antoni van Leeuwenhoek was the first to observe microorganisms with his newly built microscope and, for the first time, visualised yeast cells. In 1857, Louis Pasteur first claimed that the production of beer and wine through fermentation was a result of microbial activity rather than a chemical process. He also pointed out that some fermentations are aerobic, and others are anaerobic. In subsequent years, significant advancements were made by a scientist named Hansen. He revolutionised beer making by developing and cultivating yeast.

In 1897, Buchner’s discovery marked a significant milestone as he discovered the ability of enzymes extracted from yeast to convert sugar into alcohol. In 2000, large-scale sewage treatment was carried out by employing microbes in Berlin, Hamburg, Paris, and other western cities. In 1913, a pivotal moment arrived with the first successful industrial-scale fermentation process, enabling the production of three vital chemicals—acetone, butanol, and glycerols—through bacterial fermentation.Alexinder Fleming's breakthrough in biotechnological research was the production of the antibiotic penicillin.. This key moment took place in the realm of fermentation, illustrating the far-reaching impact of microbial studies on medical advancements. It was in 1937, that Mamoli and Vercellone unveiled the field of microbial transformation by showcasing the conversion of dehydroepiandrosterone to testosterone by cynobacterium mediolanum and yeast. The 1940s saw the identification of numerous new antibiotics, paving the way for the large-scale production of penicillin. Later in the 1950s, the microbial conversion of steroids emerged as a major field for the biotechnological and pharmaceutical industries.

Psychrotolerant Fungi and Fermentations

The mass culture of fungi holds immense importance as they act as producers of diverse commodities that possess significant industrial value. These commodities include enzymes, such as cellulases and lipases. Additionally, fungi biomass, exemplified by Brewer's yeast, serves as an invaluable resource for numerous applications. Fungi also produce metabolites that have wide-ranging industrial implications, including antibiotics, statins, and vitamins. Furthermore, the production of recombinant products through fungal mass culture has revolutionised the biotechnology field. Examples of such products include insulin, interferon, and human serum albumin. Moreover, transformation processes in fungal mass culture generate metabolites that possess structural similarities to existing compounds. These metabolites offer immense potential for the development of new drugs, agrochemicals, and other high-value products.

A schematic representation of how metabolites of psychrotolerant and psychrophilic fungi are exploited in different fields is illustrated in Scheme 1 (Hassan et al., 2016).



SCHEME 1: SCHEMATIC REPRESENTATION OF HOW METABOLITES OF PSYCHROTOLERANT AND PSYCHROPHILIC FUNGI ARE EXPLOITED IN DIFFERENT FIELDS ACCORDING TO HASSAN ET AL. (2016)

Psychrotolerant organisms play a crucial role in various industrial processes that demand high enzymatic activity, particularly at low temperatures. This is primarily due to the presence of cold-adapted enzymes within these organisms, enabling them to function efficiently in cold environments. For instance, Mortierella minutissima is a novel psychrotolerant fungus that is used in the biotransformation of D-limonene (M. Trytek et al., 2015). Another noteworthy psychrotolerant fungus is Chrysosporium pannorum, which serves a vital role in the bioconversion of α-pinene This is also observed in psychrotolerant yeasts which are progressively garnering awareness for their huge biotechnological capability. For example, antifreeze proteins which are crucial for tolerating freezing temperatures were reported for the first time in yeasts in Leucosporidium sp. AY30 (M. Trytek et al., 2005). Extracellular enzymes such as chitinase activity were indicated in Antarctic yeast isolates (Carrasco et al., 2012). The possible use of yeasts from Antarctica for bioremediation was also studied, as illustrated by Pichia caribbica that is capable of assimilating diesel fuel (Martorell et al., 2019). This research uncovers the potential of utilising Antarctica's yeast diversity for environmental cleanup efforts. The exploration of psychrotolerant yeasts has shed light on their immense biotechnological potential. From antifreeze proteins to extracellular enzymes and bioremediation capabilities, these organisms offer promising avenues for various industrial applications.

While psychrotolerant yeasts exhibit remarkable biotechnological potential, it is important to consider the production costs associated with psychrophilic yeasts, particularly in large-scale production practices. The culture of psychrophilic yeasts necessitates refrigerated conditions, which can significantly increase production costs. The consideration of production costs, including the requirement for refrigerated conditions, is essential in assessing the overall viability and scalability of utilising psychrophilic yeasts in industrial applications.

Psychrotolerant Fungi and Microbial transformation

One of the most studied whole-cell systems for microbial natural product isolation and for biotransformation are systems in fungi. Most active ingredients in medicine are inspired by natural products and the findings of this study would help improve current understanding in developing bioactive metabolites, providing the basis of more potent drugs via microbial transformation.

