UNIVERSITAS MUHAMMADIYAH PROF. DR. HAMKA
FAKULTAS FARMASI DAN SAINS
Islamic Center, Jl. Delima II/IV Klender, Jakarta Timur 13460 Telp. (021) 8611070, Fax. (021) 86603233
www.uhamka.ac.id, www.ffs.uhamka.ac.id, Email: ffs@uhamka.ac.id

SURAT TUGAS

NOMOR: 456/F.03.01/2022

Pimpinan Fakultas Farmasi dan Sains, Universitas Muhammadiyah Prof. DR. Hamka dengan ini memberi tugas kepada:

Nama	:	**terlampir**
Jabatan	:	Dosen FFS UHAMKA
Alamat	:	Islamic Center Jl. Delima Raya II/ IV, Perumnas Klender – Jakarta Timur
Tugas	:	Mengikuti **International Conference on Pharmaceutical Sciences ICOPS@IIUM2022 "Enhancement of Pharmacetical Efficacy Through Sustainable Research and Innovations"**
Waktu	:	**Senin – Selasa, 08 – 09 Agustus 2022**
Tempat	:	Virtual Conference
Lain-lain	:	Setelah melaksanakan tugas agar memberikan laporan kepada Dekan atau kepada yang memberi tugas.

Demikian surat tugas ini diberikan untuk dilaksanakan dengan sebaik–baiknya sebagaiamanah dan ibadah kepada Allah Subhanahu Wata`ala

Jakarta, 25 Maret 2022

Wakil Dekan II

[illegible] Yati, M.Farm.

LAMPIRAN SURAT TUGAS
Nomor : 456/F.03.01/2022
Tanggal : 25 Maret 2022

DAFTAR NAMA DOSEN
International Conference on Pharmaceutical Sciences (ICOPS@IIUM 2022)
"Enhancement of Pharmacetical Efficacy Through Sustainable Research and Innovations"

PRESENTER	
NO	**NAMA**
1	Dr. apt. Fith Khaira Nursal, M.Si
2	Dr. apt. Hariyanti, M.Si
3	Drs. apt. Inding Gusmayadi, M.Si
4	apt. Sofia Fatmawati, M.Si.
5	Rindita, M.Si.
6	apt. Yeni, M.Si.
7	Tahyatul, M.Biomed
8	apt. Fitria Nugrahaeni, M.Farm.
9	apt. Nora Wulandari, M.Farm.

PARTICIPANT			
NO	**NAMA**	**NO**	**NAMA**
1	apt. Elly Wardani, M.Farm.	19	apt. Fahjar Prisiska, M.Farm
2	apt. Landyyun R. Sjahid, M.Sc.	20	apt. Yudi Srifiana, M.Farm.
3	Fujianti, M.SM., Ph.D	21	apt. Daniek Viviandhari, M.Sc.
4	Dr. apt. Numlil Khaira Rusdi, M.Si.	22	apt. Tuti Wiyati, M.Sc.
5	apt. Nurhasnah, M.Farm.	23	apt. Zainul Islam, M.Farm.
6	Dr. Adia Putra Wirman, M.Si.	24	Dr. apt. Siti Fauziyah, M.Farm.
7	Dra. Fatimah Nisma, M.Si.	25	apt. Septianita Hastuti, M.Sc.
8	Dr. apt. Siska, M.Farm.	26	apt. Agustin Yumita, M.Si.
9	apt. Ari Widayanti, M.Farm.	27	Ni Putu Ermi Hikmawanti, M.Farm,
10	apt. Dwitiyanti, M.Farm.	28	apt. Novia Delita, M.Si.
11	apt. Vera Ladeska, M.Farm.	29	Ema Dewanti, M.Si.
12	apt. Ani Pahriyani, M.Sc.	30	Maharadingga, M.Si.
13	Rizky Arcinthya Rachmania, M.Si.	31	apt. Nuriza Rahmadini, M.CMM
14	Hanifah Rahmi, M.Biomed.	32	Etin Diah Permanasari, Ph.D
15	Dra. apt. Hurip Budi Riyanti, M.Si	33	apt. Maifitrianti, M.Farm.
16	apt. Nining, M.Si.	34	apt. Era Rahmi, M.Si.
17	Anisa Amalia, M.Si.	35	apt. Lusi Putri Dwita, M.Si.
18	apt. Rahmah Elfiyani, M.Farm.	36	Wahyu Hidayati, M.Biomed.

Wakil Dekan II

FAKULTAS FARMASI DAN SAINS UHAMKA

apt. Kori Yati, M.Farm.

BNI

Transaksi sedang diproses

USD 1080

No. Ref	S10RWMM000143522
Tanggal Transaksi	25-07-2022
Waktu Transaksi	18:36 WIB
Jenis Layanan	OTR Hard Currency
Nomor Rekening Tujuan	**********719
Nama Penerima	IIUM kuantan
Alamat Penerima	Jl. Sultan Ahmad Shah Bandar Indera Mahkota
Bank Tujuan	BANK MUAMALAT MALAYSIA BHD
BIC	BMMBMYKLXXX
Kurs	15.111

International Conference on Pharmaceutical Sciences (ICOPS@IIUM2022)

8th & 9th August 2022

BOOK OF ABSTRACTS

Enhancement of Pharmaceutical Efficacy through Sustainable Research and Innovation

Organisers:

International Islamic University Malaysia
Garden of Knowledge and Virtue

LEADING THE WAY
KHALIFAH • AMANAH • IQRA' • RAHMATAN LIL-ALAMIN
LEADING THE WORLD

AN INTERNATIONAL AWARD-WINNING INSTITUTION FOR SUSTAINABILITY

Universitas Muhammadiyah Prof. Dr. HAMKA

Abstracts of the

International Conference on Pharmaceutical Sciences

ICOPS@IIUM2022

Kuantan, Malaysia, 8th & 9th August 2022

International Conference on Pharmaceutical Sciences

ICOPS@IIUM2022

Virtual Conference | 8th & 9th August 2022

CONTENTS

About ICOPS@IIUM2022

The pharmaceutical science field concerns a spectrum of areas of study that include pharmacoeconomics, clinical sciences, drug delivery, drug action, drug discovery and design, and regulatory affairs. This field is growing fast, creating room for improvement and opportunities for pharmaceutical scientists to innovate and develop new drugs and new approaches to diseases and other related subjects of interest.

Conferences and seminars are great places for scientists to expand their knowledge on a lot of things. It might involve learning from leading researchers, new methods, new tools, and data that have not been published. Additionally, it provides a great forum for networking with colleagues in the field, meeting like-minded people, and receiving feedback from others.

Kulliyyah of Pharmacy, IIUM successfully hosted the International Conference on Industrial Pharmacy (ICIP) in 2014 and 2016. The third ICIP conference was slated to take place in 2020. However, the conference was held for a period because of the COVID-19 pandemic. For 2022, we are hosting this conference jointly with the Faculty of Pharmacy and Science at Universitas Muhammadiyah Prof. Dr. Hamka (UHAMKA), Jakarta, Indonesia, in an effort to boost participation in the pharmaceutical discipline globally. The conference is now known as the "International Conference on Pharmaceutical Sciences (ICOPS)" to reflect this rebranding. The conference is held virtually as a first step to inspire all pharmaceutical scientists after the pandemic. This year's selected theme is Enhancement of Pharmaceutical Efficacy through Sustainable Research and Innovation.

General Information

ORGANISING COMMITTEE

Advisors
Dr. Juliana Md Jaffri
Assoc. Prof. Dr. Hazrina Ab. Hadi

Chairperson
Prof. Dr. Muhammad Taher Bakhtiar

Deputy Chairperson
Dr. apt. Fith Khaira Nursal

Secretariat & Registration
1. Assoc. Prof. Dr. Mohd. Rushdi Abu Bakar (Head)
2. Sr. Zaililah Md Tahir
3. Sr. Rahmatul Wahida Ahmad
4. Sr. Siti Rusianti Tomin
5. Drs. apt. Inding Gusmayadi
6. Anang Rohwiyono

Programme
1. Dr. Irna Elina Ridzwan (Head)
2. Dr. Izzat Fahimuddin Mohamed Suffian
3. Sr. Amirah Binti Abdul Rashid

IT & Technical
1. Dr. Syahrir Zaini (Head)
2. Br. Mohamad Dzadil Syakirin M Shaari
3. Sr. Umi Kalthum Mohd Hanapi (ITD, OCD)
4. Br. Najmuddin Md Yasim
5. apt. Kriana Efendi

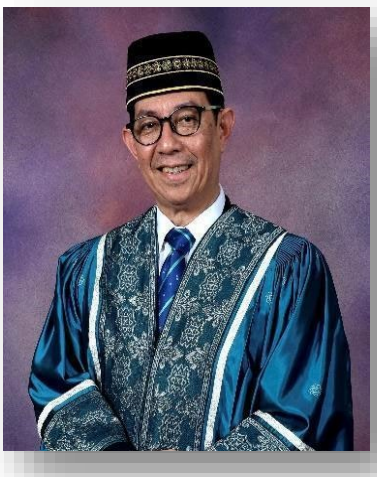
Scientific
1. Dr. Muhammad Taufiq Mohd Jailani (Head)
2. Dr. Muhammad Salahuddin Bin Haris@Harith
3. Dr. Awis Sukarni Mohmad Sabere
4. Dr. apt. Hadi Sunaryo
5. Dr. apt. Rini Prastiwi

Treasury
1. Br. Mohd Danial Jamaludin (Head)
2. Br. Ahmad Khuzairi Irfan Alias (Finance Department, OCD)
3. Apt. Kori Yati

Publication & Program Book
1. Dr. Kamal Rullah (Head)
2. Assoc. Prof. Dr. Farahidah Mohamed

Promotion & Publicity
1. Dr. Zalikha Ibrahim (Head)
2. Assoc. Prof. Dr. Alfi Khatib

Welcome Message



السلام عليكم ورحمة الله وبركاته

Alhamdulillah, all praises be to Allāh subhā nahū wataᶜālā

I am indeed honoured to write a few words in this abstract book of the International Conference on Pharmaceutical Sciences (ICOPS) 2022. I would also like to extend a warm welcome to all of the conference attendees from all around the globe.

ICOPS 2022 aims at covering a wide range of topics in pharmaceutical sciences. This rich program is anticipated to be both stimulating and informative. We believe that this two-day comprehensive programme will be both enlightening and stimulating. Additionally, it gives all participants the chance to network, meet, and interact with one another while sharing their research findings. With your support and participation, the conference will continue to be organised to update recent findings on global pharmaceutical sciences issues.

I must express my gratitude to the conference organisers from both Kulliyyah of Pharmacy IIUM and Faculty of Pharmacy and Science, Universitas Muhammadiyah Prof. Dr. Hamka (UHAMKA), Indonesia, for their efforts and dedication. Also, to everyone who helped directly and indirectly in making this conference possible.

Thank you. Wassalām.

Dzulkifli Abdul Razak, Prof. Emeritus Tan Sri Dato'
Rector
International Islamic University Malaysia (IIUM)

Welcome Message

Assalammualaikum warahmatullahi wabarakatuh

Alhamdulillah, let us give thanks to the presence of Allah Subhanahu wa Ta'ala for His gift. I would like to say thank you to the International Islamic University Malaysia (IIUM), especially the Kuliyyah of Pharmacy, for collaborating with the Faculty of Pharmacy and Science (FFS) Universitas Muhammadiyah Prof. Dr. Hamka (UHAMKA) in the International Conference on Pharmaceutical Sciences (ICOPS) IIUM 2022 on this occasion.

I would like to congratulate the organizing committee of ICOPS 2022 IIUM and UHAMKA for their success in preparing this event from the beginning. Congratulations to the speakers and all participants from several countries, I am happy to be with you all in this prestigious event.

The exciting theme of the conference, namely "Enhancement of Pharmaceutical Efficacy through Sustainable Research and Innovation" brings an opportunity for both parties (IIUM and Uhamka), in particular, as well as all participants from various institutions able to work together. Research in the field of science such as pharmacy will continue to develop with technological advances, so this event is very appropriate to display various updates and findings of sustainable research. Hopefully, in this ICOPS event, you will find the latest things that are useful for the advancement of education and for the interests of the Ummat.

Once again, I would like to say congratulate the committee. May it bring goodness to IIUM and UHAMKA and all speakers and participants; enjoy the conference enthusiastically.

Prof. Dr. Gunawan Suryoputro, M.Hum.
Rector
Universitas Muhammadiyah Prof. Dr. Hamka

Welcome Message

السلام عليكم ورحمة الله وبركاته

In the name of Allah, the Most Gracious, the Most Merciful.

I bid welcome to all participants of the International Conference on Pharmaceutical Sciences at the International Islamic University Malaysia (ICOPS@IIUM) 2022, which is being held in collaboration with Universitas Muhammadiyah Prof. Dr. HAMKA (UHAMKA), Indonesia. I hope it will be a landmark event for the Kulliyyah of Pharmacy (KOP) and the University.

ICOPS@IIUM 2022 brings together researchers, academicians and practitioners to exchange ideas, advanced knowledge and discuss critical issues in pharmacy-related fields. In addition, this conference serves as a forum for disseminating the most recent discoveries and technological advancements in pharmacy. The conference highlights promising areas of technological development and encourages academic advancement.

Lastly, the organizers surely deserve our appreciation for their excellent work and contribution in preparing for this event. I also would like to thank all those who have contributed in one way or another to make this a successful conference.

Thank you and **وسلم**

Asst. Prof. Dr. Juliana Bt. Md. Jaffri
Dean of Kulliyyah of Pharmacy (KOP)
International Islamic University Malaysia (IIUM)

Welcome Message

Assalammualaikum warahmatullahi wabarakatuh
May the peace, mercy, and blessings of Allah be with you.

Alhamdulillah, praise to Allah Subhanahu Wa Ta'ala for His grace. It is an honour to join the International Conference on Pharmaceutical Sciences at the International Islamic University Malaysia (ICOPS@IIUM) 2022 on this occasion. ICOPS@IIUM 2022 is an academic collaboration event between the Kuliyyah of Pharmacy International Islamic University Malaysia (IIUM) and the Faculty of Pharmacy and Science, Universitas Muhammadiyah Prof. Dr. HAMKA (UHAMKA), Indonesia.

It is distinct pleasure to join you today and I congratulate the organizing committee of ICOPS@IIUM 2022 for successfully preparing and organizing this event. Congratulations also to all participants who joined this conference.

In accordance with the conference theme, "Enhancement of Pharmaceutical Efficiency through Sustainable Research and Innovation", I hope that both parties (IIUM and UHAMKA) as well as all participants from various institutions can work together. Today's Pharmaceutical Sciences are experiencing prompt development with a lot of research that produces new technology and sustainable information. The importance of collaborative research between universities, even between countries, encourages pharmaceutical academics to be more creative and innovative.

I am very optimistic that this conference will succeed in encouraging academics and researchers to be more serious and enthusiastic about doing research, and always discover useful findings in the field of science, especially pharmacy. I also hope this conference will play a key role in promoting networking in the field of pharmacy sciences among invited speakers and oral speakers from different countries, especially Malaysia and Indonesia. Again, I would like to congratulate the organizing committee on holding the ICOPS@IIUM 2022 and wish everyone enjoy a very rewarding conference with enthusiasm.

Nashrun Minallah wa Fathun Qarib.

Wassalammalaikum warahmatullahi wa barakatuh.

Assoc. Prof. Dr. apt. Hadi Sunaryo, M.Si.
Dean of Faculty of Pharmacy and Science
Universitas Muhammadiyah Prof. Dr. Hamka

Welcome Message

Assalammualaikum warahmatullahi wabarakatuh

Praises to ALLAH *s.w.t.,* the Most Benevolent and the Most Merciful.

On behalf of the Organising Committee, I am pleased to welcome you to the International Conference on Pharmaceutical Sciences at the International Islamic University Malaysia (ICOPS@IIUM) 2022. This conference is a brand-new name of our previous conference, the International Conference on Industrial Pharmacy (ICIP), which was successfully held the previous year. This name change is part of our strategy to broaden the scope of the conference, hence more colleagues could join. This brand-new conference is organised in collaboration with the Faculty of Pharmacy, Universitas Muhammadiyah Prof. Dr. Hamka, Jakarta, Indonesia. This conference is presenting 8 keynote and plenary speakers, 8 invited presenters and 50 oral participants from various countries such as UK, Iran, Indonesia, India, and Japan. The conference covers a wide range of pharmaceuticals fields such as biologics development, cosmeceutical, drug delivery, drug discovery, drug formulation, nano-medicine, natural products, natural product formulations, pharmaceutical biotechnology, pharmaceutical nanotechnology, pharmacology and pharmacy practice.

In line with the theme of the conference "Enhancement of Pharmaceutical Efficacy through Sustainable Research and Innovation" is that we should learn from Covid-19 pandemic with the active research and innovation to face unprecedented challenges in the global health issue. In addition, we hope that the conference will facilitate active interactions and benefit all participants in gaining experience and expanding their network.

We would like to thank Plenary and Keynote speakers Prof. Dr. Mohamed Haniki from IIUM, Professor Seid Mehdi from Gorgan University of Agricultural Sciences and Natural Resources, Iran; Professor Galvin Halbert from the University of Strathclyde; Professor Kinji Mishima from Fukuoka University, Japan; Professor Farid Dorkoosh from Tehran University of Medical Sciences; Professor Dyah Perwitasari from the University of Ahmad Dahlan; Assoc. Professor Dr Abd Almoneem Doolaanea from

IIUM and Assoc. Professor Dr. Supandi from the University of Hamka for sharing your vast experience. We wish that your sharing can inspire us to be involved in research in the pharmaceutical fields.

Allow me to express our gratitude to the hardworking organising committee from IIUM and Uhamka to make this virtual conference successful.

Finally, we would like to express our heartiest gratitude to the platinum sponsor BUCHI Malaysia Sdn. Bhd., Pharmaniaga Bhd., and to other sponsors Johnson & Johnson Sdn. Bhd., K-Link International Sdn. Bhd. and Dream AI Enterprise.

We wish all the participants a productive and enjoyable conference.

Thank you very much.

Wassalamualaikum Wr. Wb.