This is important as microbial transformation supports sustainable uses of resources under defined cultural conditions, freeing them from pathological restrictions and seasonal fluctuations. These microbial-catalysed reactions aid in generating diverse organic molecules with complex structures, such as steroids and boost the drug discovery process. Ethynodiol diacetate (1) is a semi-synthetic steroidal drug. It is a potent progestin that inhibits the ovulation process; therefore, it is used as an oral contraceptive.

Microbial biotransformation as a unique and inexpensive resource for bioactive natural products. The diversity of the possible reaction types in microbial transformation includes the processes of oxidation, hydroxylation, esterification, isomerization, reduction, acetylation, hydrogenation, and glycosylation.

Studies about the microbial transformation of diverse compounds provide a foundation for the role of fungi in modifying the chemical structure, libraries of analogue compounds with unique structural modifications can be generated by microbial biotransformation. This is due to fungal transformation of parent drugs or starting materials, which may result in the production of metabolites with structural similarities to the parent drug. Sustainable uses of resources under defined culture conditions are feasible via microbial transformation: unconstrained by seasonal fluctuations and pathological restrictions. These metabolites might be giving various metabolites from a single substrate enhanced pharmacological, pharmacokinetic, and toxicological properties on top of having comparable biological activities as parent drugs.

Recently, the fungal transformations of ethynodiol diacetate (1) were investigated in our lab using tropical (Botrytis cinerea, Trichothecium roseum) versus psychrotolerant fungus (R3-2 SP 17) The metabolites obtained include 17α-Ethynyl-17β-acetoxyestr-4-en-3-one-15β-ol (2), 19-nor-17a-ethynyltestosterone (3), and 17α-ethynyl-3β-hydroxy-17β-acetoxyestr-4-ene (4) Figure-1.

The use of psychrotolerant fungus as biocatalytic agent of 1 was reported here for the first time, resulting in a significant, improved yield of 3, and 4 than previous reported techniques. Among all the tested biotransformed compounds, the new biotransformed product, 2 is almost as potent as parent compound, 1 for anti-proliferative activity against SH-SY5Y tumour cell line. 3 has comparable acetylcholinesterase inhibition as 1. This is further supported by the binding mechanisms of 1, and 3 into the structure of rhAChE, which were examined through molecular docking studies. The activities reported here deserve to be taken into consideration as they are good illustrations, for supporting the application of microbial transformation as a viable method for future development of anti-proliferative drug candidates, and acetylcholinesterase inhibitors.