Prof. Dr. Muhammad Taher
Chairperson ICOPS@IIUM 2022

Conference Schedule

TIME	DAY 1 (8th August 2022)	
08.00-08.20	Registration Zoom Link: https://iium.zoom.us/j/94695185372 Meeting ID: 946 9518 5372 Passcode: 467105	
08.20-08.25	Welcoming Address by Master of Ceremony	
08.25-08.30	Recitation of Al-Quran	
08.30-08.40	Welcoming Speech by Chairperson of ICOPS 2022	
08.40-08.50	Opening Speech by Rector of UHAMKA	
08.50-09.00	Officiation of ICOPS2022 by the Rector of IIUM	
09.00-09.05	Photo Session	
09.05-09.45	Plenary I: Prof. Dr. Mohamad Haniki (International Islamic University Malaysia)	
09.45-10.00	Sponsored talk by BUCHI Malaysia Sdn. Bhd.	
10.00-10.40	Plenary II: Dr. Abd Almonem Doolanea (International Islamic University Malaysia)	
10.40-10.45	Tea Break	
	BREAKOUT ROOM A	**BREAKOUT ROOM A**
Oral Presentation Session 1		
10.45-11.00	1A. Aqilah Amran (IIUM)	1B. Muhammad Hakeem (IIUM)
11.00-11.15	2A. Umar Azhan (IIUM)	2B. Ihsan Safwan (FRIM)
11.15-11.30	3A. Maduka Chetana (GPRCP)	3B. Nur Farahani (UiTM)
11.30-11.45	4A. Srilakshmi Gamagundam (GPRCP)	4B. Karishma Kanukuntla (GPRCP)
11.45-12.00	Invited speaker I (Apt. Dina Permata Wijaya, M.Si)	Invited speaker II (Apt. Sofia Fatmawati, MS)
12.00-12.15	5A. Nurul Huda Kamsani (IIUM)	5B. Abdur Rashid Mia (IIUM)
12.15-12.30	6A. Silagani Navyasri (GPRCP)	6B. A. Rama (GPRCP)
12.30-12.45	7A. Aisha Rahman (GPRCP)	7B. Mustofa Ahda (UAD)
12.45-13.00	8A. Shweta Savarn (GPRCP)	8B. Nur Farisya (IIUM)
13.00-14.00	Lunch Break	

Oral Presentation Session 2		
14.00-14.15	9A. CV Sai Sravani (GPRCP)	9B. Helmi Husaini (IIUM)
14.15-14.30	10A. Javeria Tamkeen (GPRCP)	10B. Sapiah Derahman (USM)
14.30-14.45	Invited speaker III (Apt. Hariyanti, M.Si)	Invited speaker IV (Apt. Hafiz Ramadhan, MS)
14.45-15.00	11A. Veeranti Vipanchi (GPRCP)	11B. Nur Adibah (IIUM)
15.00-15.15	12A. Nurul Jummah (ITB)	12B. Sasha Abu Rass (UKM)
15.15-15.30	15A. Somaia Abueta (IIUM)	13B. Hariyanti (UHAMKA)
15.40-16.20	Keynote Speaker I: Prof. Dr. Gavin Halbert (University of Strathclyde)	
16.20-17.00	Keynote Speaker II: Prof. Dr. Seid Mahdi Jafari (Gorgan University)	
End of Day 1		

TIME	DAY 2 (9th August 2022)	
08.00-08.30	Registration Zoom Link: https://iium.zoom.us/j/94695185372 Meeting ID: 946 9518 5372 Passcode: 467105	
08.30-09.10	Keynote Speaker III: Prof. Dr. Dyah Aryani Perwitasari (Universitas Ahmad Dahlan)	
09.10-09.25	Sponsored talk by Pharmaniaga Bhd.	
09.25-10.05	Plenary III: Prof. Dr. Kenji Mishima (University of Fukuoka)	
10.05-10.15	Tea Break	
	BREAKOUT ROOM A	**BREAKOUT ROOM B**
Oral Presentation Session 3		
10.15-10.30	14A. Ebrahim Sadaqa (ITB)	14B. Rindita (UHAMKA)
10.30-10.45	13A. Silvy Aldila (UNAND)	15B. Siska (UHAMKA)
10.45-11.00	16A. Nur Suhaila Sudarman (IIUM)	16B. Budi Untari (UNSRI)
11.00-11.15	17A. Maimuna Fatima (GPRCP)	17B. Herlina (UNSRI)
11.15-11.30	Invited speaker V (Prof. Dr. Marlina, MS)	18B. Izzuddin Ahmad Nadzirin (IIUM)
11.30-11.45	20A. Lili Fitriani (UNAND)	Invited speaker VI (Prof. Dr. Bharath Kumar)
11.45-12.00	21A. Uswatul Hasanah (UNAND)	19B. Fitria Nugrahaeni (UHAMKA)
12.00-12.15	22A.Inding Gusmayadi (UHAMKA)	20B. Dyah Rahmasari (UMM)
12.15-12.30	23A. Landyyun R. Sjahid (UHAMKA)	21B. Fitri Yuniarti (UHAMKA)
12.30-12.45	24A. Adhitya Jessica (UNAND)	22B. T.Vithya (RGUHS)
12.45-13.00	25A. Tahyatul Bariroh (UHAMKA)	23B. Yeni (UHAMKA)
13.00-14.00	Lunch Break	

Oral Presentation Session 4		
14.00-14.15	Lunch Break	24B. Nora Wulandari (UHAMKA)
14.15-14.30		25B. Yen Yen Indrawijaya (UNAIR)
14.30-14.45	Invited speaker VII (Dr. Nor Amlizan Ramli)	Invited speaker VIII (Mr. Mohemmad Redzuan)
14.50-15.30	Keynote Speaker IV: Prof. Dr. Farid Dorkoosh (Tehran University of Medical Sciences)	
15.30-16.10	Plenary IV: Assoc. Prof. Dr. Supandi (UHAMKA)	
16.10-16.15	Tea Break	
16.15-16.30	Closing Speech by Deputy Chairperson of ICOPS 2022	
16.45-17.00	Postgraduate awards presentation	
End of Day 2		

INTERNATIONAL CONFERENCE ON PHARMACEUTICAL SCIENCES

ICOPS@IIUM2022

"Enhancement of Pharmaceutical Efficacy through Sustainable Research and Innovation"

ABSTRACTS

KEYNOTE SPEAKER

RECENT ADVANCES IN THE FABRICATION AND APPLICATION OF NANOCARRIERS FOR BIOACTIVE COMPOUNDS AND NUTRACEUTICALS

Seid Mahdi Jafari[1,2]*

ABSTRACT

Various nanocarriers for food bioactive components and nutraceuticals have been presented in the last couple of years including nano-emulsions, nanostructured lipid carriers (NLCs), nano-suspensions, solid-lipid nano particles (SLNs), nano-sized liposomes and phytosomes, biopolymeric nanoparticles (NPs) and nano-micelles made of proteins, polysaccharides and their complexes or conjugates. These techniques yield nanoscale carriers (10–1,000 nm). In this study, we have covered recent developed nanocarriers in five groups based on the main mechanism/ingredient, which is being used to make them. They include lipid-based nanocarriers, nature-inspired nanocarriers, specialized-equipment techniques, biopolymeric nanocarriers and disparate techniques. Most of the bioactive compounds, such as hydrophobic vitamins, fatty acids, flavonoids, aromas, preservatives etc. have hydrophobic natures which can be encapsulated by lipid-based nanocarriers. The idea of bioactives encapsulation using natural nanocarriers such as caseins, cyclodextrins, and amylose nano structures results from taking into account the nature-made functionalities of these nanoparticles. For the nano-encapsulation of food ingredients using different technologies, it is necessary to apply some general equipment including homogenizers, mills, mixing devices, etc., but there are some nano-encapsulation techniques which are feasible to implement only by specialized developed equipment such as electro-spinning, electro-spraying, nano-spray dryer, and microfluidics devices. Utilization of individual biopolymeric nanoparticles and also, their complexes along with nanogels and nanotubes made with biopolymers are another group of nanocarriers which have been covered in this study. Finally, some miscellaneous nanocarriers such as surfactant-based nanocarriers, nanocrystals and inorganic nanocarriers will be described briefly.

KEYWORDS:
Bioactive ingredients; Nanocarriers; Nano-encapsulation; Techniques; Classification.

***Corresponding author:**
Email address:
smjafari@gau.ac.ir

Authors' Affiliation:
[1]Department of Food Materials and Process Design Engineering, Gorgan University of Agricultural Science and Natural Resources, Gorgan, Iran.
[2]Universidade de Vigo, Nutrition and Bromatology Group, Department of Analytical Chemistry and Food Science, Faculty of Science, E-32004 Ourense, Spain.

KEYNOTE SPEAKER

PRECISION MEDICINE IMPLEMENTATION IN DEVELOPING COUNTRIES: ACADEMIC PERSPECTIVE

Dyah Aryani Perwitasari*, and Lalu Muhammad Irham

ABSTRACT

The field of genomics has made much progress since the draft sequence of the human genome has been published twenty years ago. We are getting closer to implementing the precision medicine which where patients are prescribed medications tailored specifically to the individual characteristics of each patient. Precision medicine does not mean making drugs or medical devices that are uniquely designed for a specific patient, but the ability to categorize people into different subgroups with different susceptibilities to specific diseases.

Currently, the genomic era gives us the opportunity as well as challenging in clinical implementation. Opportunities for understanding health and disease are now unprecedented. Some of those opportunities including: 1). era of genomic medicine is not only given us an insight to understand the structure of genomes, but also brought us in to the situation of understanding the biology of genomes; 2). the application of genomic for improving the effectiveness of healthcare such as pharmacogenomic and genomic driven drug discovery is become possible; 3). The cost of sequencing is decreasing it is making easier to implementing the precision medicine in current situation; 3). precision medicine show cased the use of genomic information that can be translated into clinical implementation through genomic-based therapies and biomarkers for several of diseases; and 4) introducing precision medicine as a science in medical and pharmacy students.

However, there were some of challenges need to be addressed in the future. Some of these challenges such as; 1). precision medicine is not only to established the data into clinical situation but also researchers needed to standardize the collection of clinic and hospital data around the country. They also needed databases to store large amounts of patient data efficiently especially in developing country; 2). implementation of precision medicine approaches will require more knowledge of molecular genetics and biochemistry among doctors and other healthcare providers. As genetic tests become available, physicians will have to interpret the results and translate the results into treatment and prevention approaches, as well as convey this knowledge to patients. The philosophy of precision medicine must be recognized in the academic environment, which need lecturer, researcher and sophisticated instruments; 3). the Precision Medicine Initiative also raises ethical, social, and legal issues.

We concluded the field of precision medicine promises to improve many aspects of health and healthcare even though the challenges need to be addressed in near future especially in developing countries. The future directions of future medicine must be introduced since early year of education period.

KEYWORDS:
Precision medicine;
Developing countries;
Academic

***Corresponding author:**
Email address:
dyah.perwitasari@pharm.uad.ac.id

Authors' Affiliation:
Faculty of Pharmacy, Universitas Ahmad Dahlan, Yogyakarta

KEYNOTE SPEAKER

PULSTILE DRUG DELIVERY OF TERIPARATIDE

Farid Dorkoosh*, Nooshafarin Amani, Hamid Akbari, and Mohsen Amini

ABSTRACT

Teriparatide (PTH(1-34)) is one of FDA-approved anabolic medications for postmenopausal and severe osteoporosis treatment. It shows anabolic effects in intermittent administration for improving microarchitectural detoriation of bone tissue and low mineral density. In current study, a multi-layer implantable device was developed for providing pulsatile pattern release of Teriparatide and higher acceptance of patients, composed of biodegradable and biocompatible polyanhydride complexes as isolating layers which regulated drug release and hyaluronic acid (HA) hydrogel as reservoir of drug in order to maintain peptide bioactivity and protect the peptide drug from proteolytic enzymes in body. Copolymers of poly [1,3-bis (p-carboxyphenoxy) propane-sebasic acid] (CPP-SA) with molar ratios of 20:80 and 10:90 were synthesized by melt polycondensation of mixed anhydrides. Characterization of synthesized polymer was done by GPC, ^{1}HNMR, FTIR. The PTH-HA hydrogel was prepared by periodate oxidation of sodium hyaluronate. Swelling property and in vitro drug release from PTH-HA hydrogel were evaluated. Implants were synthesized by spin coating and dip coating methods. SEM images of implants were proved the rate of surface degradation of polymers in frame and also were shown morphology of fabricated implants. In vitro release study was done for evaluating pulsatile release pattern. The overall release pattern could be modulated by the polyanhydride composition and the thickness of polyanhydride films. Furthermore, the delivery of more than one drug from the same device with a pulsatile profile can be done.

An implantable delivery system composed of PHBV as external frame, CPP-SA copolymer as isolating layers and PTH-HA hydrogel layers which were stacked over each other alternatively with the aim of providing pulsatile release of drug was developed for boosting anabolic effect of PTH in treatment of severe osteoporosis. The delivery system was fabricated by using spin coating technique for forming internal layers and dip coating technique for synthesizing external frame. Different polymer concentrations and ratio of CPP-SA copolymer were used for providing an optimum 24 h pattern of release. Typical multi-pulse release of PTH was demonstrated using 20% polymer concentration with the ratio of 10:90 (CPP-SA) (Figure 1). Histopathological evaluations showed low potential of drug-loaded laminated implant for inducing inflammation in adjacent tissues of implanted site due to hyaluronic acid anti-inflammatory effect and PTH effect in accelerating healing process via promoting angiogenesis (Figure 2). In vivo study on rat showed well-defined pulses of drug concentration with approximately definite intervals between two adjacent pulses which means that CPP-SA (10:90) isolating layer can play role in controlling drug release and provide anabolic effect of Teriparatide, ideal for treatment of osteoporosis.

KEYWORDS:
Teriparatide;
Pulstile drug delivery;
Osteoporosis;

***Corresponding author:**
Email address:
dorkoosh@tums.ac.ir

Authors' Affiliation:
Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, IRAN

PLENARY SPEAKER

ELECTROSPRAY AS AN ORGANIC SOLVENT-FREE MICROENCAPSULATION TECHNIQUE FOR WIDE RANGE OF ACTIVE INGREDIENTS

Abd Almonem Doolaanea*

ABSTRACT

Electrospray, or electrohydrodynamic atomization, is a technique that uses high electric field to spray liquid into monodisperse droplets. With proper setup and control of the process parameters, mainly, flow rate and high voltage, the size of the droplets can be controlled precisely from millimeter scale down to nanometers. When it s combined with another mechanism to form particles, like ionic gelation, it becomes a particle generation technique. Electrospray-ionic gelation is used to encapsulate wide range of active ingredients including small molecules (hydrophilic and hydrophobic), macromolecules (proteins and nucleic acids) and even living cells (mammalian cells and bacteria). One of the main advantages that makes this technology sustainable is the absence of organic solvents that causes environmental issues and the use of natural polymers like alginate and chitosan as main polymers for encapsulation.

KEYWORDS:
Electrospray;
Microencapsulation;
Alginate;
Chitosan.

***Corresponding author:**
Email address:
smjafari@gau.ac.ir

Authors' Affiliation:
Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University Malaysia (IIUM), Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.

PLENARY SPEAKER

UTILISATION OF INTERFACE OF MICRO- AND NANO-COMPOSITE PARTICLES BY HIGH-PRESSURE TECHNIQUE

Kenji Mishima[1,2]*

ABSTRACT

The control of the interface of micro and nano-composite materials are essential for developing environmentally benign methods for manufacturing microcapsules for Drug Delivery Systems (DDS). However, toxic organic solvents and multiple steps were often used which were unsuitable for manufacturing microcapsules for DDS in conventional methods. Here, we will talk about new methods we developed to control the interface of micro- and nano-composite particles and bubbles using a high pressure techniques. These methods used pressure-induced phase separation using super critical carbon dioxide ($scCO_2$) solution and ultrasound irradiation under high pressure conditions. Some medicine, such as Levofloxacin were used as core materials and polymers having pH-responsive functions such as Eudragit E100 or L100 were used as coating materials. The coating materials were dissolved in $scCO_2$ solution containing a co-solvent. As the pressure of the high pressure cell slowly decreased into atmospheric pressure, microcapsules were formed in the cell. The structure of the microcapsules was observed by SEM equipped with an electron probe microanalyzer (EPMA) devices. In order to confirm the absence of co-solvent in the capsule, we used the FT-IR. In the later part of the talk, we will introduce a novel method for producing and quanitfing micro- and nano- bubbles. These micro- and nano- bubbles were produced in a specially designed high pressure cell equipped with an ultrasonication horn located in the vessel. This technique is unique as micro phase separation between the high pressure gas and liquid interphase can be achieved through direct sonication, leading to the enhancement of micro- and nano- sized bubble production. The characterization of the mico- and nano- bubbles as well as its comparison with other conventional methods and possible future applications will be discussed.

KEYWORDS:
Microcapsules;
Micro- and nano-Composite Particles;
Drug Delivery Systems.

***Corresponding author:**
Email address:
mishima@fukuoka-u.ac.jp

Authors' Affiliation:
[1]Department of Chemical Engineering, Faculty of Engineering, Fukuoka University, 8-19-1, Nanakuma Jonan-ku, Fukuoka 814-0180, Japan.
[2]Research Center of Composite Material, Fukuoka University, 8-19-1, Nanakuma Jonan-ku, Fukuoka 814-0180, Japan.

PLENARY SPEAKER

BIOANALYSIS: APPLICATIONS IN PHARMACEUTICAL SERVICES

Supandi*

ABSTRACT

Biosampling using dried blood spot (DBS) and Volumetric Absorptive Microsampling(VAMS) methods has recently become very popular in bioanalysis. Small sample amount, effectiveness in storage and dissemination, stable analyte, and lower risk of infection make it less intrusive and more convenient for the patient or subject. The bioanalysis method includes sample preparation (liquid-liquid extraction, protein precipitation, and solid-phase extraction)and validation of the bioanalytical method. Equivalence testing and medication therapy can be tracked using the established bioanalysis approach.

KEYWORDS:
Bioanalysis;
DBS;
VAMS;
Equivalence testing.

***Corresponding author:**
Email address:
supandi@uhamka.ac.id

Authors' Affiliation:
Pharmacy and Science Faculty, Muhammadiyah Prof Dr Hamka University.

INVITED SPEAKER-I

FORMULATION OF GEL CONTAINING JACKFRUIT LEAVES (*ARTOCARPUS HETEROPHYLLUS* LAM.) EXTRACT LOADED GELATIN MICROPARTICLES AND ANTIBACTERIAL ACTIVITY AGAINST *PROPIONIBACTERIUM ACNES*

Dina Permata Wijaya*, Mardiyanto, Herlina, Jessica Amelia, Mutiara Larasati

ABSTRACT

*Jackfruit leaves extract (*Artocarpus heterophyllus *Lam.) contains flavonoid compounds that have antibacterial activity against* Propionibacterium acnes *for acne treatment.* Propionibacterium acnes *are commonly found in the hair follicles and sebaceous glands. Flavonoid compounds are thermolabile and easily oxidised. The microparticle systems into gel can increase delivery into hair follicles and sebaceous glands so the jackfruit leaves extract can reach the desired target and prevent degradation. The aims of this research were to formulate microparticle gel containing jackfruit leaves extract, analyse physical properties and antibacterial activity against* Propionibacterium acnes*. The microparticle systems were prepared using variations of gelatin concentration as a polymer, Tween 80 as a stabilizer, and HPMC as a gelling agent. Microparticles gelatin was made by using the nanoprecipitation method. The microparticles into gel were characterized by encapsulation efficiency, particles diameter, PDI, zeta potential, pH, viscosity, spreadability, stability testing, and antibacterial activity against* Propionibacterium acnes*. The result showed that the microparticle of jackfruit leaves extract with 30 mg gelatin has an encapsulation efficiency of 81.75%. The result of characterization of the best formula showed the diameter particle of 5.3 µm; polydispersity index of 0.382; and zeta potential of -11.15 mV. The microparticle into gels containing jackfruit leaves extract has good physical characteristics and stability. The microparticles of jackfruit leaves extract into gels have potent antibacterial activity against Propionibacterium acnes.*

KEYWORDS:
Jackfruit leaves extract;
Microparticles;
Gel;
Gelatin;
Propionibacterium acnes.

***Corresponding author:**
Email address:
dinapermatawijaya@unsri.ac.id

Authors' Affiliation:
Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Sriwijaya of University, Indralaya, Oga Hilir Regency, South Sumatera, Indonesia 30862.

INVITED SPEAKER-II

SIMULTANEOUS IDENTIFICATION OF SILDENAFIL CITRATE AND TADALAFIL IN HERBAL COFFEE USING THIN LAYER CHROMATOGRAPHY-DENSITOMETRY

Fatmawati, S[1*], Situmorang, A[2], and Hanifa, B[3]

ABSTRACT

The use of herbal medicine in Indonesia as an alternative medication in communities is generally high. Currently, herbs are also packaged in the form of coffee or other powdered drinks to provide a more comfortable consumption. In this study, identification of sildenafil and tadalafil in herbal coffee marketed in online shops was carried out because the transaction was more numerous and widespread. Samples of herbal coffee and reference were tested by Thin Layer Chromatography Densitometry using ethyl acetate-methanol-Ammonia as mobile phase. Selectivity of the method showed that sildenafil and tadalafil in herbal drink can be separated using this method. The test results showed from 10 herbal coffee samples, 4 samples were identified as containing sildenafil and 4 samples containing tadalafil.

KEYWORDS:
Sildenafil;
Tadalafil;
Coffee;
Herbal;
Chromatography.

***Corresponding author:**
Email address:
sofia.fatmawati@uhamka.ac.id

Authors' Affiliation:
[1]Pharmacochemistry Laboratory, Pharmacy and Science Faculty, Muhammadiyah Prof Dr Hamka University.
[2]Pharmacochemistry Laboratory, Pharmacy and Science Faculty, Muhammadiyah Prof Dr Hamka University.
[3]Pharmacy and Science Faculty, Muhammadiyah Prof Dr Hamka University.

INVITED SPEAKER-III

OPTIMIZATION AND LOCALIZATION OF NANOSTRUCTURED LIPID CARRIERS CINCHONINE TO HAIR FOLLICLES

Hariyanti [1,3*], Kurniati, N.F[2], Mauludin, R[1], and Sumirtapura, Y.C[1]

ABSTRACT

Background: Cinchonine, the quinoline alkaloid of Cinchona extract has hair growth stimulant activity. Therefore Cinchonine must be reaching into hair follicles. NLC can facilitate Cinchonine in hair follicles. Objectives: determine the optimum formula of NLC Cinchonine and its localization in hair follicles. Methods: The study began with lipid screening, formula optimization, and characterization: particle size, PDI (PSA), morphology (TEM), melting point (DSC), entrapment efficiency by indirect method (HPLC) and localization (CLSM). Results: cinchonine had the highest solubility in stearic acid (91.70±0.61%) and oleic acid (92.33±0.45%), the total lipid used was 2%, the ratio of solid lipid: liquid lipid (9:1), a sonication time (15 minutes), Tween 80 3.5% and co surfactants was glycerin 2.5%. The optimum NLC Cinchonine has a particle size of 567.6 ± 15.4 nm, PDI 0.343 ± 0.045, TEM analysis results show a particle size of 500 nm, a melting point of 61.5°C, and entrapment efficiency of 93.35 ± 0.22%. The localization of NLC showed that NLC was effective in facilitating cinchonine to reach the hair follicles. Conclusion: The optimum NLC Cinchonine is Cinchonine 0.18; Stearic acid 1,8; oleic acid 0.2; Tween 80 3.5; glycerin 2.5; and deionized water up to 100%, effectively facilitating Cinchonine into the hair follicles.

KEYWORDS:
Cinchonine;
Hair follicles;
Nanostructured Lipid Carriers.

***Corresponding author:**
Email address:
hariyanti0880@gmail.com

Authors' Affiliation:
[1]Department of Pharmacy, School of Pharmacy, Institut Teknologi Bandung, Bandung, West Java, Indonesia.
[2]Department of Pharmacology-Clinical Pharmacy, School of Pharmacy, Institut Teknologi Bandung, Bandung, West Java, Indonesia.
[3]Department of Pharmaceutical Technology, Faculty of Pharmacy, Universitas Muhammadiyah Purwokerto, Purwokerto, Central Java, Indonesia.

INVITED SPEAKER-IV

DETERMINATION OF SUNSCREEN EFFECTIVENESS PARAMETERS AND IRRITATION TEST OF LYOTROPIC GEL OF BINJAI (*MANGIFERA CAESIA* JACK. EX. WALL) LEAVES METHANOL EXTRACT

Hafiz Ramadhan*, Dyera Forestryana, and Haryati

ABSTRACT

The aims of this study are to determine sunscreen effectiveness parameters and irritation test of lyotropic gel of Binjai (Mangifera caesia Jack. ex. Wall.) leaves methanol extract. Binjai leaves were extracted with a Soxhlet apparatus using methanol solvent. Preparation of the lyotropic system using glyceryl monooleate and Plantacare, then making the gel using 7% Viscolam. Determination of Sun Protection Factor (SPF), Percentage of Erythema (%Te), and Percentage of Pigmentation (%Tp) using UV-Vis spectrophotometry. In vivo irritation test using a male albino rabbit. The results showed that there was an increase in the SPF value of the gel of extract from 21.08 to 27.73 after the gel was made with the lyotropic system of the extract in the concentration of 2500 ppm, and the %Tp decreased from 0.755% to 0.153%, but %Te of the gel of extract was better than the extract lyotropic gel, although it met the requirements of <1%. The irritation test result was found that the two preparations did not cause irritation. The conclusion is the application of a lyotropic system to Binjai leaves methanol extract can provide better sunscreen effectiveness in the form of gel preparations and is classified as safe to be applied to the skin.

KEYWORDS:
Binjai leaves;
Lyotropic system;
Gel;
Sunscreen;
Irritation test.

***Corresponding author:**
Email address:
hafizramadhan14@gmail.com

Authors' Affiliation:
Department of Pharmacy, University of Borneo Lestari.

INVITED SPEAKER-V

ANTI-AGING EFFECTS OF CREAM FORMULATION CONTAINING SECRETOMES FROM MESENCHYMAL STEM CELLS

Marlina[1*], Reysa, Pradifta[1], Henny, Lucida[1], Hana, Nurul Salsabila[1], Nur, Elida[2], and Popy, Ayu Namira[2]

ABSTRACT

Skin aging occurs not only due to age but is influenced by various environmental factors such as lifestyle, pollution, and excessive exposure to UV rays. Secretomes can act as anti-aging agents that stimulate collagen biosynthesis naturally in the skin. This study aims to formulate a cream that contains 5% secretome with Olivem®1000 and essential oil. The evaluation includes organoleptic examination, homogeneity, emulsion type, pH, viscosity, stability, and globule size. The cream is an oil-in-water type with good physical stability, a pH value of 7.06, and 0.205m of globule size, with a thixotropic flow property. The antiaging effectiveness test was obtained in 2 stages: photographic evaluation and examination by a professional dermatologist before and after using the cream, every day for five weeks. As a result, the cream has an antiaging activity based on the difference between the parameters of the anti aging effect test before and after using the cream on volunteers, including sebum, elasticity, collagen, and pigment values. Furthermore, the antiaging effectiveness test showed an increase in the value of 1.64% sebum, 7% elasticity, 5% collagen, and a 5.67% decrease in pigment. ELISA test showed that FGF still exists in cream with a 61.143 pg/ml concentration.

KEYWORDS:
Anti-aging;
Secretome;
Cream;
Cosmetics;
Conditioned-medium mesenchymal stem cells.

***Corresponding author:**
Email address:
marlina@phar.unand.ac.id

Authors' Affiliation:
[1]Faculty of Pharmacy, Andalas University, Jl. Limau Manis, Padang, 25166, West Sumatera, Indonesia.
[2]Biomolecular Research Centre, Ina Laboratory, Padang, 25152, West Sumatera, Indonesia.

INVITED SPEAKER-VI

A STUDY ON ASSESSMENT OF EFFECTIVENESS OF CLINICAL PHARMACIST CARE INTERVENTIONS IN THE PREVENTION AND MANAGEMENT OF DIABETIC COMPLICATIONS IN HEALTH CARE SETTINGS

A.Bharath Kumar[1*], M.S. Umashankar[2], and M. Niranjan Babu[3]

ABSTRACT

Background: Diabetes mellitus is a heterogeneous metabolic disease which is characterized by recurring hyperglycemia and glucose intolerance impairs the insulin secretion and series of pathophysiological changes induces beta cells dysfunction. Objectives: To study the risk profile associated with diabetic complications and to identify the clinical pharmacist care interventions in the management and to control the further progression of diabetic complications. Methodology: The prospective study was conducted on the consecutive patients of diabetic patients attending diabetic outpatient department of tertiary care hospital over 6 month's period. About 325 patients were selected for the study based on the study protocol and collected patient's data were treated statistically. Results: The present research study findings revealed that diabetic complications were more prevalent in the age group between 41-50 years. Diabetes mellitus past medical history patients were more 102 (31.38%) and 27.69% patients with family history of diabetes mellitus were at risk to develop the diabetic complications. Glycated hemoglobin ranges from 7-9 mg/dl patients were more 145 (44.61%) and 56% patients had abnormal postprandial blood glucose values which indicating that there is need for effective treatment plan with an advent of clinical pharmacist intervention services to the patients to reduce diabetic complications. Conclusion: The study has been concluded that there is a need for amalgamation of clinical pharmacist intervention care services such as patient counseling on lifestyle medications, and patient referral care services could significantly enhance the patient health care outcomes.

KEYWORDS:
Diabetes mellitus;
Clinical pharmacist care;
Diabetic risk;
Glycemic control;
Health outcomes.

***Corresponding author:**
Email address:
abharatpharma@gmail.com

Authors' Affiliation:
[1]Department of Pharmacy Practice, Seven Hills College of Pharmacy (Autonomous), Tirupati, Andhra Pradesh, India.
[2]Department of Pharmaceutics, SRM College of Pharmacy, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu, India.
[3]Department of Pharmacognosy, Seven Hills College of Pharmacy (Autonomous), Tirupati, Andhra Pradesh, India.

INVITED SPEAKER-VII

CRISABOROLE NANOEMULSION: *EX VIVO* TRANSDERMAL PERMEATION STUDY

Mohd Hafiz Mohd Jaafar[1], Tommy Julianto Bustami Effendy[1], Zahid Hussain[2] and Nor Amlizan Ramli[1*]

ABSTRACT

Atopic dermatitis is a chronic inflammatory disease that is identified by intense pruritus and inflamed eczematous lesions, which affects 15-30 % of children and 2-10 % of adults worldwide. Crisaborole is a low molecular weight boron-based benzoxaborole compound that is topically active against skin inflammation and becomes inactive once it reaches the systemic circulation, thus reducing its efficacy. To address these issues, crisaborole was formulated into a nanoemulsion system that optimized its permeability and prolonged its topical efficacy. This formulation was then investigated for their ex vivo *skin permeation profile. Nanoemulsion was achieved by spontaneous emulsification of vitamin E with aqueous phase. Several concentrations of crisaborole (CN1.5%, CN2% and CN2.5%) were added and its permeation and accumulation were analyzed in an ex vivo transdermal permeation study using rat skin model. BP ointment (CP) and olive oil (CC) were used as positive and negative control respectively. In the* ex vivo *study, cumulative permeation of crisaborole in CN1, CN2, CN3 and CP were significantly different from CC. However, accumulation of CN1, CN2 and CN3 in both stratum corneum and epidermis layer was significantly higher as compared to CP and CC. CN2 was preferred over CC and CN1.5 in drug permeation profile to deliver its therapeutics effect.*

KEYWORDS:
Atopic dermatitis;
Crisaborole;
Nanoemulsion;
Topical delivery.

***Corresponding author:**
Email address:
nor.amlizan@uitm.edu.my

Authors' Affiliation:
[1]Department of Pharmaceutics, Faculty of Pharmacy, Universiti Teknologi MARA Cawangan Selangor, Malaysia.
[2]Department of Pharmaceutics & Pharmaceutical Technology, College of Pharmacy, University of Sharjah, UAE.

INVITED SPEAKER-VIII

IMPACT OF MENTAL HEALTH STATUS AND HIV-RELATED STIGMA AMONG PATIENTS UNDER HIGHLY ACTIVE ANTI-RETROVIRAL THERAPY (HAART): A SYSTEMATIC REVIEW

Mohemmad Redzuan, MR[1*], Syahrir, Z[2], Norny Syafinaz, R[2] Ramli, M[3] and Sze Meng, L[1]

ABSTRACT

Introduction: mental health status and HIV-related stigma has been recognized as one of the factors impacting HAART treatment outcome such as poor adherence to medications and failure to sustain undetectable viral load. The objective of this study was to evaluate the presence of mental health status and HIV-related stigma factors affecting the adherence to HIV medications among HIV patients. Method: a search of publication papers were conducted using electronic databases such as EBSCO Host (PubMed/MEDLINE, CINAHL, PsychINFO), Proquest Central, Scopus and Cochrane Library. Inclusion criteria were controlled studies such as randomized controlled trials, observational studies, cross-sectional studies, cohort studies and case-control studies that measured either HIV-related stigma or mental health status factors affecting the HAART adherence and treatment outcomes. Result: a total of 33 studies were being included as part of qualitative synthesis. The review focused on 2 main themes of impact, which included (1) mental health (five subthemes) and (2) HIV-related stigma (six subthemes) to understand the relationship with its treatment outcome. Conclusion: this systematic review discussed the impact of mental health and HIV-related stigma on HAART treatment outcomes. This information will be helpful to approach HIV patients from a different perspective when providing treatment care and medication counselling.

KEYWORDS:
HIV-related stigma;
Mental health;
HAART adherence;
Treatment outcome.

***Corresponding author:**
Email address:
evan_world89@yahoo.com

Authors' Affiliation:
[1]Department of Pharmacy, Klinik Kesihatan Tanglin, Kuala Lumpur.
[2]Kulliyah of Pharmacy, IIUM Kuantan.
[3]Kulliyah of Medicine, IIUM Kuantan.

FACTORS AFFECTING THE SIZE OF SYNBIOTIC MICROCAPSULES

Amran, N.A[1,2]*, Doolanea A.M[1], and Arzmi, MH[2,3]

ABSTRACT

Oral synbiotic microcapsule containing Streptococcus salivarius *K12 and* Musa acuminata *skin extract (OroSYN) is a novel treatment that should undergo more studies to be used in the dental care industry. It has been proven that the synbiotic can inhibit* C. albicans *and non-albicans Candida biofilm formation. This shows that there is a potential for synbiotic to work as an active component in products which aim for the prevention of dental caries and candidiasis. Hence, encapsulation of OroSYN formulation is proposed to extend the stability of OroSYN while maintaining its quality. The aim of this study is to investigate the factors affecting the particle size of synbiotic microcapsules. The OroSYN microcapsules are produced by dripping of alginate mixture containing the synbiotic and 4% alginate solution onto 2% calcium chloride solution. Our study found that the size of OroSYN microencapsulation is affected by the voltage, flow rate and distance. However, the variables that are manipulated for this study are the flow rate and voltage while the distance is kept as the controlled variable. The responding variable is the size particles of the OroSYN microcapsules. In conclusion, the higher the voltage used, the lower the flow rate pumped by the syringe pump, the smaller the size of synbiotic particles produced using the electrospray technique.*

KEYWORDS:
Microencapsulation;
Synbiotic;
Voltage;
Flow rate.

***Corresponding author:**
Email address:
nurulaqilahamran33@gmail.com

Authors' Affiliation:
[1]Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University of Malaysia, Kuantan Campus, 25200 Kuantan, Pahang.
[2]Cluster of Cancer Research Initiative IIUM (COCRII), International Islamic University of Malaysia, Kuantan Campus, 25200 Kuantan, Pahang.
[3]Department of Fundamental Dental and Medical Sciences, Kulliyyah of Dentistry, International Islamic University of Malaysia, Kuantan Campus, 25200 Kuantan, Pahang.