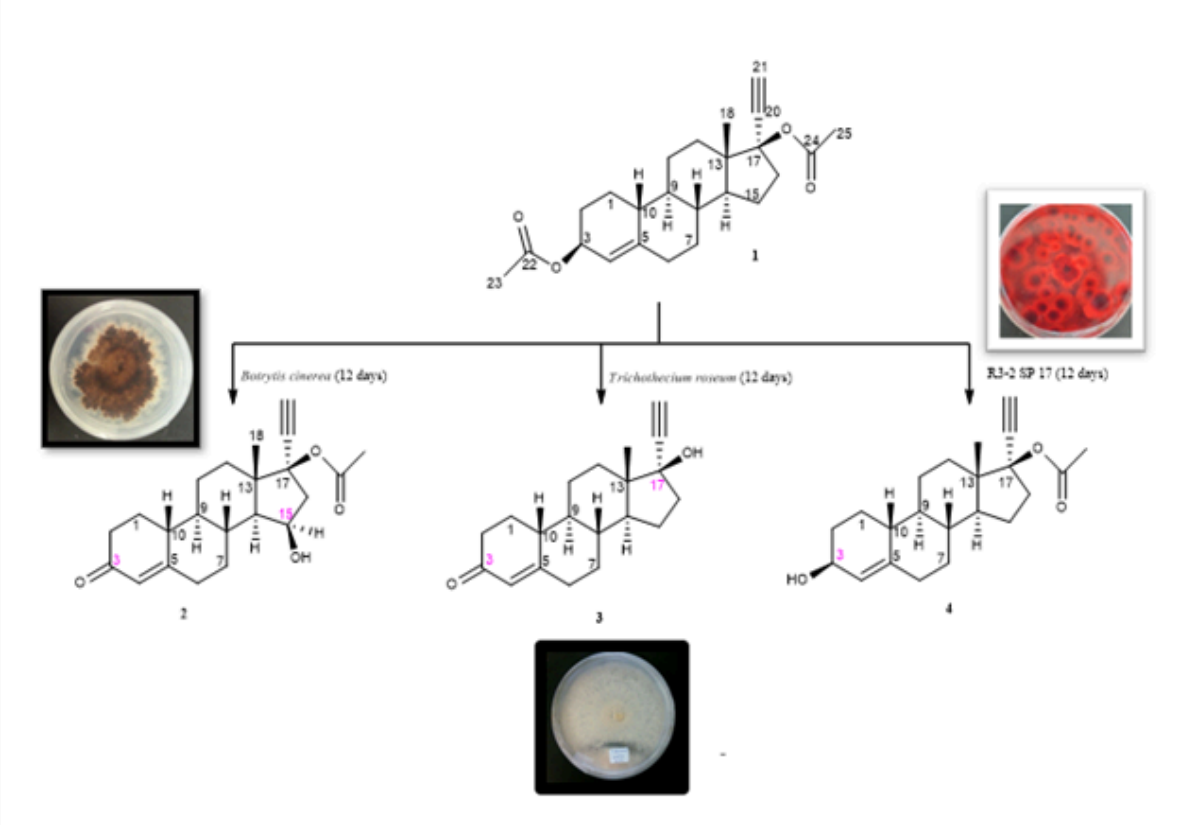


FIG.1. BIOTRANSFORMATION OF ETHYNODIOL DIACETATE (1) WITH BOTRYTIS CINEREA, TRICOTHECIUM ROSEUM, AND R3-2 SP 17

Over time, microbial transformation has emerged as a simple yet powerful tool for generating metabolites, playing a crucial role in strategizing bio-sustainable processes to accelerate the discovery of new drugs in the pharmaceutical industry. Thus, this research must be continued to cater to the growing demand for pharmaceuticals, on top of fulfilling the growing needs to live up to the commitment to the environment as advocated in Sustainable Development Goal 3: Good Health and Wealth-being of the 17 Sustainable Development Goals (SDGs), one of the United Nations 2030 Agenda for Sustainable Development. Additionally microbial transformation offers immense potential in the generation of valuable metabolites, which serve as essential building blocks for the development of novel pharmaceuticals. This approach not only enables the synthesis of complex compounds but also provides a sustainable alternative to traditional synthesis methods, minimising the use of non-renewable resources and reducing environmental impact.

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ABOUT THE AUTHOR

ASSOCIATE PROFESSOR DR. SADIA SULTAN

Assoc. Prof. Dr. Sadia Sultan obtained her Ph.D degree in 2004 from ICCBS Karachi University Pakistan. Then she worked as a chemist in the QA department of Abbott Lab Pakistan until April 2006. In June 2006, she was appointed postdoctoral at the Faculty of Pharmacy UiTM. Later in June 2009, she became a senior lecturer in the Department of Pharmacology and Pharmaceutical Chemistry at the Faculty of Pharmacy UiTM Puncak Alam. She has more than 20 years of experience in the field of natural product research. Her area of expertise includes:
Biotransformation of exogenous substrates using microorganisms and plant tissue culture techniques.
Exploring bioactive secondary metabolites from plant, soil and marine endophytic fungi. (using dereplication and OSMAC approach).
Modern NMR spectroscopic approaches in elucidation of secondary metabolites.

Questions

Let's dive deeper into the article and evaluate your comprehension. We have three questions for you here.

An Exploration of Interdisciplinary Insights: Unravelling CYP2C9 Inhibition via Metabolomics

BY: DR. FAZLEEN HASLINDA MOHD HATTA

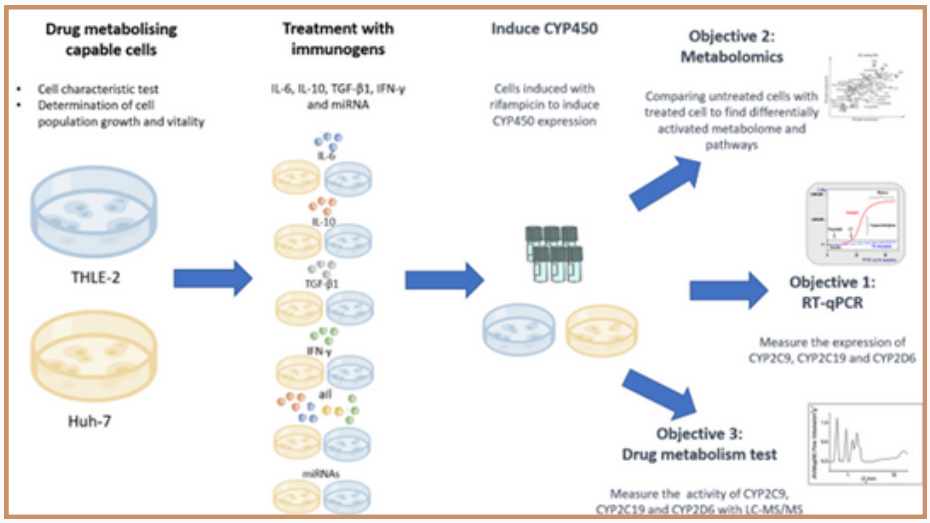
The cytochrome P450 (CYP450) enzymes play a crucial role in drug metabolism, detoxification, and synthesis of endogenous compounds. They are expressed primarily in the liver, involved in the biotransformation of a wide range of drugs and xenobiotics. The activity of CYP450 enzymes can be modulated by a variety of factors including genetic polymorphisms, drug-drug interactions, and the environment. Several studies have demonstrated that exposure to immunogens can significantly affect the expression and activity of CYP450 enzymes. For example, cytokines such as interleukin-6 (IL-6), transforming growth factor beta (TGF-β) and interferon-gamma (IFN-γ) have been shown to influence the expression of various CYP450 isoforms, including CYP2C9, CYP2D6, and CYP2C19.

Other cytokines such as interleukin-10 (IL-10) have been shown to downregulate the expression of certain CYP450 isoforms. microRNA-130 (miRNA-130), a small non-coding RNA that plays a key role in post-transcriptional gene regulation, is involved in mediating the immunogens on CYP450 expression. We have previously found that CYP2C9 activities are significantly lowered in Turkish patients with Behcet's disease, compared to healthy Turkish subjects. The gap in the knowledge is that the effects of these molecules on the expression and metabolic activity of CYP450 enzymes have not been fully characterized.

We aim to specifically identify the mechanisms and pathways mediated by the exposures to the immunogens using human liver model. Metabolite expression data will show the differentially activated pathways between the treated cell lines and the non-treated. Precursor drugs will be used to test the metabolism activity of the cells after treatment. Validation of CYP450 enzyme expression will be done using RT-qPCR. Understanding the interplay between immunogens and CYP450 expression is of clinical importance, with direct implications on drug efficacy and toxicity. This study will provide detailed illustration on the impact of these immunogens, enabling precision medicine, in magnitude of orders including identification of biomarkers, therapeutic target discovery, diagnostics and therapeutic monitoring.

Our interdisciplinary approach bridges immunology, pharmacology, and metabolomics. By unravelling the intricate web of CYP2C9 inhibition in Behçet's disease, we hope to enhance drug safety and personalized medicine. As we embark on this scientific journey, let curiosity guide us toward novel therapeutic avenues.

Research Directions



1. Sample: Drug metabolism capable hepatocytes cells, treated with immunogens in contrast to untreated.
2. CYP2C9 Expression: Assess CYP450 levels in cells using HPLC and qPCR.
3. Metabolite Profiling: Employ mass spectrometry or nuclear magnetic resonance (NMR) to identify metabolites.
4. Drug metabolism assessment: The drug metabolism activity of each cell group will be measured using HPLC and qPCR.
5. Pathway Analysis: Map altered metabolites to relevant pathways (e.g., arachidonic acid metabolism).

Correlation Studies: Investigate associations between metabolite levels and CYP450 activity.

TEAM MEMBERS

PROFESSOR DR. MIZATON BINTI HAZIZUL HASAN
DR. MOHD SHIHABUDDIN BIN AHMAD NOORDEN
MR. MOHD FAIZ BIN MUSTAFFA
MR. MOHD IZWAN BIN MOHAMAD YUSOF

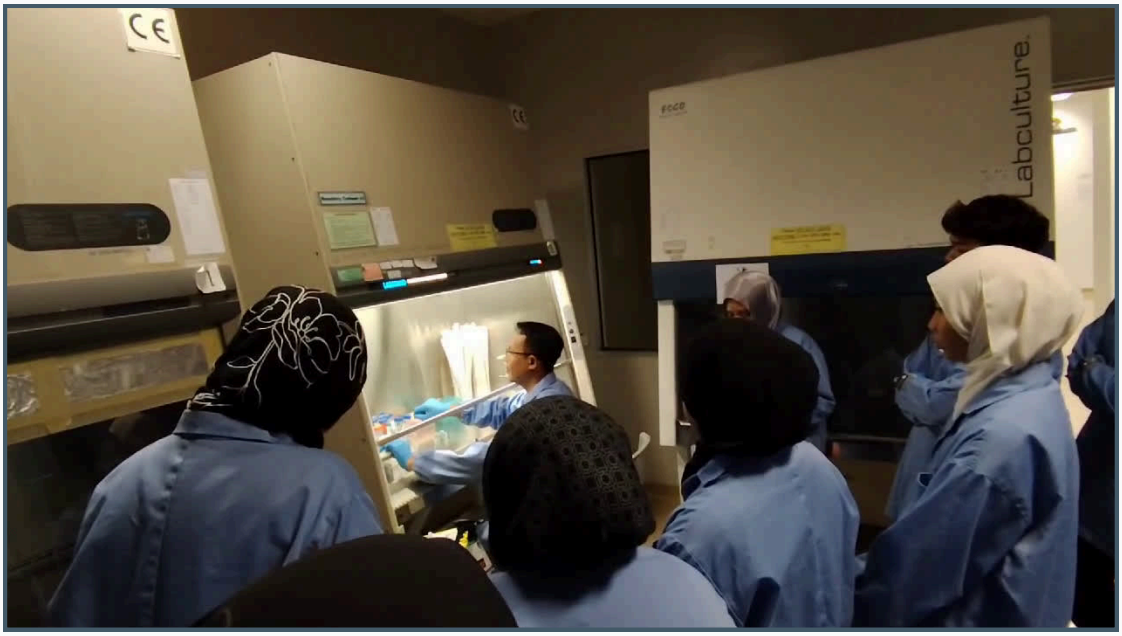
Webinar on “Revolutionizing ADMET Modelling: Exploring the Frontiers with Artificial Intelligence”