2A - PHARMACEUTICAL TECHNOLOGY

DEVELOPMENT AND CHARACTERISATION OF CAPSAICIN ENCAPSULATED POLYMERIC HYDROGEL NANOCARRIER FOR *IN VITRO* CANCER THERAPY

Azhan, U[1], Ramlan, K[1], Yasir, N[1], Othman, SFC[2], Hadi, H[1], and Suffian, IFM[1]*

ABSTRACT

Capsaicin has gained significant attention as of late due to its anticancer activities on many types of cancer. However, its use in therapy has been limited due to their short in vivo half-life. Therefore, it would be beneficial to find solutions to overcome this limitation. One of the potential solutions is via the use of nanoparticles. This study aims to use chitosan and κ-carrageenan polymers to develop hydrogel nanocarriers for capsaicin drug-loading via the nanoprecipitation method. The factors affecting size, polydispersity index (PDI) and zeta potential of empty nanoparticles were investigated, which includes process parameters and nanoparticle composition. Afterwards, the capsaicin are then encapsulated at various concentrations to investigate its effects on size, PDI, zeta potential, PBS swelling ratio, encapsulation efficiency, drug loading capacity and viscosity. In the future, selected formulations will be tested for its in vitro drug release kinetics, foetal bovine serum stability as well as stability studies. Then, one formulation will be selected for in vitro cytotoxicity studies which will be performed on various cell lines, including lung cancer (A549), hepatic cancer (Hep-G2), and colorectal cancer (HT-29).

KEYWORDS:
Nanoparticles;
Polymer;
Hydrogel;
Capsaicin;
Chitosan.

***Corresponding author:**
Email address:
izzat_fahimuddin@iium.edu.my

Authors' Affiliation:
[1]Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University Malaysia, 25200 Kuantan, Pahang Malaysia.
[2]Department of Biotechnology, Kulliyyah of Science, International Islamic University Malaysia, 25200 Kuantan, Pahang Malaysia.

3A - PHARMACEUTICAL TECHNOLOGY

FORMULATION AND EVALUATION OF FAVIPIRAVIR PRONIOSOMES FOR PULMONARY DELIVERY

Maduka Chethana* and Naseeb Basha Shaik

ABSTRACT

The aim of the present study is to formulate favipiravir proniosomes for pulmonary delivery employing slurry method using different surfactants, carriers and surfactant: cholesterol ratio. FTIR, DSC, XRD studies showed that the drug and excipients are compatible with each other. Taguchi experimental design (L9) was applied for screening by taking independent variables as type of surfactants, surfactant: cholesterol ratio and type of carriers while %Entrapment efficiency is dependent variable. The prepared proniosomes were evaluated for vesicle formation, flow properties, entrapment efficiency, in-vitro diffusion studies, lung deposition studies, particle size, zeta potential, SEM. F5 was optimized based on the evaluation parameters. It showed good flow properties, higher %Entrapment efficiency (89.64%) and diffusion of 92.33% at 7th hr. The lung deposition studies by Twin Stage Impinger showed aerosol mass output of 31.46%, aerosol output rate of 0.11mg/min, respirable fraction of 8.08% and vesicle size at TSI in S1, S2 (1.682 µm; 1.322 µm), SEM studies showed spherical vesicles. F5 exhibited zeta potential of -4.61mV. Optimized formulation F5 was found to follow zero order release kinetics and Higuchi release mechanism. It was found to be stable. The present study concluded that proniosomes are suitable formulations for delivery of favipiravir to lungs.

KEYWORDS:
Favipiravir;
Proniosomes;
Surfactants;
Carriers;
Lung deposition.

***Corresponding author:**
Email address:
chethana.maduka@gmail.com

Authors' Affiliation:
G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad, Telangana-500028, India.

4A - PHARMACEUTICAL TECHNOLOGY

FORMULATION AND EVALUATION OF ARIPIPRAZOLE ORAL DISINTEGRATING TABLETS

Damagundam Srilakshmi*, A, V. Navya, B, J. Pooja C, Dr. D. Prasanthi D

ABSTRACT

Aripiprazole, an antipsychotic, is a BCS class IV drug (low solubility, low permeability) with oral bioavailability of 87%. The aim of this work is to develop oral disintegrating tablets from solid dispersion of aripiprazole that are capable of enhancing solubility. The solid dispersions of this drug were prepared by using a combination of β-Cyclodextrin and PVP K30 in 1:1, 1:2 by using a physical mixture and solvent evaporation method. Among all the formulations SCD6 (Drug: β-cyclodextrin) shows a high percentage of drug release i.e., 98.58±0.28% for 45 min, and solubility was found to be 0.954±0.32mg/ml. SCD6 formulation was optimized for the preparation of oral disintegrating tablets by direct compression using different concentrations of various natural superdisintegrants namely tapioca starch, Amorphophallus campanulactus*, and synthetic superdisintegrants namely sodium starch glycolate and crospovidone. Among all, F3 formulations containing tapioca starch, 7.5% was found to possess a better disintegration time (28±1.52sec) and in-vitro dissolution (98.64±0.29% for 45min). Hence it can be concluded that solid dispersions of aripiprazole incorporated in oral disintegrating tablets are a very useful approach for better release of aripiprazole in an efficient manner.*

KEYWORDS:
Aripiprazole;
Oral disintegrating;
Superdisintegrants.

***Corresponding author:**
Email address:
sreesagar98@gmail.com

Authors' Affiliation:
G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad, Telangana-500028, India.

5A - PHARMACEUTICAL TECHNOLOGY

SELECTION OF POLYMERS FOR ISONIAZID THROUGH DRUG-POLYMER COMPATIBILITY TESTING

Nurul Huda Kamsani[1], Nur Fatin Adlin Kamarudin[1], Khairul Auni Adli Mohamad Aini[1], Harith Juwaidi Abdul Rais[1], Muhammad Hakeem Mohd Zaid[1], Bappaditya Chatterjee[2], Awis Sukarni Mohmad Sabere[3], and Muhammad Salahuddin Haris[1]*

ABSTRACT

Isoniazid (INH) is an antibiotic that is used together with other antitubercular drugs to treat tuberculosis (TB) infection. TB mortality ratio increased to 6.6 people in 2018 from 6.5 people in 2017 for every 100,000 populations and this makes TB the second deadliest infectious disease after dengue fever. Drug-polymer compatibility studies between INH and several selected polymers was conducted to measure the compatibility between ingredients if being used in a single formulation. The compatibility study was conducted by using thermogravimetric analysis (TGA), differential scanning calorimetry (DSC), and Fourier transform-infrared (FTIR) with the drug-to-polymer ratio of 1:1 for all DSC, TGA, and FTIR analysis. The polymers selected to be used in this study were hydroxypropyl methylcellulose (HPMC), polyvinyl acetate (PVA), Soluplus® (SOLU), and Eudragit (EUD). DSC results showed that INH is compatible with all the polymers. Further TG analysis showed that binary mixtures of all drug-polymers portrayed incompatibility with each other due to the presence or absence of thermal events and some of them caused temperature shifts more than 10% ± from the pure isoniazid. For FTIR, INH showed interaction with HPMC and EUD.

KEYWORDS:
Isoniazide;
Compatibility;
Preformulation studies;
Thermal analysis.

***Corresponding author:**
Email address:
solah@iium.edu.my

Authors' Affiliation:
[1]Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.
[2]Shobhaben Pratapbhai Patel School of Pharmacy & Technology Management (SPPSPTM), SVKM's NMIMS, Mumbai, Maharashtra, India.
[3]Department of Pharmaceutical Chemistry, Kulliyyah of Pharmacy, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.

6A - PHARMACEUTICAL TECHNOLOGY

FORMULATION AND *IN-VITRO* EVALUATION OF CLOPIDOGREL BISULPHATE NANOSUSPENSION USING BOX BEHNKEN DESIGN

Silagani Navyasri*, Harita Toravi, and Dr. K. Latha

ABSTRACT

Aim: The poor oral bioavailability of Clopidogrel bisulphate (less than 50%) made it aim at the improvement of the same by improving its aqueous solubility by formulating Clopidogrel bisulphate nanosuspensions. Methodology: The nanosuspensions of Clopidogrel bisulphate were formulated by nano-precipitation method and optimization was done using Box-Behnken design. Results and Discussions: The formulations were evaluated for viscosity, which was obtained in the range of 2.01-4.43cps. It was also evaluated for drug content, drug entrapment efficiency which was in the range of 61.2-86.3% and 81.12-90.36% respectively. The optimized formulation was prepared and evaluated for entrapment efficiency, drug release and the optimized formulation showed entrapment efficiency of 89.5% and drug release of 88.4% at the end of 90 min which was close to the value predicted by the design. The optimized formulation was also evaluated for particle size, zeta potential and polydispersity index before and after subjecting to probe and bath sonication. The particle size of nanosuspension before and after subjecting to probe and bath sonication were found to be 2334d.nm, 4.306d.nm, 4.808d.nm respectively, zeta potential- 0.940mV, 2.14mV, 0.511mV respectively and polydispersity index- 0.410, 0.487, and 0.369 respectively.

KEYWORDS:
Clopidogrel bisulphate;
Nanosuspension;
Box-Behnken design;
In-vitro dissolution;
Polydispersibility Index.

***Corresponding author:**
Email address:
navyasrisilagani@gmail.com

Authors' Affiliation:
Department of Pharmaceutics, G. Pulla Reddy College of Pharmacy, Osmania University, Hyderabad, India.

7A - PHARMACEUTICAL TECHNOLOGY

FORMULATION AND EVALUATION OF FLOATING MICROSPHERES OF CEFPODOXIME PROXETIL USING SIMPLE LATTICE DESIGN

Aisha Rahman*, A. U. Mayanka, and Latha Kukati

ABSTRACT

Objectives: Cefpodoxime proxetil is an oral third generation cephalosporin antibiotic. It is highly soluble in acidic medium, has narrow absorption window, short half-life, frequent dosing is inconvenient, by formulating as floating delivery it is beneficial for decreasing the dosing frequency of the drug, leading to increased patient compliance. Methodology: Floating microspheres of Cefpodoxime proxetil (CP) were prepared by Solvent Evaporation Method. Simple lattice design was applied for optimization of the formulation. Results and Discussion: The floating microspheres were evaluated for various parameters such as particle size, in-vitro buoyancy, incorporation efficiency, scanning electron microscopy, in-vitro drug release and in-vivo buoyancy studies etc. CP release from the polymer coated microspheres was slow over 12 hrs and dependent on core: coat ratio, wall thickness and size of microspheres. Formulation CPM2 prepared exhibited good micromeritic properties, percentage yield, in-vitro buoyancy, entrapment efficiency 65% and %drug release 73% for a period of 7hrs. The coefficient of determination indicated that the release data was best fitted with zero-order kinetics. The diffusion exponent 'n' values of the Korsemeyer-Peppas model were found to be Anomalous.

KEYWORDS:
Cefpodoxime proxetil;
Microspheres;
Cephalosporins;
Patient compliance.

***Corresponding author:**
Email address:
aisharahman.ar17@gmail.com

Authors' Affiliation:
G. Pulla Reddy College of Pharmacy, Osmania University, Hyderabad, Telangana, India

8A - PHARMACEUTICAL TECHNOLOGY

FORMULATION AND *IN VITRO* EVALUATION OF SUPER POROUS HYDROGEL AS GASTRORETENTIVE DRUG DELIVERY SYSTEM FOR EPLERENONE

Shweta Savarn*, and Naseeb Basha Shaik

ABSTRACT

The present work aims to formulate a super porous hydrogel tablet of eplerenone for gastroretentive drug delivery system to improve its bioavailability by using different rate retarding polymers like xanthan gum, guar gum and Carbopol, along with suitable excipient. All the formulations were prepared by direct compression method. The prepared tablets were evaluated for physical characters, swelling studies, in vitro buoyancy studies/floating lag time, in-vitro drug release, hardness and friability. The main aim was to optimize the formulation for 1-12hrs in-vitro release. Optimized formulation F8 containing 0.3% of xanthan gum and carbopol each was considered as the best product with respect to in-vitro drug release for 12 hrs and showed improved site-specific action. The results showed that the drug release rate was decreased as the viscosity of the polymer was increased. The drug release kinetics was performed for the optimized formulation and it shows zero order with non-Fickian transport drug release. Eplerenone is an aldosterone antagonist, mainly used for the treatment of high blood pressure, heart attack. Eplerenone is a suitable candidate for controlled release administration due to its short elimination time 4-6 hrs.

KEYWORDS:
Eplerenone;
Super porous hydrogel tablets;
xanthan gum;
Carbopol;
In vitro buoyancy studies.

***Corresponding author:**
Email address:
shwetasavran123@gmail.com

Authors' Affiliation:
G. Pulla Reddy College of Pharmacy, Osmania University, Hyderabad, Telangana, India.

9A - PHARMACEUTICAL TECHNOLOGY

FORMULATION EVALUATION AND OPTIMIZATION OF TOPICAL SERTACONAZOLE NITRATE EMULGEL BY BOX-BEHNKEN DESIGN

CV Sai Sravani*, Harini, and Dr. K. Latha

ABSTRACT

The objective of the study is the topical delivery of sertaconazole nitrate by formulation emulgel using a high molecular weight polymer of Carbopol 934P. Emulgels prepared from the design were evaluated for physical appearance, pH determination, in-vitro drug release, ex-vivo drug release, stability etc. The in-vitro drug release rate of emulgel was evaluated using a diffusion cell containing dialysis membrane with phosphate buffer pH 7.4. ESA1, ELP1 have shown less drug release for 8hrs having low surfactant and oil concentration. Based on this response further optimization is performed using Box-Behnken design. All the evaluations were performed for the formulations obtained. Ex vivo studies indicated that the EM formulated with Carbopol 934P in the concentration of 1.8%, surfactant 2.62% and oil 10% have shown least drug release of 12.3% and more of the drug deposited into the skin compared with the other formulations. Zeta potential was found to be -11.1mv, the globules diameter was 1714 d.nm and the polydispersity index 0.638 indicating the screened formulation is homogenous. Hence, concluded that EM formulation was stable, observed to follow zero-order kinetics and the data obtained fitted well with the Korsemayer-Peppas equation. It was thus proved from this research work that emulgel containing sertaconazole nitrate was a promising delivery system for the treatment of fungal infections.

KEYWORDS:
Emulgel;
Carbopol;
Zeta potential;
Sertaconazole.

***Corresponding author:**
Email address:
sravanicv498@gmail.com

Authors' Affiliation:
G. Pulla Reddy College of Pharmacy

FORMULATION AND EVALUATION OF DILTIAZEM HYDROCHLORIDE FLOATING MUCOADHESIVE SYSTEM

Javeria Tamkeen* and K. Latha

ABSTRACT

In present investigation, an attempt was made to develop a floating mucoadhesive drug delivery system exhibiting a unique combination of floatation and bioadhesion to prolong the residence time in the stomach using diltiazem hydrochloride as an anti-hypertensive drug. The floating mucoadhesive tablets were prepared by direct compression method using different ratios of Carbopol 934 and HPMCK-100M as polymers and sodium bicarbonate as gas generating agent. Tablets were characterized for floating properties, in-vitro drug release, bioadhesive strength and swelling index. The optimized formulation FH 13 showed 91.2±0.69 drug release at 12 hours with floating lag time of 15sec and the bioadhesion strength was found to be 150gm. Increase in the concentration of Carbopol and HPMC would increase the swelling index, bioadhesive strength and in-vitro drug release of the tablets. The prepared tablets were observed with total floating time for up to 12–24 hr. Increasing HPMC polymer caused higher mucoadhesion than Carbopol. Tablets with 6% effervescent base had longer lag time than 8% and 10%. The in-vitro release studies and floating behavior were studied in simulated gastric fluid (SGF) at pH 1.2. The n values of optimized formulations were found in the range of 0.667 indicating anomalous transport mechanism.

KEYWORDS:
Diltiazem hydrochloride;
Floating mucoadhesive tablets;
Bioadhesion;
In vitro release.

***Corresponding author:**
Email address:
javeriatamkeen9@gmail.com

Authors' Affiliation:
G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad, Telangana, India-500028

11A - PHARMACEUTICAL TECHNOLOGY

DUTASTERIDE TOPICAL GEL GARLIC EXTRACT FOR MALE PATTERN BALDNESS

Veeranti Vipanchi* and Dr. D. Prasanthi

ABSTRACT

*Topical preparations are used for the localized effect at the site of their application by virtue of drug penetration into the underlying layers of skin. The main advantage is to bypass first pass metabolism. Dutasteride is mainly used for treating benign prostatic hyperplasia (BPH). Men suffering from male pattern baldness have high levels of Dihydrotestosterone (DHT). Dutasteride off-label use for hair growth could be its stronger effect on blocking DHT. The main purpose of research is to cure male pattern baldness with dutasteride gel induced with garlic extract. Garlic (*allium sativum*) contains sulphur compounds including allicin, which helps in promoting hair growth. Gelling agents at various concentrations were preliminary screened for gel consistency. The control and the prepared gels were evaluated for clarity, homogeneity, spreadability, extrudability, drug content,* in vitro *diffusion, ex-vivo permeation, skin irritation, anti-inflammatory activity, and stability studies. All formulations have shown better physicochemical properties. Animal studies were performed on male albino rats of weight (260-300gm) for 30days and the hair length after 15days was found as control group (0.7cm), garlic gel 10% (1.2cm). The garlic induced preparation produced more effective results when compared to other preparations, hence this can be suggested for treating male pattern baldness.*

KEYWORDS:
Dutasteride;
Male pattern baldness;
Topical gel;
Dihydrotestoterone;
Garlic.

***Corresponding author:**
Email address:
vipanchi47@gmail.com

Authors' Affiliation:
G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad, Telangana-500028, India.