BY: ASSOCIATE PROFESSOR DR. FAZLIN MOHD FAUZI

On the 26th of April 2024, the Faculty organised a webinar on “Revolutionizing ADMET Modelling: Exploring the Frontiers with Artificial Intelligence”, where Associate Professor Dr Vasanthanathan Poongavanam from Uppsala University, Sweden was the invited speaker. In this hour-long webinar, Dr Poongavanam covered the different ways artificial intelligence is being applied in pre-clinical studies, specifically in analysing the pharmacokinetics profile of lead compounds. This is of importance as poor pharmacokinetic profile of lead compounds has been identified as one of the reasons for the high attrition rate in drug discovery and development. In his talk, Dr Poongavanam explored looking at the pharmacokinetic profile of lead compounds that go beyond the traditional Lipinski’s Rule of 5. Although this rule has guided the synthesis of orally available drugs, several classes of drugs can still be administered orally despite violating this rule, in particular antiinfective drugs. These compounds are termed ‘chameleonic compounds’ as they can shield polar functional groups when crossing lipid membranes. Through the study of the crystal structures of these chameleonic compounds, it was discovered that they contain flexible aromatic side chains and can form intramolecular hydrogen bonds. Dr Poongavanam also demonstrated several predictive models that have been developed and used by pharmaceutical companies to streamline the drug discovery process. By incorporating artificial intelligence in drug discovery, the time it takes for a drug to be approved can be reduced and/or increase the success rate. In his closing remarks, Dr Poongavanam highlighted several key points such as: i) despite the leaps and bounds that artificial intelligence has made in drug discovery, it is still a long and arduous process, and ii) a good predictive model is dependent on robust data that is being used. In summary, this webinar offered a compelling glimpse into the cutting-edge fusion of artificial intelligence and pharmacokinetic modeling, shedding light on the promising avenues for revolutionising drug discovery.

Tissue Culture Unit at Faculty of Pharmacy UiTM Puncak Alam Conducts Cell Culture Induction Workshop for Final Year Research Project Students

BY: MDM. NUR FATHIAH BINTI MOHD RADZI,
DR. GURMEET KAUR SURINDAR SINGH



The Tissue Culture Unit at the Faculty of Pharmacy, Universiti Teknologi MARA (UiTM) Puncak Alam, recently held a comprehensive Cell Culture Induction Workshop. This workshop was specifically tailored for final year research project students pursuing the Bachelor in Pharmacy program (B.Pharm) as part of their academic requirements. This workshop, held on March 22nd, 2024, aimed to equip students with the essential knowledge and skills required for successful cell culture experiments. The half-day workshop consisted of three comprehensive sessions, each designed to provide participants with a well-rounded understanding of cell culture procedures and laboratory protocols. The event kicked off with an introduction to the Tissue Culture Unit, where eleven participants were introduced to the laboratory policies, management, and online booking system called the internet Laboratory Integrated Site System (iLISS).

Led by esteemed senior lecturer, Dr. Hasseri Halim, from the Faculty of Pharmacy, UiTM, the second and final sessions delved into the intricate workings of cell and tissue culture. Topics covered included aseptic techniques, potential sources of contamination, cellular proliferation, and maintenance. At the end of the lecture, there was an interactive segment that allowed attendees to clarify concepts, seek further explanation on procedures, and address any queries they had regarding the workshop content. The question-and-answer session created an environment of active learning and knowledge exchange, enhancing the overall educational experience for all involved.

To ensure a well-rounded experience, participants were treated to a laboratory tour conducted by Nur Fathiah Mohd Radzi, the science officer in charge of the tissue culture facility to familiarize participants with the laboratory layout, equipment, and facilities of the laboratory, enabling them to navigate the space effectively during their experiments. The instructor demonstrated the cell culture setup in the laboratory. Under the guidance of experienced facilitators, each participant was given the chance to engage in the preparation of cell culture media and subculturing procedures, thereby enhancing their proficiency in pipetting techniques. Additionally, they learned how to observe cell confluency and perform cell counting using the specified formulas. The workshop was hailed as a resounding success, with all participants actively involved and deeply enriched by the experience. The interactive sessions, combined with practical demonstrations and hands-on activities, fostered an environment of active learning and knowledge exchange, ensuring that the participants left with a solid foundation in cell culture techniques.

Faculty of Pharmacy's Annual Ramadan Program Inspires Personal Growth and Community Engagement

BY: MS. NURUL AIN NADZIRAH BINTI RENDRYE,
DR. GURMEET KAUR SURINDAR SINGH

In a bid to foster personal growth and community engagement, the students' organizations of the Faculty of Pharmacy, Universiti Teknologi MARA (UiTM) launched its highly anticipated annual Ramadhan program for 2024. Under the theme "The Month of Better Self-Reflection", this initiative aims to inspire students to strive for personal development and be their best selves. This initiative was organized by the Society of Pharmacy Students (SOPHYS) in collaboration with the Faculty of Pharmacy Student Secretariat (SMF) 2023/2024. Commencing on March 12th, the program spans the entire month of Ramadan, providing a platform for students to engage in various activities centered around self-reflection and helping others. The program has garnered significant attention and participation, particularly from students of the Faculty of Pharmacy, who have wholeheartedly embraced this opportunity for personal growth and community involvement. One of the program's notable highlights was the "rewang" activity and charity volunteering held on March 26th. Taking place in the parking lots of the Faculty of Health Sciences, the event attracted a diverse group of participants, including students and others eager to make a positive impact. From 8:30 am to 2:00 pm, volunteers dedicated their time and efforts to engaging in acts of kindness and self-reflection.

Furthermore, an important aspect of the program is the collaboration with the Islamic Affairs section (UHEI). Volunteers, comprising both students and staff from the Faculty of Pharmacy, have been actively involved in cooking and distributing porridge meals within and around the UiTM Campus Puncak Alam. The initiative consists of two sessions: one in the morning from 8:30 am to 12:00 pm, where volunteers prepare the porridge ingredients, and another in the evening, where they pack and distribute the porridge to faculty staff, lecturers, students, and the wider community outside UiTM Puncak Alam Campus.

The enthusiastic participation from students and staff, coupled with the collaboration with the Islamic Affairs section, has made this year's Ramadan program a resounding success. By combining self-reflection activities with community engagement, SOPHYS and SMF are fostering a sense of unity and inspiring students to make a positive difference during this holy month.

RAMADAN QUIZ 2024

**BY: MS. NURUL AIN NADZIRAH BINTI RENDRYE,
DR. GURMEET KAUR SURINDAR SINGH**

The highly anticipated annual program with the inspiring slogan "The Month of Better Self-Reflection," was organised by the Society of Pharmacy Students (SOPHYS) and Faculty of Pharmacy Student Secretariat (SMF) 2023/2024. The program aims to encourage students to strive for excellence and become the best versions of themselves. Taking place throughout the Ramadan month, the program began on March 12th, igniting a transformative journey for participants.

The program's activities were inaugurated with the captivating Quiz Ramadhan at DKF9 of the Faculty of Pharmacy, Puncak Alam, which took place from 2 to 3 p.m. This engaging quiz garnered an overwhelming response from participants, especially students from the Faculty of Pharmacy. Designed to challenge and stimulate intellectual abilities, the quiz featured multiple rounds, each progressively more demanding.

The first round, hosted on the Quizizz platform, presented participants with 30 questions at an easier level. From the initial pool of participants, only the top 50 participants advanced to the second round, which consisted of 15 medium-level questions. Finally, the top 20 participants faced off in the final round, tackling 10 challenging, hard-level questions. The top 5 winners, who demonstrated exceptional knowledge and skill, were honoured with prizes during the closing ceremony which coincides with the Khatam Al-Quran with Iftar Faculty event on March 31, 2024. The overwhelming response from participants, particularly those from the Faculty of Pharmacy, underscores the significance and impact of this annual event.

NASYID INTERBATCH COMPETITION 2024

BY: MS. NURUL AIN NADZIRAH BINTI RENDRYE,
ASSOC. PROF. DR. MAHMATHI KARUPPANNAN

Under the slogan "The Month of Better Self Reflection," our yearly Ramadan programme in 2024 has begun, encouraging students to be the greatest versions of themselves. This programme was organised by the Society of Pharmacy Students (SOPHYS) and Faculty of Pharmacy Student Secretariat 2023/2024 during the month of Ramadan, starting on March 12th of this year.

Nasyid InterBatch is the second physical activity out of many that have been planned, and it took place at DKF7 of Faculty of Pharmacy from 3pm to 4pm It gives great pleasure to announce that this programme was well received by attendees, particularly students and audiences from the Faculty of Pharmacy.

Each batch had a Nasyid group representing to compete, and each performance had its own unique charm. The invited judges were Mr. Harith Zulkifli, Mr. Shahrul Nizam, and Mr. Muhammad Hamdi Othman. The evaluation was not only based on the voice modulation but also considered the creativity, cooperation, uniformity, and compatibility of the group members. Additionally, audiences were allowed to vote for their favourite Nasyid group. The judges' decision was final, and the winners were announced during the Khatam Al-Quran with Iftar Faculty and Closing Ceremony on March 31, 2024.