12A - PHARMACEUTICAL TECHNOLOGY

FORMULATION AND CHARACTERIZATION OF NANOSTRUCTURED LIPID CARRIERS DELIVERY SYSTEM FOR TREATMENT OF DIABETIC NEPHROPATHY

Nurul Jummah[1,2]*, Satrialdi[1], Aluicia Anita Artarini[1], Anindyajati[1], and Diky Mudhakir[1]

ABSTRACT

Conventional treatments of DN have been proven to reduce the severity of DN but their effectiveness does not cure DN in patients. Thus, the formulation of drug delivery systems and the widely performed gene therapy need to be analyzed for their effectiveness in the treatments of DN. Nanostructured Lipid Carrier (NLC) is targeted at kidney cells to reduce the expression of TGF-β1. The aim of this study was to examine the characterization of the delivery system for the NLC formulation for DN treatments. The characterization of NLC showed that it had the characteristics of nanoparticles that were able to enter kidney cells with particle sizes of 256,0±9.95 nm with a particle charge of +4.24 mV. The polydispersity index showed good size uniformity and indicated values of 0.179±0.037 and entrapment efficiency is 92.06±2.295%. In addition, this NLC formula has a good spherical shape, as shown by the results of TEM and the formation of NLC can be seen from the interaction between materials shown by the different Tm in the DSC results. As a result, these NLC characterization data indicate that they have high potential as a gene therapy delivery system to the kidneys.

KEYWORDS:
Diabetic nephropathy;
Delivery system;
NLC;
TGF-β1;
Kidney.

***Corresponding author:**
Email address:
nuruljummah19@gmail.com

Authors' Affiliation:
[1]Department of Pharmaceutics, School of Pharmacy, Institut Teknologi Bandung (ITB), Bandung 40132, Indonesia.
[2]Department of Pharmacy, Faculty of Mathematics and Natural Science, Universitas Islam Makassar, Makassar 90245, Indonesia.

13A - PHARMACEUTICAL TECHNOLOGY

HAIR TONIC FORMULATION FROM CONDITIONED-MEDIUM OF SYNOVIAL MEMBRANE-MESENCHYMAL STEM CELLS

Marlina[1]*, Silvy Aldila[1], Roslinda Rasyid[1], Henny Lucida[1], Nur Elida[2], and Popy Ayu Namira[2]

ABSTRACT

Conditioned-medium is a secretome derived from a mesenchymal stem cell. Hair development can be induced by the conditioned medium, which contains amino acids in the form of cytokines, excretome, and growth factors. This study aims to formulate the conditioned medium into a hair tonic and investigate how it affects hair development at concentrations of 5% (formula 1) and 10% (formula 2). The formulation of hair tonic contains ethanol 96%, propylene glycol, menthol, methylparaben, and aquadest. The evaluations included organoleptic testing, pH, specific gravity, viscosity, stability, and hair growth effect. As a result, the hair tonic comes in a clear, homogenous liquid with a distinct menthol scent. The pH of Formula 1 and Formula 2 is 6.6 and 6.8; the specific gravity is 0.9981 g/ml and 0.9987 g/ml, and the viscosity is 1.2523 Cp and 1.2416 Cp. The shape, color, pH value, and viscosity of hair prepared at -5°C and 25°C exhibited no change in shape, odor, color, pH value, or viscosity.

KEYWORDS:
Conditioned-medium;
Secretome;
Hair tonic;
Hair growth;
Synovial membrane-mesenchymal stem cells.

***Corresponding author:**
Email address:
marlina@phar.unand.ac.id

Authors' Affiliation:
[1]Faculty of Pharmacy, Andalas University, Jl. Limau Manis, Padang, 25166, West Sumatera, Indonesia.
[2]Biomolecular Research Centre, Ina Laboratory, Padang, 25152, West Sumatera, Indonesia.

FORMULATION, CHARACTERIZATION OF CHITOSAN NANOPARTICLES LOADED WITH *PHYLLANTHUS NIRURI* EXTRACT AND *IN VITRO* INVESTIGATION OF POTENTIAL TOXICITY IN SERTOLI CELLS

Ebrahim Sadaqa*, Ratna Annisa Utami, and Diky Mudhakir

ABSTRACT

Recently, there has been a huge interest in using nanoparticles in the pharmaceutical industry, but many of these nanoparticles are reported to have toxic effects on the human body. The present study is to investigate the potential cytotoxic and genotoxic effects of chitosan nanoparticles loaded with Phyllanthus niruri extract (PNNP) in mouse Sertoli cells (TM4 cells). An ionic gelation method was used to formulate PNNP. A colorimetric MTT assay was used to evaluate cell viability and calculate the IC_{50} value. A fast halo assay was used to assess DNA damage and, thereby, genotoxic effects in TM4 cells. We succeeded in formulating PNNP with a mean droplet size of 175.4 ±3.081 nm, a polydispersity index (PI) of 0.291± 0.018, zeta potential of 37.82 ± 1.92 mV, and a good entrapment efficiency (EE%) of 74 ±5.67%. Our findings demonstrated that PNNP at concentration of 62.5 µg/ml could induce single strand DNA damage in TM4 cells and cause significant genotoxic effects. This genotoxic effect, if not repaired or misrepaired, can cause unintended side effects in Sertoli cells which might contribute to spermatogenesis disruption and male infertility.

KEYWORDS:
Nanoparticles;
Phyllanthus niruri;
TM4 cells;
Fast halo assay;
DNA damage.

***Corresponding author:**
Email address:
ebrahimsadaqa190@gmail.com

Authors' Affiliation:
Department of Pharmaceutics, School of Pharmacy, Institut Teknologi Bandung (ITB), Bandung 40132, Indonesia

15A - PHARMACEUTICAL TECHNOLOGY

LAYER BY LAYER (LbL) ENCAPSULATION OF SESAME OIL IN CHITOSAN-ALGINATE MATRIX FOR COLON-TARGETED DELIVERY

Somaia Abueta[1]*, Abd Almonem Doolaanea[1], Hazrina Ab Hadi[1], and Abdullah Mohammed Alogayli[2]

ABSTRACT

Medical uses of chitosan-alginate beads have been growing widely in recent years due to their wide applications in pharmaceutical and biomedical technology. Moreover, a variety of research uses drug encapsulation in the chitosan-alginate matrix which facilitates the delivery of therapeutic molecules to the target site. Sesame oil has various medical applications. It contains a significant amount of lignans which enhances its antioxidant function. It also inhibits the proliferation of human colon cancer cells. It is also known for its good anti-inflammatory effects. Consuming sesame oil directly will not enable the colon cells to obtain the desired quantity of the active ingredients in the oil due to untargeted delivery. Therefore, the required effect and optimum loading dose will be missed. The aim of this study is to encapsulate sesame oil in chitosan-alginate beads and to optimize the formulation for targeted colon delivery. The beads were prepared by using ionic gelation with suitable coating using layer-by-layer (LbL) technique to achieve the colon delivery. The beads were characterized for particle size, and in vitro drug release in different simulated buffers. Formulation coated with LbL provides a successful pass of the stomach system, whereas a complete drug release occurred in the intestine within 4 to 5.5 h. They revealed that the LbL approach is a viable method to obtain a sesame oil chitosan-alginate bead formulation for targeted colon delivery.

KEYWORDS:
Targeted drug delivery;
Sesame oil;
Chitosan;
Alginate beads.

***Corresponding author:**
Email address:
seta@stu.kau.edu.sa

Authors' Affiliation:

[1]Department of Pharmaceutical Technology, Faculty of Pharmacy, International Islamic University Malaysia, Kuantan 25200, Malaysia.
[2]Department of Histology, Faculty of Medicine, Batterjee Medical College, Jeddah, Saudi Arabia.

FORMULATION OF LIP BALM CONTAINING PROPOLIS EXTRACT

Nur Suhaila Sudarman, A*

ABSTRACT

Nowadays, among all the cosmetic products lip balm formulations are the most extensively used to boost the beauty of the lip. Due to an unpleasant environment that can cause damage to the lip, lip balm is created to help people to overcome this problem. The aim of this study is to formulate a lip balm containing propolis extract and other excipients. Beeswax, candelilla wax, sunflower seed wax, jojoba oil, and shea butter will be weighed and placed in a water bath for melting purposes. Then, add the propolis, vitamin E, and castor oil into the beaker, mix together, and put four drops of aroma oil. Pour the lip balm mixture into the lip balm container which should be clean and sterile. For rapid cooling, place the lip balm into the freezer for about 30 minutes. As a result, the organoleptic characteristics like its appearance and texture are strongly harder and its color also changes to light yellowish. Some of the ingredients provide the same functions but they become a strong product when combined all together. In conclusion, the formulation of lip balm containing propolis and other excipients will be achieved and will be usable for others.

KEYWORDS:
Lip balm;
Waxes;
Oils;
Propolis extract;
Organoleptic.

***Corresponding author:**
Email address:
n.suhaila632@gmail.com

Authors' Affiliation:
Department of Pharmaceutical Technology, Kuliyyah of Pharmacy, International Islamic University Malaysia (IIUM), Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.

FORMULATION AND EVALUATION OF FAMOTIDINE PULSATILE TABLET USING CORE IN CUP METHOD

Maimuna Fatima* and Prasanthi Domaraju

ABSTRACT

The present work aims to formulate pulsatile delivery system using "core-in-cup" system for Famotidine, a H_2 receptor antagonist used for duodenal/benign gastric ulcers, GERD and nocturnal acid breakthrough (i.e., a sudden surge of gastric acidity at midnight). In such a situation, pulsatile release of drug is preferable with a lag time of 3-4hrs. For preparing core tablets HPMC K4M polymer and gas generating agent sodium bicarbonate was selected. Precompression parameters were within acceptable limits with good flow properties. Core tablets were evaluated for various parameters, and based on the results, 40% HPMC K4M was selected. Core-in cup formulations were prepared using Ethyl cellulose as a cup, HPMC K4M and Xanthan gum as hydrophilic-plug layers and evaluated. Optimized formula F4 showed hardness 6.0±0.12kg/cm^2, thickness 3.5±0.13mm, weight variation 295±1.06mg, friability 0.53±0.14%, floating lag-time 102±0.71sec, swelling index 129.5±0.37% and optimum lag time of 4.2hrs with 83±0.20% drug release at the end of 7th hour. Model dependent kinetics depicted, F4 follows zero-order drug release kinetics, from the 'n' value of Korsmeyer-Peppas model it shows Anomalous transport mechanism, release process being swelling controlled.

KEYWORDS:
Famotidine;
H_2-receptor antagonist;
Nocturnal acid breakthrough;
Pulsatile release;
Core-in-Cup Tablet.

***Corresponding author:**
Email address:
maimuna.fatima12@gmail.com

Authors' Affiliation:
G. Pulla Reddy College of Pharmacy, Mehdipatnam, Hyderabad, Telangana-500028, India.

FORMULATION OF FAST DISSOLVING TABLET OF COCRYSTAL PIPERINE-SUCCINIC ACID

Lili Fitriani, Kevin Aidil Akbar, and Erizal Zaini*

ABSTRACT

Piperine, the main secondary metabolite in the Piperaceae family, has been utilized traditionally due to its pharmacological activities. However, piperine is included in class II of BCS causing a low dissolution rate and making it difficult to develop into a dosage form. The objective of this study was to formulate a fast dissolving tablet form cocrystal piperine-succinic acid with an optimal super-disintegrant concentration which likely increases the dissolution rate of piperine. Cocrystals piperine-succinic acid were prepared by slurry method and fast dissolving tablets of cocrystal piperine-succinic acid by direct compression method. The tablets formula were differ by the concentrations of croscarmellose sodium as a super-disintegrant which were 1% (F1) ; 2.5% (F2) and 5% (F3). Optimization of each formula was carried out by evaluating the disintegration time. Tablets were evaluated including physical characteristics, dissolution test, wetting time, and water absorption ratio. The results of the optimization of the formula obtained a concentration of 2.5% (F2) with disintegration time 27.27 seconds. The water absorption ratio was obtained at 41.64% with a wetted time of 5.04 seconds. The dissolution rate of piperine in the 60 minutes was 22.08% with an increase in the dissolution rate of 2.75-fold compared to intact piperine.

KEYWORDS:
Piperine;
succinic acid;
Fast dissolving tablet;
Disintegration test;
Dissolution rate.

***Corresponding author:**
Email address:
erizal@phar.unand.ac.id

Authors' Affiliation:
Department of Pharmaceutics, Faculty of Pharmacy, Andalas University, Padang 25613, Indonesia.

FORMULATION OF ORALLY DISINTEGRATING FILM (ODF) LOADED WITH PIPERINE-SUCCINIC ACID COCRYSTAL

Uswatul Hasanah, Verlia Nisrina Putri, Lili Fitriani, and Erizal Zaini*

ABSTRACT

Piperine is a secondary metabolite of the alkaloid group found in the Piper nigrum and Piper longum species of the Piperaceae family with many pharmacological activities and currently being developed as a nutraceutical. Piperine belongs to the class II of biopharmaceutical classification system, which has low solubility and high permeability. Therefore, piperine-succinic acid cocrystals were formed to improve its solubility. This research aims to formulate the piperine-succinic acid cocrystal to an optimum Orally Disintegrating Film (ODF) base formula. Cocrystals of piperine-succinic acid were prepared by the slurry method and ODF were made by solvent casting method. The ODF bases were formulated with different concentrations of hydroxypropyl methyl cellulose (HPMC) as a film-forming polymer with concentrations at 4% (F1, F3, and F5) and 6% (F2, F4, and F6) and polyethylene glycol (PEG) 400 as plasticizers with concentrations of 0.6% (F1 and F2), 1.2% (F3 and F4) and 1.8% (F5 and F6). The ODF were evaluated for organoleptic characteristics, uniformity of weight and thickness, pH, moisture content, swelling property, and disintegration time. The results indicated F2 is the optimal formula and selected as the base formula. The ODF loaded with 10 mg piperine in the form of piperine-succinic acid cocrystal were evaluated, with addition of the content uniformity test. The final F2 loaded with piperine-succinic acid cocrystal ODF disintegrated in 41.367 ± 1.538 seconds with the petri dish method and 48.227 ± 0.352 seconds with the slide dish method.

KEYWORDS:
Cocrystal piperine-succinic acid;
Orally disintegrating film;
Solvent casting;
Disintegration time.

***Corresponding author:**
Email address:
erizal@phar.unand.ac.id

Authors' Affiliation:
Department of Pharmaceutics, Faculty of Pharmacy, Andalas University, Padang 25613, Indonesia.

22A - PHARMACEUTICAL TECHNOLOGY

POLYVINYLPYRROLIDONE AS OPTIMUM BINDER ON ZINGIBER EXTRACT TABLET FORMULATION

Inding G*, Fahjar P, and Kharisma U

ABSTRACT

In the manufacture of tablets, the use of Polyvinylpyrrolidone (PVP) as a binder is common. PVP is a good binder for almost all types of tablets. In this study, PVP was tried to be used as a binder on tablets with the active ingredient of dry extract of red ginger added with zinc which is efficacious as an anti-atherosclerosis. The purpose of this study is to find out what is the optimum level of PVP as a binder that will produce physically qualified tablets, namely on hardness, brittleness, and time of disintegration. The experimental tablets were made in 5 formulas with a range of PVP binding concentration of 2.8% to 3.9%. Tablets are made by the wet granulation method, evaluated at the granulation stage and the tablet stage. The results showed that the granules for all the formulas made were qualified. The granule evaluation results which include moisture content and flow properties are all qualified to be pressed into tablets. The results of the tablet evaluation showed that of the five formulas tested for hardness, brittleness, and the time of disintegration met the conditions according to the reference used. If further observed from the data figures and based on the results of statistical tests it was obtained that the one with the best physical properties, namely the highest hardness with the fastest crushing time is in formula 5. Thus, it can be concluded that the optimal binding formula of PVP on ginger extract tablets with added zinc is 3.9%.

KEYWORDS:
PVP;
Binder;
Tablets;
Red Ginger Extract.

***Corresponding author:**
Email address:
indinggusmayadi@uhamka.ac.id

Authors' Affiliation:
Faculty of Pharmacy and Science UHAMKA University.

23A - PHARMACEUTICAL TECHNOLOGY

DEVELOPMENT OF THE SOFT LOZENGES FORMULATION OF 70% ETHANOL EXTRACT WUNGU LEAVES (*GRAPTOPHYLLUM PICTUM*. L)

Fith Khaira Nursal, Landyyun R. Sjahid*, Dinda D. Daud, and Nurul Hikmah

ABSTRACT

In the manufacture of tablets, the use of Polyvinylpyrrolidone (PVP) as a binder is common. PVP is a good binder for almost all types of tablets. In this study, PVP was tried to be used as a binder on tablets with the active ingredient of dry extract of red ginger added with zinc which is efficacious as an anti-atherosclerosis. The purpose of this study is to find out what is the optimum level of PVP as a binder that will produce physically qualified tablets, namely on hardness, brittleness, and time of disintegration. The experimental tablets were made in 5 formulas with a range of PVP binding concentration of 2.8% to 3.9%. Tablets are made by the wet granulation method, evaluated at the granulation stage and the tablet stage. The results showed that the granules for all the formulas made were qualified. The granule evaluation results which include moisture content and flow properties are all qualified to be pressed into tablets. The results of the tablet evaluation showed that of the five formulas tested for hardness, brittleness, and the time of disintegration met the conditions according to the reference used. If further observed from the data figures and based on the results of statistical tests it was obtained that the one with the best physical properties, namely the highest hardness with the fastest crushing time is in formula 5. Thus, it can be concluded that the optimal binding formula of PVP on ginger extract tablets with added zinc is 3.9%.

KEYWORDS:
Wungu leaves;
Soft lozenges;
Gelatine;
Glycerin.

***Corresponding author:**
Email address:
landyyun@uhamka.ac.id

Authors' Affiliation:
Pharmacy Department, Faculty of Pharmacy and Science, Universitas Muhammadiyah Prof. Dr. Hamka.