ALUMNI

Minimising Falls: Unveiling the Advantages of Deprescribing Fall Risk-Increasing Drugs (FRIDs)

BY: MR. MOHD SHAH REZA BIN HAMZAH, RPh 11171
Graduate of Masters in Pharmacy Practice (2022/2023 Intake)

Falls-related injuries among older people have led to increased healthcare costs [1, 2] due to a rise in emergency department visits, ward admissions, and long-term care facility admissions [3]. Treating falls-related injuries typically incurs significant medical expenses. As the population ages, the number of falls-related injuries and associated expenditures is projected to substantially increase. In 2015, estimated medical expenses for fatal and non-fatal falls among older people in the United States exceeded 50 billion dollars [1, 4, 5].

Benzodiazepines rank as the most commonly prescribed drugs among older people in a specific country, accounting for 28.9% [6]. The concurrent use of various benzodiazepines, sudden dosage increases, and short-acting forms escalate the risk of falls [7]. Reports consistently highlight the substantial risk of falling associated with benzodiazepines and zolpidem, evident in odds ratios (OR) of 1.42 and 1.95, respectively [8].

Additionally, despite their widespread use for pain and inflammation management in older people, non-steroidal anti-inflammatory drugs (NSAIDs) pose multiple adverse effects. These include gastrointestinal bleeding, cardiovascular complications, and NSAID-induced nephrotoxicity [9]. Furthermore, CNS-related adverse effects of NSAIDs such as confusion, dizziness, drowsiness, and vision impairment, heighten the risk of falls among older people [10].

Potentially inappropriate medications (PIMs) persist in being prescribed to older people despite their unfavorable outcomes and associated adverse events. Previous studies revealed that 21.3% of community-dwelling older people in the United States received at least one of 33 PIMs, aligning with data from the 1996 Medical Expenditure Panel Survey (MEPS) [11]. Moreover, two other studies reported varying prevalence rates of inappropriate medication use among community-dwelling older people in different years. They found that 23.5% and 17.5% of older people in the United States used at least one of 20 PIMs in 1987 and 1992, respectively [12].

Deprescribing has demonstrated several potential benefits for older people [13]. It involves discontinuing inappropriate polypharmacy and PIMs, thereby mitigating the associated harm. Ceasing the use of specific medication classes, such as FRIDs, notably reduces the risk of falls among older people.

Moreover, withdrawal of benzodiazepines and NSAIDs has shown improvements in cognitive and psychomotor functions, and a positive impact on blood pressure regulation, respectively [14, 15]. Antihypertensives, also categorized as FRIDs due to side effects like dizziness and orthostatic hypotension, elevate the risk of falls in older people [16]. Discontinuing inappropriate antihypertensives has been associated with fewer cardiovascular events and lower mortality rates over a 5-year follow-up period [17].

The benefits of deprescribing extend to cost reduction through a decrease in medication usage, adverse drug reactions (ADRs), and subsequent reduced utilization of health services. Most notably, costs related to hospital and physician fees, residential and personal care, nursing facilities, care for pensioners, medical equipment, and products could potentially be reduced [4].

In Malaysia, deprescribing is not widely practiced, especially in community settings, primarily due to the absence of dispensing rights granted to community pharmacists [18]. The absence of a dispensing separation policy grants general practitioners (GPs) the legal right to both prescribe and dispense medications from their clinics. Consequently, many GPs do not routinely review or initiate deprescribing protocols for their older patients. Nevertheless, the implementation of deprescribing practices in Malaysia is crucial to maximise benefits for older people by addressing medication-related issues and reducing healthcare costs associated with unnecessary medications

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SPOTLIGHT ON SUCCESS: CONGRATULATIONS TO OUR NEWLY PROMOTED FACULTY MEMBERS

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AMOUNT: RM100,000.00

ASSOC. PROF. DR. SHARIZA SAHUDIN
GRANT FUNDED BY VNI SCIENTIFIC ADN BHD
PROJECT TITLE: PHASE 1 CLINICAL TRIALS OF NATURAL-BASED CREAM FOR A TOPIC DERMATITIS COMPARISONS WITH AQUEOUS CREAM USED AS A STANDARD MOISTURISER AS AN ANJUVANT TREATMENT TO IMPROVE MILD TO MODERATE A TOPIC DERMATITIS
AMOUNT: RM20,000.00

MR. AHMAD AZANI OTHMAN
JXTX GCC 2024 SCHOLARSHIP
ABSTRACT TITLE: BACTERIAL COMMUNITY ASSOCIATED WITH NATIVE BLOWFLIES (DIPTERA: CALLIPHORIDAE) OF PAHANG NATIONAL PARK, MALAYSIA: A METAGENOMIC APPROACH

CORRESPONDING AUTHORS OF THE MONTH

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1 WoS Q2
1 3 WoS Q3
2 Scopus-indexed

Dr. Hasseri Halim
WoS Q3/Q4

Dr. Aisyah Hasyila Jahidin
Scopus-indexed

UPCOMING EVENTS

HANDS-ON WORKSHOP ON CELL CULTURE TECHNIQUES

Faculty of Pharmacy, UiTM Puncak Alam cordially invites you to participate in our upcoming Hands-on Workshop on Cell Culture Techniques in May 2024! Kindly find the attached poster for detailed information regarding the workshop. We would appreciate it if you could disseminate the information regarding this workshop to friends, students, staff and colleagues. For any further information, please contact the person-in-charge (PIC) : Mdm. Nur Fathiah Mohd Radzi (fathiahradzi@uitm.edu.my).