24A - PHARMACEUTICAL CHEMISTRY

PREPARATION MULTICOMPONENT CRYSTAL OF ACECLOFENAC AND L-GLUTAMINE

Jessica, A., Wahyuni, S., Zaini, E., and Fitriani, L.*

ABSTRACT

This study aims to increase the solubility of ACF by forming multicomponent crystals (MCC) with L-Glutamine as a coformer at a ratio of 1:1 equimolar using the liquid assisted grinding (LAG) method. Powder X-Ray Diffraction (PXRD), Differential Scanning Calorimetry (DSC), FT-IR spectroscopy, Particle Size Analyzer (PSA) and Scanning Electron Microscopy (SEM) were used to characterize the MCC. The solubility test was carried out in CO2-free distilled water. The dissolution rate was carried out in phosphate buffer pH 6.8 and CO_2-free distilled water, each of which was added with 0.1% sodium lauryl sulfate (SLS). Characterization results of MCC revealed a decrease in intensity of the diffraction peak, a lower melting point on DSC thermogram, no wavenumbers shift on FT-IR analysis, and a decrease in particle size from SEM and PSA Analysis. The results of the solubility test of MCC showed an increase in solubility of 2.21 times. The increase in the dissolution rate of MCC in the medium of distilled water free of CO_2 and phosphate buffer pH 6.8 was 5.34 times and 5.56 times, respectively. It can be concluded that the formation of MCC of ACF and L-Glutamine can increase the solubility and dissolution rate of ACF.

KEYWORDS:
Aceclofenac;
L-Glutamine;
Multicomponent crystal;
Eutectic mixture; Solubility.

***Corresponding author:**
Email address:
lilifitriani@phar.unand.ac.id

Authors' Affiliation:
Faculty of Pharmacy, Andalas University, Kampus Limau Manis, Padang, Indonesia.

25A - PHARMACEUTICAL CHEMISTRY

MODIFIED STEAM DISTILLATION AND CHEMICAL COMPOUNDS ANALYSIS OF ESSENTIAL OIL *PLUMERIA OBTUSA*

Tahyatul Bariroh[1]*, Rindita[1], and Sofia Fatmawati[2]

ABSTRACT

*One of the plants in Indonesia that has a distinctive aroma in its flowers is the frangipani plant (*Plumeria sp*). The frangipani is a plant that is widely planted as a decoration in the yard of the house because the flowers are attractive and have an aroma. The frangipani plant also grows wild on roadsides and in burial areas. Frangipani flowers have various petals including* Plumeria obtusa*,* P. rubra*,* P. alba*, and* P. acuminata*.* P. obtusa *is more commonly found, the number of flowers is more, and the petal size is larger than the others. The frangipani flower which has this aroma allows the presence of essential oils in it. The use of frangipani essential oil for aromatherapy products has not been widely applied because it still requires research related to extraction method, the amount of yield and its quality testing of the essential oil of frangipani flowers. This study aims to obtain the extraction method, the amount of yield, and analysis of the chemical compound* P. obtusa*. The extraction method used a modified steam distillation. Identification of volatile oil compounds using GC-MS (Gas Chromatography-Mass Spectroscopy). The results of the GC-MS test of frangipani essential oil showed that there was a linalool compound in the oil.*

KEYWORDS:
Essential oil;
Frangipani;
GC-MS;
Linalool;
Plumeria.

***Corresponding author:**
Email address:
tahyatul_bariroh@uhamka.ac.id

Authors' Affiliation:
[1]Biology Pharmacy, Faculty of Pharmacy and Sciences, Universitas Muhammadiyah Prof. Dr. Hamka, Indonesia.
[2]Chemistry Pharmacy, Faculty of Pharmacy and Sciences, Universitas Muhammadiyah Prof. Dr. Hamka, Indonesia.

1B - NATURAL PRODUCTS

EXTRACTION OF FISH OIL BY USING WET RENDERING FROM PATIN FISH (*PANGASIANODON HYPOPHTHALMUS*)

Muhammad Hakeem Mohd Zaid[1], Muhammad Salahuddin Haris[1]*, Kamal Rullah[2], and Muhammad Fitri Yusof[3]

ABSTRACT

Fish oil is one of the supplements sold in most of the community pharmacies that can help to provide the consumers with many health benefits such as EPA and DHA which helps in reducing inflammation, growth development of the foetus, and brain maintenance. Usually, fish which are considered as fatty fish are used as the main source. In Malaysia, Patin fish which is one of the local freshwater fish is also included in this group. Due to those reasons, this study will be focusing on the extraction of Patin fish oil from different parts of the fish by using the wet rendering method that was improvised based on the previous research on the Patin fish oil extraction. The outcome of this study is to observe the percentage of extracted fish oil from different parts of the fish and to determine which parts of the fish can be considered for fish oil extraction during the manufacturing phase. The results showed that the fish flesh was the one which produced the highest percentage of fish oil compared to the fish bones and the internal organs of the fish.

KEYWORDS:
Pangasianodon hypophthalmus;
Patin fish;
Wet rendering;
Fish oil.

***Corresponding author:**
Email address:
solah@iium.edu.my

Authors' Affiliation:
[1]Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, IIUM Kuantan Campus, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.
[2]Drug Discovery and Synthetic Chemistry Research Group, Department of Pharmaceutical Chemistry, Kulliyyah of Pharmacy, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia.
[3]Department of Marine Science, Kulliyyah of Science, International Islamic University of Malaysia, Kuantan, Pahang, Malaysia.

2B - PHARMACOGNOSY

PHYTOCHEMICAL ANALYSIS, ANTIOXIDANT AND CELL WOUND HEALING PROPERTIES OF ETHANOLIC EXTRACT OF *BAECKA FRUTESCENS* LEAVES

Ihsan Safwan Kamarazaman[1,2,*], Fauziah Abdullah[2], Ling Sui Kiong[2], Juliza Mohamed[2], Nazrin Che Saad[2], Evana Kamarudin[1], Izyan Hazirah Zulkurnain[1], Nurhanani binti Ayub[1], Salfarina Ramli[1], Aida Azlina Ali[1], and Hasseri Halim[1]*

ABSTRACT

Baeckea frutescens *is an evergreen, heather-like shrub or small tree growing up to 8 meters tall. In Peninsular Malaysia, B. frutescens is found on the mountaintops, quartz ridges and sandy coasts. There are numerous pharmacological reports on* B. frutescens *including anti-bacterial, anti-dysentery, anti-pyretic, treatment of influenza, measles, abdominal pain, jaundice and irregular menstrual cycle. In this study, phytochemistry analysis, antioxidant and wound healing properties of BFLE were studied in order to postulate the potency of this plant towards the development of wound healing agent. Phytochemistry of BFLE was evaluated by phytochemistry analysis and LCMS while the antioxidant activity of the extract was determined by 2,2-diphenyl-1-picrylhydrazyl (DPPH), radical scavenging properties, total phenolic content (TPC) and ferric reducing antioxidant power (FRAP). In vitro wound healing properties of BFLE were determined by MTT assay, cell proliferation and cell migration assays, respectively. The results of the present study showed very good antioxidant and wound healing properties of BFLE. Treatment with 1.25-25 µg/mL of the extract has shown to increase the proliferation and migration rate of both keratinocyte and fibroblast cells. These results demonstrated that BFLE has very good antioxidant and wound healing properties and served as a very good candidate for wound healing agents. However, further studies were required to clarify the mechanism of actions in which pathways involved those that contributed to their activities.*

KEYWORDS:
Baeckea frutescens; Antioxidant; Wound healing; Keratinocytes, Fibroblast.

***Corresponding author:**
Email address:
hasseri2945@uitm.edu.my

Authors' Affiliation:
[1]Faculty of Pharmacy, Universiti Teknologi MARA, 42300 Bandar Puncak Alam, Selangor, Malaysia.
[2]Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor, Malaysia.

3B - PHARMACEUTICAL ANALYSIS

MOLECULAR INTERACTION OF LEVOCETIRIZINE DIHYDROCHLORIDE AND AMINO ACIDS L-ALANINE AND L-GLUTAMINE IN AQUEOUS SOLUTION: UV-VIS SPECTROSCOPY STUDY

Zolkiflee, NF[1], Meor Mohd Affandi, MMR[1,3]*, and Majeed, ABA[2]

ABSTRACT

Different physiological events in the body influence drug-amino acid interaction in the aqueous media. Hence, the interactions of levocetirizine dihydrochloride (LCTZ), a second-generation antihistamine, with both l-alanine (Ala) and l-glutamine (Gln) have been studied in this context. The goal of this study is to elucidate the thermodynamic parameters contributed to drug-amino acid interaction in aqueous medium, which may be used as a model for drug-protein interaction. At varied concentrations, UV-vis analysis was performed on LCTZ-Ala and LCTZ-Gln solution systems. The ΔG values for LCTZ-amino acids systems are negative, indicating that the interactions are spontaneous. The association constant, K_a, for the (LCTZ-Gln) system was found to be larger than that of the (LCTZ-Ala) system, indicating a higher interaction in the (LCTZ-Gln) system.

KEYWORDS:
Levocetirizine;
Aqueous solution;
Drug-amino acid interaction;
Thermodynamics.

***Corresponding author:**
Email address:
meor@uitm.edu.my

Authors' Affiliation:
[1]Fundamental of Pharmaceutics Laboratory and
[2]Brain Research Laboratory, Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), 42300 Bandar Puncak Alam, Selangor Darul Ehsan, Malaysia.
[3]Faculty of Pharmacy, Universiti Teknologi MARA (UiTM), 42300 Bandar Puncak Alam, Selangor Darul Ehsan, Malaysia.

4B - PHARMACEUTICAL ANALYSIS

DERIVATIVE AND DIFFERENCE SPECTROPHOTOMETRIC METHODS FOR THE ANALYSIS OF AMBRISENTAN IN PHARMACEUTICAL DOSAGE FORMS

K.Karishma*, and Y. Padmavathi

ABSTRACT

Two new derivative and difference spectrophotometric methods were developed for the determination of ambrisentan in tablets by UV spectrophotometry. Both methods were developed and optimised using the Phosphate buffer as a solvent system. The difference spectrophotometric method was developed using differences in spectral characteristics of drug observed in acid buffer pH 2 Phosphate buffer solution and basic buffer pH 8 Phosphate buffer solution as a solvent system. The derivative spectrophotometric method was developed by differentiating absorbance of a sample with respect to the wavelength of drug was observed in 0.2M pH 6.8 Phosphate buffer solution as a solvent system. All the determinations were carried out at 263 nm wavelength. The developed methods were validated as per ICH guidelines [ICH Q2 (R1)]. Linearity was observed over a concentration range of 20-100 mcg/ml for ambrisentan. The coefficient of determination was found to be 0.999 for two methods. The LOD and LOQ were found to be 3.75mcg/ml and 11.37mcg/ml for the derivative spectrophotometric method. The LOD and LOQ were found to be 3.14 mcg/ml and 9.52mcg/ml for difference spectrophotometric method. The methods were found to be precise and accurate. The validated methods were successively applied for the analysis of ambrisentan in tablets.

KEYWORDS:
UV spectrophotometric;
Derivative;
Difference;
Ambrisentan;
LOD and LOQ.

***Corresponding author:**
Email address:
karishmakanukuntla13@gmail.com

Authors' Affiliation:
G.Pulla Reddy College of Pharmacy.

IDENTIFICATION OF α-GLUCOSIDASE INHIBITORS DERIVED FROM *P. MACROCARPA* FRUITS USING GCMS AND MOLECULAR DOCKING APPROACHES

Abdur Rashid[1], Qamar Uddin Ahmed[1*], Zaidul Islam Sarker[2], ABM Helaluddin[1], and Sahena Ferdosh[3]

ABSTRACT

P. macrocarpa *fruits have been reported to be effectively used in Malaysia and neighboring countries to prevent and control diabetes. Despite its potential for diabetes, no study has ever been conducted to predict the protein–α-glucosidase inhibitors interaction. Thus, the objective of this research was to identify α-glucosidase inhibitors in* P. macrocarpa *fruits extract using GCMS analysis and to further investigate the molecular interactions through an in silico approach. Initially, the fresh fruits were extracted through the subcritical method to obtain liquid CO_2 extract which was evaluated for an in vitro α-glucosidase inhibitory effect. Subsequently, the extract was subjected to GCMS analysis for the identification of putative α-glucosidase inhibitors which were then analysed through molecular docking and dynamic simulation approaches to further confirm their antidiabetic effect through digestive enzymes inhibition. From the results, several bioactive compounds as fatty acids including others were identified. Among the identified compounds, 6 phytoconstituents were analysed for molecular docking that showed moderate to higher binding affinity when compared to that of quercetin (−8.4 kcal/mol) supporting these compounds as antidiabetic agents. Hence, the present study concludes that the* P. macrocarpa *fruits have the potential ability to manage diabetes.*

KEYWORDS:
P. macrocarpa fruit;
GCMS;
α-Glucosidase inhibitor;
Molecular docking.

***Corresponding author:**
Email address:
quahmed@iium.edu.my

Authors' Affiliation:
[1]Kulliyyah of Pharmacy, International Islamic University Malaysia, 25200 Kuantan, Pahang DM, Malaysia.
[2]Cooperative Research Extension, and Education Services, Northern Marianas College, Saipan MP 96950, USA.
[3]Kulliyyah of Science, International Islamic University Malaysia, 25200 Kuantan, Pahang DM, Malaysia.

6B - PHARMACEUTICAL ANALYSIS

DEVELOPMENT AND VALIDATION OF NEW SPECTROPHOTOMETRIC METHOD FOR ANALYSIS OF SILODOSIN IN SOLID DOSAGE FORMS USING HYDROTROPIC SOLUBILIZATION TECHNIQUE

A.Rama*, and Y. Padmavathi

ABSTRACT

Solubility is the major problem for various drugs in the pharmaceutical industry. Many drugs show poor aqueous solubility, which result in poor bioavailability of the drug. Solubility enhancement processes are widely used in the pharmaceutical industry to improve the dissolution and bioavailability of poorly water soluble drugs. Hydrotropes with an amphiphilic molecular structure possess the ability to increase the solubility of sparingly soluble organic molecules in water .It is a molecular phenomenon whereby adding a second solute (hydrotrope) helps to increase the aqueous solubility of poorly soluble solutes . Simply the presence of a large quantity of one solute enhances the solubility of another solute. The developed method was validated as per ICH guidelines [ICH Q2 (R1)]. A sensitive UV spectrophotometric method was developed using a derivative spectrophotometric method for the determination of silodosin in solid dosage forms . The derivative method was developed using hydrotropic agents urea and sodium acetate which increases solubility of silodosin. The method developed using 270nm wavelength was selected for estimation of silodosin. Linearity was observed over a concentration range of 40-200 mcg/ml for silodosin. The coefficient of determination was found to be 0.999. The methods were found to be linear, sensitive, precise, accurate and simple. The validated method was successively applied for the analysis of silodosin in solid dosage forms.

KEYWORDS:
Silodosin;
Hydrotropic agents;
ICH guidelines;
Spectrophotometeric.

***Corresponding author:**
Email address:
allakondarama239@gmail.com

Authors' Affiliation:
G.Pulla Reddy College of Pharmacy.

7B - PHARMACEUTICAL ANALYSIS

THE USE OF FTIR SPECTROSCOPY COMBINED WITH CHEMOMETRICS FOR QUALITY CONTROL ANALYSIS OF *ORTHOSIPHON STAMINEUS* EXTRACTS AS AN ANTIOXIDANT AND α-GLUCOSIDASE INHIBITORY AGENT

Mustofa Ahda[1,2]*, Irwandi Jaswir[3], Alfi Khatib[2], Qamar Uddin Ahmed[2], and Abdul Rohman[4]

ABSTRACT

Introduction: Quality control of Orthosiphon stamineus *leaf extract is an essential part of the product development to ensure the existence of the extract used. In this study, the use of FTIR spectroscopy and chemometrics combination was applied for quality control of* Orthosiphon stamineus *leaf extract as an antioxidant and α-glucosidase inhibitory agent. Material and Methods: To find the potential extract,* Orthosiphon stamineus *leaves were extracted at various ethanol concentrations (100%, 80%, 60%, 40%, and 0%). All extracts were evaluated for inhibition activity of DPPH and α-glucosidase. Next, all extracts were also analysed using FTIR spectroscopy in ranging wavenumbers 4000-400 cm^{-1}. Result and Discussion: This study showed that 40% ethanolic* Orthosiphon stamineus *leaf extract is the best extract which has a good inhibition activity of DPPH and α-glucosidase. Both inhibition activities from this extract produce IC_{50} of 85.528±3.584 µg/mL and 48.369±0.790 µg/mL, respectively. Furthermore, The discriminant analysis based on the FTIR spectrum results in 20% ethanolic extract of* O. stamineus *leaves coming together with 40% ethanolic extract. Conclusion: FTIR spectroscopy combined with chemometrics has distinguished clearly several* Orthosiphon stamineus *leaf extracts (100%, 80%, 60%, and 0%). However, 40% and 20% ethanolic extract of* O. stamineus *may require marker-based analysis.*

KEYWORDS:
α-Glucosidase inhibitory agent;
Antioxidant;
Quality control;
Infrared fingerprinting.

***Corresponding author:**
Email address:
mustofa_ahda@yahoo.com

Authors' Affiliation:
[1]Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Universitas Ahmad Dahlan, Yogyakarta, Indonesia.
[2]Department of Pharmaceutical Chemistry, International Islamic University Malaysia, Kuantan Malaysia.
[3]INHART, International Islamic University Malaysia, Kuala Lumpur, Malaysia.
[4]Center of Excellence, Institute of Halal Industry and Systems (PUI-PT IHIS), Gadjah Mada University, Yogyakarta 55281, Indonesia.