Thank you and we look forward to your participation.

UPCOMING EVENTS

19TH WORKSHOP ON LABORATORY RODENTS (RATS AND MICE) CARE AND USE

Laboratory Animal Facility & Management (LAFAM), Faculty of Pharmacy, UiTM Puncak Alam cordially invites you to participate in our upcoming 19th Rodent Workshop in June 2024! Kindly find the attached poster for detailed information regarding the workshop.

We would appreciate it if you could disseminate the information regarding this workshop to friends, students, staff and colleagues. For any further information, please contact the person-in-charge (PIC) :

1. Ms. Nur Halina Mustafa (nurhalina@uitm.edu.my, 03-32584664)
2. Mdm. Nurul Aini Baharom (aini6964@uitm.edu.my, 03-3258 4722)

Thank you and we look forward to your participation.

PUBLICATION OPPORTUNITY

Important dates:

Call for papers: 15 February 2024

Date for final paper submission: 30 July 2024

Publication process: 1 Aug 2024 - 31 Oct 2024

Online publication: 30 Nov 2024

BY: MADAM NUR SABIHA MD HUSSIN

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ISSUE 04/2024

APRIL 2024

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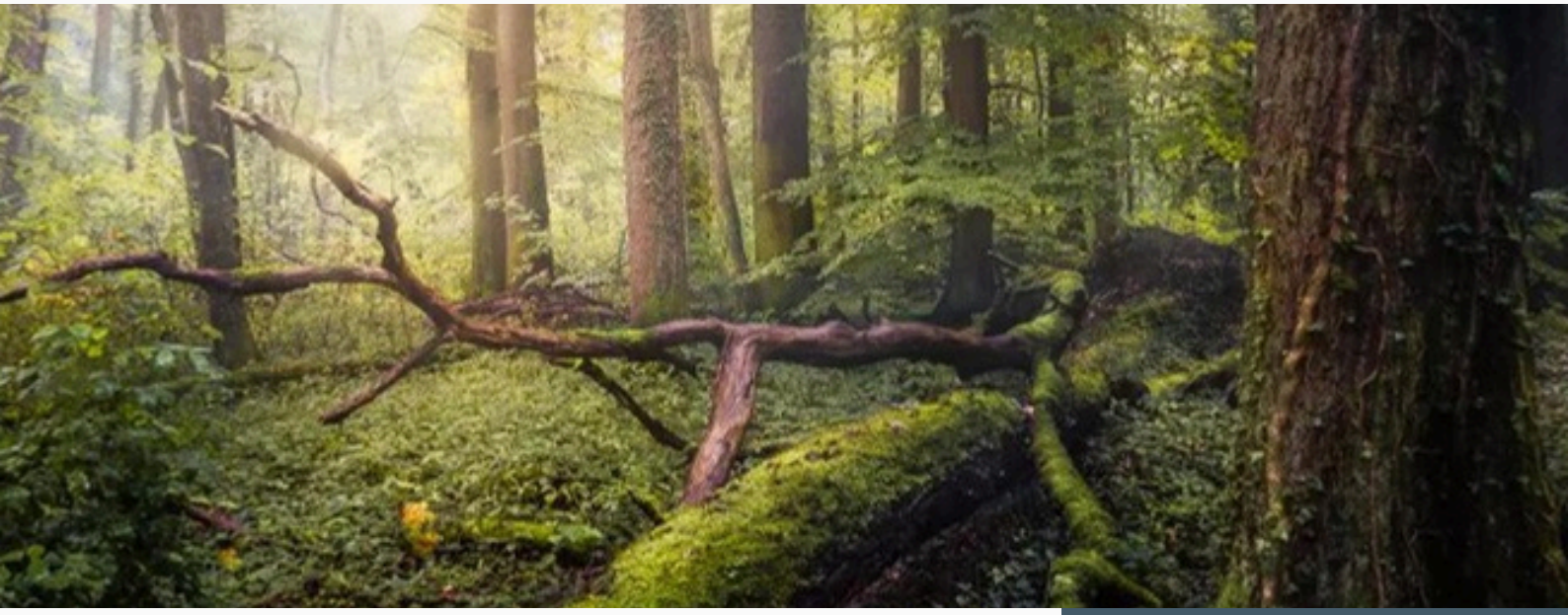

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