8B - PHARMACEUTICAL CHEMISTRY

SYNTHESIS OF FLAVONE-BASED COMPOUNDS AS ROS-DEPENDENT APOPTOSIS INDUCERS IN COLORECTAL CANCER

Nur Farisya Shamsudin[1], Sze-Wei Leong[2], Suet Lin Chia[2], Utid Suriya[3], Thanyada Rungrotmongkol[3], Mohd Fadhlizil Fasihi Mohd Aluwi[4], Irna Elina Redzwan[1], M. Taher Bakhtiar[5], Muhammad Salahuddin Haris[5], Lam Kok Wai[6], Kamal Rullah[1]*

ABSTRACT

Apoptosis is essential for maintaining cell homeostasis. It hinders the cancer cells survival and excessive ROS can induce DNA damage in cancer cells, which lead to apoptosis. Therefore, targeting apoptosis may be a universal cancer therapeutic technique. Twelve flavone-based compounds were synthesised and characterised. All compounds were evaluated for cytotoxicity against four human cancer cell lines: kidney, breast, colorectal, and bladder cancer cells. Only compound 8 exhibited excellent cytotoxicity against all investigated cancer cell lines, with notably potent cytotoxicity against colorectal (SW620) cells (IC_{50}: 3.2 µM) and higher cytotoxicity than control (IC_{50}: 4.2 µM). Mechanistic analyses such as colony formation, cell cycle arrests and flow cytometry analyses demonstrated an increase in intracellular ROS-induced apoptosis in SW620 cells, which is a potential mode of action for compound 8. Western blot research confirmed the apoptotic mechanism of 8 by showing overexpression of c-PARP, BAD, BAK, and AMPK and downregulation of BCL-2 and AKT. Taken together, the data showed that 8 induces apoptosis by increasing ROS. According to this study, a 4-chloromethyl substituent at the C3-phenyl group may be required for 8's cytotoxicity since other para substituents are inactive. Therefore, structure-activity analysis of 8 in related proteins can be studied.

KEYWORDS:
Flavone-based compounds;
ROS-dependent;
Apoptosis;
Colon cancer.

***Corresponding author:**
Email address:
kamalrullah@iium.edu.my

Authors' Affiliation:
[1]Drug Discovery and Synthetic Chemistry Research Group, Department of Pharmaceutical Chemistry, Kulliyyah of Pharmacy, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia.
[2]UPM - MAKNA Cancer Research Laboratory, Institute of Bioscience, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia.
[3]Structural and Computational Biology Research Unit, Department of Biochemistry, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand
[4]Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Pahang, Malaysia.
[5]Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.
[6]Drugs and Herbal Research Centre, Faculty of Pharmacy, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur, Malaysia.

IMPACT OF REVERSIBLE INHIBITOR BINDING TO PROTEIN ARGININE DEIMINASE TYPE 4 (PAD4): MOLECULAR DYNAMICS SIMULATION AND MMPBSA CALCULATION

Helmi Husaini Zainal Fithri[1], Ernie Zuraida Ali[2], and Zalikha Ibrahim[1]*

ABSTRACT

PAD4 catalyses the conversion of peptidylarginine into peptidylcitrulline. Overexpression of PAD4 and the peptidylcitrulline products have been reported in various diseases including rheumatoid arthritis and cancers. GSK199 is the first PAD4 selective reversible inhibitor discovered. The impact of GSK199 binding on PAD4 stability and flexibility, however, is poorly understood. Here, the impact of GSK199 binding towards PAD4 stability and flexibility is investigated via molecular dynamics simulation, followed by molecular mechanics generalised Poisson-Boltzmann surface area (MMPBSA) calculation. A simulation of inactive control, GSK106 with PAD4 was also conducted for comparison. The atomic deviation plot shows both simulations were stable throughout 100 ns. The atomic fluctuation at the N-terminal domain in the PAD4-GSK199 complex was significantly higher compared to in the PAD4-GSK106 complex, indicating that the PAD4 inhibition gives impact mainly at the N-terminal domain. The MMPBSA analysis shows a marked difference in binding free energies, with -60.95 kJ/mol in the PAD-GSK199 complex and -30.92 kJ/mol in the PAD4-GSK106 complex. Further analysis revealed that the GSK199's binding to PAD4 is assisted by 5 hydrogen bonds, whereas the GSK106's binding is aided by 3 hydrogen bonds. Furthermore, GSK106 was found to be in close proximity (1.9 Å) to the backbone of ASN585, which contributed to the binding free energy. The findings from this study provide valuable insight for rational design of other PAD4 reversible inhibitors.

KEYWORDS:
Protein arginine deiminase type 4;
Reversible inhibitor;
Molecular dynamics simulation;
Binding free energy.

***Corresponding author:**
Email address:
zalikha@iium.edu.my

Authors' Affiliation:
[1]Department of Pharmaceutical Chemistry, Kulliyyah of Pharmacy, International Islamic University Malaysia, Indera Mahkota, 25200, Kuantan, Pahang, Malaysia.
[2]Inborn Error of Metabolism and Genetic Unit, Nutrition, Metabolism and Cardiovascular Research Centre, Institute for Medical Research, National Institutes of Health, Ministry of Health Malaysia, Section U13 Setia Alam, 40170, Shah Alam, Selangor, Malaysia.

10B - PHARMACY PRACTICE

ORAL HEALTH KNOWLEDGE AMONG PHARMACISTS AND PHARMACY ASSISTANTS IN KELANTAN

Sapiah Derahman*, Norkhafizah Saddki, and Zainab Mat Yudin@Badrin

ABSTRACT

Non-dental healthcare providers can help prevent oral diseases and promote oral health. This study investigated oral health knowledge among the Ministry of Health pharmacists and pharmacy assistants in Kelantan. A total of 202 pharmacists and pharmacy assistants participated in this cross-sectional study. A self-administered questionnaire was used to obtain the variables of interests. Most participants knew about common oral diseases and their complications, could identify most risk factors and signs and symptoms of dental caries, periodontal disease, and oral cancer, and were aware of the recommended preventive care. However, lack of knowledge regarding the association between systemic diseases/conditions and oral health including oral side effects of medications were common. Most participants were unaware that gum disease is an early sign of diabetes (73.3%) and pregnant women with gum disease are at risk of delivering premature (63.9%) and low birth weight babies (63.4%). Most were also unaware that analgesics (66.8%), antacids (73.3%), calcium channel blockers (65.37%), and antiretrovirals (63.9%) can reduce salivary flow. In conclusion, most pharmacists and pharmacy assistants in this study had correct oral health knowledge although misunderstandings about certain facts were common. Incorporation of oral health subject/module into pharmacy training curriculum and in-service continuous education is recommended.

KEYWORDS:
Knowledge;
Oral health;
Pharmacist.

***Corresponding author:**
Email address:
sapiahderahman@student.usm.my

Authors' Affiliation:
School of Dental Sciences, Universiti Sains Malaysia, Health Campus, 16150 Kubang Kerian, Kelantan, Malaysia.

11B - PHARMACY PRACTICE

INCIDENCE OF GASTROINTESTINAL ADVERSE DRUG REACTION DUE TO METFORMIN INTOLERANCE AMONG TYPE 2 DIABETES MELLITUS PATIENTS: A CROSS-SECTIONAL STUDY

Nur Adibah Binti Abdul Razak*, and Nor Ilyani Mohamed Nazar

ABSTRACT

Metformin is the first line agent in treating Type 2 Diabetes Mellitus (T2DM). However, it has been associated with gastrointestinal adverse drug reaction (ADR) in about 20-30% of the population. This study aims to 1) determine the incidence of gastrointestinal ADR of metformin among T2DM patients and 2) identify the current practice of interventions related to patients developing metformin intolerance in the hospital setting. This is a cross-sectional study of the patients' data/profile extracted from the Electronic medical record (EMR) at the internal medicine clinic, SASMEC @IIUM, from May 2021 to June 2022. Patients were divided into metformin tolerant, suspected of metformin intolerant and confirmed cases of metformin intolerant. A total of 682 patients were screened, 298 patients were excluded, making the final number 384 patients for further investigation. Thirty-one patients (8.1%) identified as having metformin intolerant, and another 6 patients (1.6%) are suspected of having metformin intolerant. The metformin tolerance was 347 patients (90.3%). The most common intervention to overcome metformin intolerance was changing to an extended-release metformin formulation (62.2%) and immediately stopping the medication in addition of another agent (37.8%). Further investigation is needed to confirm the suspected cases and the interventions' outcomes.

KEYWORDS:
Metformin intolerance;
Gastrointestinal adverse drug reaction;
Type 2 Diabetes Mellitus.

***Corresponding author:**
Email address:
adibahrzk@iium.edu.my

Authors' Affiliation:
Kulliyyah of Pharmacy, International Islamic University Malaysia

12B – A REVIEW

EFFECTIVENESS OF EDUCATIONAL INTERVENTIONS ON GLYCEMIA CONTROL IN CHILDREN WITH T1DM - A SCOPING REVIEW

Sasha Muhammed Elamin*, Noraida Mohamed Shah, Adyani Md Redzuan, Siti Azdiah Abdul Aziz

ABSTRACT

Background: Describing and evaluating the components and effects of patient education interventions is important to encourage and enable more effective interventions to be conducted. A few reviews provided evidence that patient education interventions are beneficial for children and adolescents with type I diabetes mellitus (T1DM). Objectives: This scoping review aims to give an overview of published interventions and the potential outcomes of education interventions for children and adolescents with T1DM. Methods: Relevant literature published between 2000 and 2021 were comprehensively reviewed. Arksey and O'Malley's framework for scoping studies guided the review process and thematic analysis was undertaken to synthesize extracted data. Results: Of the 5015 articles identified, 49 studies were included. Majority of the interventions were multidisciplinary, involving interactive sessions, motivating interviews, game-based sessions or peer education interventions under the supervision of health care providers. The interventions were delivered through face-to-face, online or a mixture of both methods. Majority of studies showed improvement of glycated hemoglobin (HbA1c), with or without improvement in other outcomes. Conclusion: Different education interventions have positive impacts on children and adolescents with T1DM. The results support the usefulness of patient education interventions in improving glycemic control.

KEYWORDS:
Children;
Intervention;
Patient education;
Type 1 diabetes mellitus;
Glycemia.

***Corresponding author:**
Email address:
sashaburass@gmail.com

Authors' Affiliation:
Centre for Quality Management of Medicines, Faculty of Pharmacy, Universiti Kebangsaan Malaysia.

13B - NATURAL PRODUCTS

EFFECT OF EXTRACTION TIME WITH LIME JUICE USING AUTOCLAVE AND CHARACTERIZATION OF FISH GELATIN FROM WHITE SNAPPER (*LATES CALCARIFER)* SCALES

Hariyanti, H*, Hanifa, M, and Widayanti, A

ABSTRACT

Gelatin is a substance obtained from the process of partial hydrolysis of collagen. One of the alternative raw materials in the manufacture of gelatin is white snapper scales. This study aims to determine the effect of variations in extraction time using autoclave on the addition of lime juice and its characterization. The methods implemented include extraction with lime juice of variations in extraction time for 30, 60, and 90 minutes. The extraction results are carried out by determining the yield value of the gelatin product and its characterization. The results of the study obtained high gelatin results at an extraction time of 60, and 90 minutes, namely 18.33%, and 23,97%. The results of the gelatin characterization at an extraction time of 60 minutes resulted in a moisture content value of 1.30%, ash content value of 1.45%, a pH of 4.91, and a viscosity value of 1.84 cps. The viscosity value of the 90-minute extraction time is 1.06 cps so it does not meet the GMIA requirement (1.5-7.5 cps). Identification of gelatin by FTIR analysis shows fingerprints according to normal gelatin. The summary of the study suggests that the best extraction of fish scales gelatin using an autoclave is 60 minutes.

KEYWORDS:
Lates calcarifer Scales;
Extraction time;
Gelatin;
Autoclave;
Lime juice.

***Corresponding author:**
Email address:
hariyanti@uhamka.ac.id

Authors' Affiliation:
Faculty of Pharmacy and Science, Universitas Muhammadiyah Prof. Dr HAMKA, Klender, East Jakarta.

14B - NATURAL PRODUCTS

ETHNOMEDICINAL EXPLORATION OF PLANTS USED FOR TRADITIONAL MEDICINE IN CIHANJUANG VILLAGE, PANDEGLANG-BANTEN PROVINCE, INDONESIA

Rindita*, Nuriza Rahmadini, Ade Putra Prakasa, Agung Nugroho, Amila Mulyani, Anugrah Ilham Saputra, and Lana Maulana

ABSTRACT

Ethnomedicinal exploration is one of solutions to understand biodiversity of plants, especially that have been used as traditional medicine in many villages in Indonesia. In Cihanjuang Village in Banten, people are still using plants to cure diseases, but the report is still unknown. This research aimed to make a list of plants used in that village for treating gastritis, hypertension, fever, and diarrhea. Also, to know what part of plants used and how to use or consume. The method used was a semi-structured interview with questionnaire and quantitative analysis by counting the use value (UV) of plants listed. There are 30 spesies used to treat fever, 16 spesies for gastritis, 18 spesies to cure diarrhea, and 18 spesies for hypertension. Part of plants that are mostly used are the leaves. The highest UV of plants are: Morinda citrifolia (0.62) and Syzygium polyanthum (0.55) for hypertension; Dracaena sanderiana (0.57) and Ceiba pentandra (0.51) for gastritis; Salacca zalaca (0.65) and Solenostemon scutellarioides (0.51) for diarrhea; Gardenia jasminoides (0.77) and Centella asiatica (0.72) as antipyretic. There are species that less known to have medicinal effect for treating disease mentioned: Ampelocissus arachoidea *(hypertension),* Dracaena sanderiana *(gastritis),* Decalobanthus peltatus *(diarrhea), and* Swietenia mahagoni *(fever), thus need to be explored.*

KEYWORDS:
Ethnomedicine;
Banten;
Use value,
Biodiversity.

***Corresponding author:**
Email address:
rindita@uhamka.ac.id

Authors' Affiliation:
Faculty of Pharmacy and Science, Universitas Muhammadiyah Prof. DR. HAMKA.

15B - PHARMACOGNOSY

THE EFFECT OF LONG EXPOSURE REED DIFFUSER FRANGIPANI ESSENTIAL OIL ON SPATIAL MEMORY FUNCTION OF MALE WISTAR RAT

Siska Siska[1] and Tahyatul Bariroh[2]*

ABSTRACT

Memory function is a very important function related to brain performance. Decreased memory function with age and stress is associated with decreased neuroplasticity. One of the diseases caused by decreased neuroplasticity is dementia. Dementia is a neurodegenerative disease with a fairly high incidence worldwide. Complementary therapies, including aromatherapy, are attractive to patients, practitioners and families for the treatment of dementia against cognitive impairment or against the distressed behavior. This study aims to determine the effect of long exposure to frangipani essential oil reed diffuser on spatial memory function in rats. 24 rats were divided into 4 groups, namely the group without exposure to reed diffuser for 5 and 10 days, group with exposure to reed diffuser for 5 and 10 days. Learning ability and spatial memory tests were carried out on all groups of experimental animals using the T-Maze device. Parameters measured were travel time (s) and total error (times/test) recorded for three test sessions. The lower the travel time and the smaller the total error indicates a better performance of the memory function. Exposure to essential oils for 10 days decreased travel time and the number of errors more than exposure to essential oils for 5 days.

KEYWORDS:
Aromatherapy;
Diffuser;
Frangipani;
Memory.

***Corresponding author:**
Email address:
tahyatul_bariroh@uhamka.ac.id

Authors' Affiliation:
[1]Pharmacology, Faculty of Pharmacy and Sciences, Universitas Muhammadiyah Prof. Dr. Hamka, Indonesia.
[2]Biology Pharmacy, Faculty of Pharmacy and Sciences, Universitas Muhammadiyah Prof. Dr. Hamka, Indonesia.

16B - PHARMACOGNOSY

ANTIDIABETIC ACTIVITY OF ETHANOL FRACTION FROM SALAM LEAVES (*SYZYGIUM POLYANTHUM* WIGHT.) IN WHITE MALE RATS INDUCED BY HIGH FAT AND FRUCTOSE DIET

Budi Untari*, Herlina, Indah Solihah, Dian Permata Wijaya, and Dian Noptiana

ABSTRACT

The aim of the study is to determine the effect of ethanol fraction of salam leaves in decreasing blood glucose levels in type 2 diabetes mellitus rats induced by high fat and fructose diet. Induction of high fat and fructose diet was done by giving fructose 1800 mg/kgBW and high fat 15 g/rat for 30 days. Wistar male white rats were divided into six groups, namely normal, positive control (metformin 150 mg/kgBW) negative control (0.5% Na CMC) and the ethanol fraction of salam leaves was made with doses variations of 250, 500, and 1000 mg/kgBW. The results showed that the percentage of blood glucose in the positive control group was 73.83% and the 3 treatment groups with the ethanol fraction of salam leaves at doses of 250, 500, 1000 mg/kgBW, respectively 63.15%, 67.89% and 89.59%. This shows that the ethanol fraction of salam leaves has antidiabetic activity, and there is no significant difference with metformin ($p>0.05$). ED_{50} the ethanol fraction of salam leaves is 211.53 mg/kgBW. Pancreatic histopathology results showed improvements in pancreatic β cells by the positive control group and the treatment group at doses of 250, 500 and 1000 mg/kgBW compared to other groups.

KEYWORDS:
Ethanol fraction;
Syzygium polyanthum Wight.;
Antidiabetic.

***Corresponding author:**
Email address:
untaribudi@yahoo.com

Authors' Affiliation:
Department of Pharmacy Faculty of Mathematics and Sciences, Sriwijaya University, Inderalaya, Indonesia.

17B - PHARMACOGNOSY

ANTIHYPERLIPIDEMIA TEST OF MELINJO LEAF *N*-HEXANE FRACTION (*GNETUM GNEMON* L.) AGAINST MALE WHITE RATS WISTAR STRAIN INDUCED BY PROPYLTHIOURACIL

Herlina[1]*, Ferlina Hayati[2], Dina Permata Wijaya[1], and Laddy Mailany[1]

ABSTRACT

*Research about the antihyperlipidemic activity of the n-hexane fraction of melinjo leaves (*Gnetum gnemon *L.) against white male Wistar rats induced by propylthiouracil has been carried out. Wistar male white rats were divided into six groups, namely normal, positive control (simvastatin 0.987 mg/KgBB), negative control (NaCMC 0.5%), and three test groups with doses of 20 mg/KgBB, 40 mg/KgBB, and 80 mg/KgBB. Measurement of triglyceride levels and cholesterol using the enzymatic method (GPO-PAP) and (CHOD-PAP). The decrease in triglyceride levels, and the increase in HDL n-hexane fraction at doses of 20, 40, and 80 mg /kgBW were significantly different from simvastatin ($p > 0.05$), while the decrease in cholesterol and LDL levels in the n-hexane fraction at doses of 20, 40, 80 mg/kgBW was not significantly different from simvastatin ($p < 0.05$). Effective dose (ED_{50}) of the n- hexane fraction of melinjo leaves was 84,821 mg/kgBW. The results of the histopathological examination of the rat liver showed that the 80 mg/kgBW dose fraction was the same as simvastatin with 10% necrosis and % fat degeneration. The n-hexane fraction of melinjo leaves has antihyperlipidemic activity and there is a significant difference compared to the negative control group ($p < 0.05$).*

KEYWORDS:
Gnetum gnemon L.;
Antihyperlipidemia;
Total cholesterol;
HDL;
Triglyceride.

***Corresponding author:**
Email address:
rinaafdil@gmail.com

Authors' Affiliation:
[1]Department of Pharmacy Faculty of Mathematics and Sciences, Sriwijaya University, Inderalaya, Indonesia.
[2]Department of Chemistry Faculty of Mathematics and Sciences, Sriwijaya University, Inderalaya, Indonesia.

ANTIMALARIAL REMEDIES IN MALAY MEDICAL MANUSCRIPTS: A PHARMACOLOGICAL PERSPECTIVE

Joni Tamkin, H. K. and Ahmad Nadzirin, I.*

ABSTRACT

Malaria is an infectious disease caused by Plasmodium spp. *The main treatment is artemisinin, discovered after a massive study on Chinese medical manuscripts. However, artemisinin monotherapy contributes to antimalarial drug resistance and there are issues of relapse and failure when using artemisinin-based combination therapy (ACTs). Interestingly, Malay traditional medicine also provides numerous remedies to treat malaria, of which can be obtained from Malay medical manuscripts (MMM). Hence, this study was to extract and analyse the formulations in MMM. Several terms referring to malaria were scanned throughout six MMM. The formulations were extracted and the ingredients were comparatively analysed against contemporary studies. Lastly, SAKTI-iPharmaprospect analysis was carried out to evaluate the formulations. A total of 17 formulations comprising 37 ingredients were identified. Several ingredients have been empirically demonstrated to possess pharmacological actions against malaria such as* Alpinia galanga *which had been shown to eliminate* Plasmodium spp. *from a malaria patient's body.* Tabernaemontana corymbose *had been used to relieve symptomatic symptoms such as fever. SAKTI-iPharmaprospect analysis revealed that formulations RU.01.35 and RU.03.43 comprising Zingiber officinale, and formulation RU.02.41 comprising S. aromaticum, have potential to be developed into accessible and affordable alternative malaria treatments due to its inhibitory and anti-plasmodial activity against Plasmodium spp.*

KEYWORDS:
Malay medical manuscript;
Malaria;
Alternative medicine.

***Corresponding author:**
Email address:
izzuddin_a@iium.edu.my

Authors' Affiliation:
Department of Biomedical Science, Kulliyyah Of Allied Health Sciences, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia

19B - PHARMACOGNOSY

SUPER RED DRAGON FRUIT (*HYLOCEREUS COSTARICENSIS*) SKIN EXTRACT FORMULATION AND ANTIOXIDANT ACTIVITY CREAM WITH VARIATIONS IN CONCENTRATION OF GLYCERYL MONOSTEARATE

Nugrahaeni, Fitria, Yati, Kori*, and Sukmara

ABSTRACT

Glyceryl monostearate can be used as an emulsifier because it can affect the increase in antioxidant activity. The purpose of the study was to determine the effect of variations in the concentration of glyceryl monostearate on the physical characteristics of cream preparations ethanol extract of super red dragon fruit peel and its antioxidant activity. The research methods experimentally include the preparation of extract, phytochemical screening using thin layer chromatography, formulations using various concentrations of glyceryl monostearate 8%, 10%, 12% then physical quality of the cream and antioxidant activity test using the DPPH method. The IC_{50} results obtained for formula 1, 2, and 3, respectively, are 3.69ppm; 3.98ppm; and 4.78ppm. Formula 3 was the best formula that approximates the value of the positive control antioxidant activity, vitamin C with a value of 5.83 ppm. The results of the irritation test showed that all formulas did not cause irritation. The results of the preference test show that all formulas are liked by the respondents. The conclusion in this study was that increasing variations in the concentration of glyceryl monostearate did not affect the physical characteristics of the super red dragon fruit peel extract cream but did affect its antioxidant activity.

KEYWORDS:
Super red dragon fruit peel extract;
Glyceryl monostearate;
Antioxidant test;
Irritation test;

***Corresponding author:**
Email address:
koriyati@uhamka.ac.id

Authors' Affiliation:
Faculty Pharmacy and Science, Muhammadiyah Prof.DR.HAMKA University, Jakarta, Indonesia.

20B - PHARMACOGNOSY

THE ANTIMICROBIAL ACTIVITY OF *AVERRHOA BILIMBI* EXTRACT-LOADED NIOSOME SERUM AGAINST *PROPIONIBACTERIUM ACNE* AND *STAPHYLOCOCCUS AUREUS*

Dyah Rahmasari*, Chintya Ayu Oktavia, Danar Izza Mahendra, Fevi Wiga Saputri, and Raditya Weka Nugraheni

ABSTRACT

This study aims to develop and determine the antibacterial activity of Averrhoa bilimbi *extract in niosome serum system preparation and its irritation effect. 12%* Averrhoa bilimbi *extract was formulated into a niosome system and incorporated into serum with varying concentrations of 30%, 40%, and 50%. The niosome system was characterized for particle size, Polydispersity Index, and zeta potential, and then physicochemical properties were evaluated for niosome serum preparation. Further, the antibacterial effect against* Propionibacterium acnes *and* Staphylococcus aureus *are tested using a well-diffusion method. The preparation stability was assessed using freeze-thaw methods, and the irritation test was evaluated using HET-CAM (Hen's Egg Chorioallantoic Membrane) method. The results showed that the preparation has an excellent physicochemical characteristic, while the best inhibition zone diameter was 15,37mm±0,07; 36,72mm±0,09; and 39,09±0,81, against* S. aureus*, respectively. However, the results of the stability test of the preparation have a significant change but have no irritation effect on CAM. It can be concluded that the niosome serum of* Averrhoa bilimbi *extract has a potential antibacterial impact on acne, especially against* S. aureus*.*

KEYWORDS:
Averrhoa bilimbi extract; Niosome; *Propionibacterium acnes*; *Staphylococcus aureus.*

***Corresponding author:**
Email address:
dyahrahmasari@umm.ac.id

Authors' Affiliation:
Department of Pharmacy, Faculty of Health Science, University of Muhammadiyah Malang, Indonesia.

21B - PHARMACOGNOSY

SCREENING ANTI-BACTERIAL ACTIVITY AND MOLECULAR IDENTIFICATION OF LACTIC ACID BACTERIA (LAB) FROM FERMENTED CABBAGE (*BRASSICA OLERACEA L.*) AGAINST *SHIGELLA DYSENTERIAE* PATHOGEN BACTERIA

Fitri Yuniarti*, Wahyu Hidayati, Puji Astuti, and Khansa Nabilah

ABSTRACT

Objective: Lactic Acid Bacteria (LAB) are often found naturally in foodstuffs such as vegetables and fruits. Cabbage fermentation is one of the best sources for producing Lactic Acid Bacteria which contains antibacterial compounds such as bacteriocin, hydrogen peroxide, and organic acids. The aims of this study were to isolate LAB, to screen for antibacterial activity, and to identify the selected isolates. Methods: This study began with the isolation of Lactic Acid Bacteria from fermented cabbage, continued with screening for antibacterial activity using the disc diffusion method and molecular identification of isolates with the highest antibacterial activity using the PCR method. Results: After isolation, 6 isolates were obtained, namely K31, K32, K33, K34, K35, K36. The results of the antibacterial activity test showed that K32 isolate had the highest activity against the test bacteria Shigella dysenteriae. *Molecular identification by PCR method and sequencing of amplification results showed that isolate K32 had 99% similarity to* Lactobacillus buchneri *strain JCM 115. Conclusion: From the results of the study, it can be concluded that fermented cabbage contains Lactic Acid Bacteria which has antibacterial activity against* Shigella dysenteriae.

KEYWORDS:
Fermented Cabbage;
Lactic Acid Bacteria;
Antibacterial;
Shigella dysenteriae;
PCR.

***Corresponding author:**
Email address:
fitri_yuniarti@uhamka.ac.id

Authors' Affiliation:
Fakultas Farmasi dan Sains Universitas Muhammadiyah Prof Dr Hamka, Jl Delima II/IV Klender, Jakarta Timur, 13460, Indonesia.

22B - PHARMACY PRACTICE

A PROSPECTIVE STUDY ON DRUG INDUCED HEPATIC AND RENAL DYSFUNCTION AMONG INPATIENTS AT A TERTIARY CARE HOSPITAL

Dr T.Vithya[1]*, Yamini Pooja[2] , Dr. Manoharan[3], and Dr. Shankar Prasad[3]

ABSTRACT

Objectives: To study the incidence of drug induced liver and kidney injury among Inpatients, and to identify the time relationship between drug exposure, onset of reaction, and most common class of drugs causing DILI and DIKI. Methodology: A prospective hospital based observational study was conducted for a period of 9 months at a tertiary care Hospital. All Inpatients above 18 year of age who developed DILI and DIKI were included. Known cases of liver and kidney disease, pregnant, lactating women were excluded. DILI was analyzed through M & V CDS scale and DIKI through RIFLE criteria. Results: Out of 127 patients, 82 had DIKI and 45 had DILI. Cardiovascular drugs were the commonest drugs involved in DIKI followed by Anti-microbial and ATT caused DILI. Out of 82 patients, (RIFLE criteria) - 37 patients (45.1%) reported no AKI, 28 patients (34.1%) were at risk, 12 patients (14.6%) as injury, and 5 patients (6.1%) were considered as failure. Out of 45 DIH patients, (M & V CDS scaling score), 37 patients (82.2%) were reported under possible (10 – 13), 4 patients (8.9%) as probable (14 – 17), followed by 3 patients (6.7%) as unlikely (6 – 9) and 1 patient (2.2%) as definitive > 17.

KEYWORDS:
DILI;
DIKI;
RIFLE;
M & V.

***Corresponding author:**
Email address:
vithijas@gmail.com

Authors' Affiliation:
[1]Professor, Department of Pharmacy Practice, Al Ameen College of Pharmacy, Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka, India
[2]Pharm D student, Department of Pharmacy practice, Al Ameen College of Pharmacy, Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka, India
[3]Nephrologist, St Philomena's Hospital, Bangalore, Karnataka, India
[3]Medical Director, St Philomena'S Hospital, Bangalore, Karnataka, India.

23B - PHARMACEUTICAL ANALYSIS

THE QUANTITATIVE ANALYSIS OF ALKALOIDS IN *PTEROCARPUS INDICUS* WILLD. LEAVES ETHANOL EXTRACT WITH MACERATION AND SOXHLETATION EXTRACTION METHODS

Yeni Yeni*, Hurip Budi Riyanti, and Lucy Syifa Griselda

ABSTRACT

Pterocarpus indicus *Willd. is one of the plants that can be used for the prevention and treatment of diseases. The leaves of this plant contain secondary metabolites such as alkaloids, tannins, saponins, glycosides and flavonoids. The aim of this study is to determine the effect of the extraction method on the levels of alkaloids contained in the ethanol extract of P. indicus leaves. The extraction of alkaloid compounds was carried out using maceration and soxhletation extraction methods. Determination of alkaloid content was conducted using UV-Vis spectrophotometer. The yield of maceration extract was 10.6375% and the yield of soxhletation extract was 24.04%. The results of the quantitative analysis of the maceration extract were 166.8792 ± 3.1288 mg reserpine equivalent/g and the results of the quantitative analysis of the soxhletation extract were 85.6670 ± 2.5871 mg reserpine equivalent/g. Based on the independent sample T-test, a significance of 0.000004 (<0.05) was obtained. It means that there is a significant difference in the levels of alkaloids in P. indicus by maceration and soxhletation methods.*

KEYWORDS:
Alkaloid;
Pterocarpus indicus;
Maceration;
Soxhletation;
UV-Vis spectrophotometer.

***Corresponding author:**
Email address:
yeni@uhamka.ac.id

Authors' Affiliation:
Department of Pharmacy, Universitas Muhammadiyah Prof. DR. HAMKA, Jalan Delima II/IV-13460, Jakarta, Indonesia

KNOWLEDGE, ATTITUDE AND BEHAVIOR OF WOMAN TOWARD SUNSCREEN IN RURAL AREA IN INDONESIA

Nora Wulandari*, Utami Nabiilah, and Yudi Srifiana

ABSTRACT

Excessive exposure to ultraviolet rays could bring an impact on skin health. Sunscreen is a cosmetic preparation that protects the skin from exposure to ultraviolet rays. One of the preventions to overcome the exposure to UV rays is by using sunscreen. This study aimed to determine the knowledge, attitude, and behavior toward the use of sunscreen in the rural area in Indonesia. This was an observational study which was conducted in Sungailiat District, Indonesia. Knowledge, attitude, and behavior assessed using developed questionnaire. Collected data statistically analyzed using univariate analysis to obtain the frequency distribution of each variable, and Spearman's rho test applied to get correlation between each variable. A total of 403 respondents were obtained as the sample of this study. The results showed that 56.3% of respondents had good knowledge, 99.8% of respondents had a positive attitude, and 45.2% of respondents had good behavior toward sunscreen to prevent the negative effects of UV exposure. Bivariate analysis found there was a significant correlation (P=0.001) between each variable with positive direction. As this study was conducted in a coastal area, which is frequently exposed to the sun, the residents appeared to be aware about sunscreen and the use of it.

KEYWORDS:
Knowledge;
Attitude;
Behavior;
Sunscreen.

***Corresponding author:**
Email address:
wulandari.nora@uhamka.ac.id

Authors' Affiliation:
Faculty of Pharmacy and Science, University of Muhammadiyah Prof. DR. HAMKA, Indonesia.

25B – A REVIEW

BIOPHARMACEUTICAL ASPECTS OF IVABRADINE IN HEART FAILURE AND HEART RATE REDUCTION

Indrawijaya, Yen Yen Ari[1]*, Sargo, Siti Sjamsiah[2], and Suharjono, Suharjono[2]

ABSTRACT

Background: Describing and evaluating the components and effects of patient education interventions is important to encourage and enable more effective interventions to be conducted. A few reviews provided evidence that patient education interventions are beneficial for children and adolescents with type I diabetes mellitus (T1DM). Objectives: This scoping review aims to give an overview of published interventions and the potential outcomes of education interventions for children and adolescents with T1DM. Methods: Relevant literature published between 2000 and 2021 were comprehensively reviewed. Arksey and O'Malley's framework for scoping studies guided the review process and thematic analysis was undertaken to synthesize extracted data. Results: Of the 5015 articles identified, 49 studies were included. Majority of the interventions were multidisciplinary, involving interactive sessions, motivating interviews, game-based sessions or peer education interventions under the supervision of health care providers. The interventions were delivered through face-to-face, online or a mixture of both methods. Majority of studies showed improvement of glycated hemoglobin (HbA1c), with or without improvement in other outcomes. Conclusion: Different education interventions have positive impacts on children and adolescents with T1DM. The results support the usefulness of patient education interventions in improving glycemic control.

KEYWORDS:
Ivabradine;
Biopharmaceutical aspects;
Heart Failure;
Heart Rate.

***Corresponding author:**
Email address:
yenyen.indrawijaya@gmail.com

Authors' Affiliation:
[1]Master Program of Clinical Pharmacy, Faculty of Pharmacy, Universitas Airlangga
[2]Department of Clinical Pharmacy, Faculty of Pharmacy, UniversitasAirlangga.

Platinum Sponsor

BUCHI Malaysia Sdn. Bhd.

Platinum Sponsor

Pharmaniaga Bhd.

Other Sponsor

Johnson & Johnson
Sdn. Bhd.

Your Global Link
K-Link International
Sdn. Bhd.

by Dream AI Enterprise

Kulliyyah of Pharmacy, International Islamic University Malaysia

X

Faculty of Pharmacy and Sciences, Universitas Muhammadiyah Prof. Dr. Hamka

https://conference.iium.edu.my/ICOPS/index.php/home/

POLYVINYLPYRROLIDONE AS OPTIMUM BINDER ON ZINGIBER EXTRACT TABLET FORMULATION

Inding Gusmayadi, Fahjar Prisiska, and Kharisma Utami

Faculty of Pharmacy and Science UHAMKA, Jakarta, Indonesia

BACKGROUND

- Red Ginger extract plus zink give effect as anti-atheroschlerosis on rabbit (Priyanto, 2013)
- The dose of combined of Red Ginger Extract and Zink is 50 mg/KgBW of Extract and 6,7 mg/KgBW of Zink
- To make easy on administration formulated into tablet dosage form
- Many kinds of tablet dosage form were investigated: Conventional Tablet, Chewable Tablets, and Lozenges
- Some of excipients also had been be tried to find out the best formula for this active ingredient, combine of Red Ginger Extract plus Zink

Focused on This Research

- To make easy on administration make into tablet
- Standard formula for conventional tablet
- Using Polyvinylpyrrolidone (PVP) as binder
- Previous research find out the range of PVP 2.8-3.9% possible for good binder
- Aimed at find out the optimum concentration of PVP as binder

METHODOLOGY

- Material: API → Zinger Extract + Zn
- Make into 5 formulas with concentration 2.8, 3.1, 3.4, 3.7, and 3.9
- First Step: Granulation
- Second Step: Evaluation of granule
- Third Step: Compression tablet
- Fourth Step: Evaluation of tablet

RESULTS

Evaluation of Granule

Moisture Content
Flowability
Compressibility

Evaluation of Tablets

Weigh Uniformity
Hardness
Friability and Abrasive
Disintegration Time

Moisture Content, Flowability, and Compressibility

Formula	MC (%)	Flowability (sec)	Compressibility (%)
1	4 ± 0.6	4,3 ± 0.08	9 ± 0.5
2	3 ± 0.4	4,0 ± 0.11	9 ± 0.6
3	3 ± 0.2	3,9 ± 0.16	8 ± 0.8
4	3 ± 0.2	3,9 ± 0.07	6 ± 0.9
5	3 ± 0.2	3,5 ± 0.04	6± 0.1

Weigh Uniformity, Friability, and Abrasive

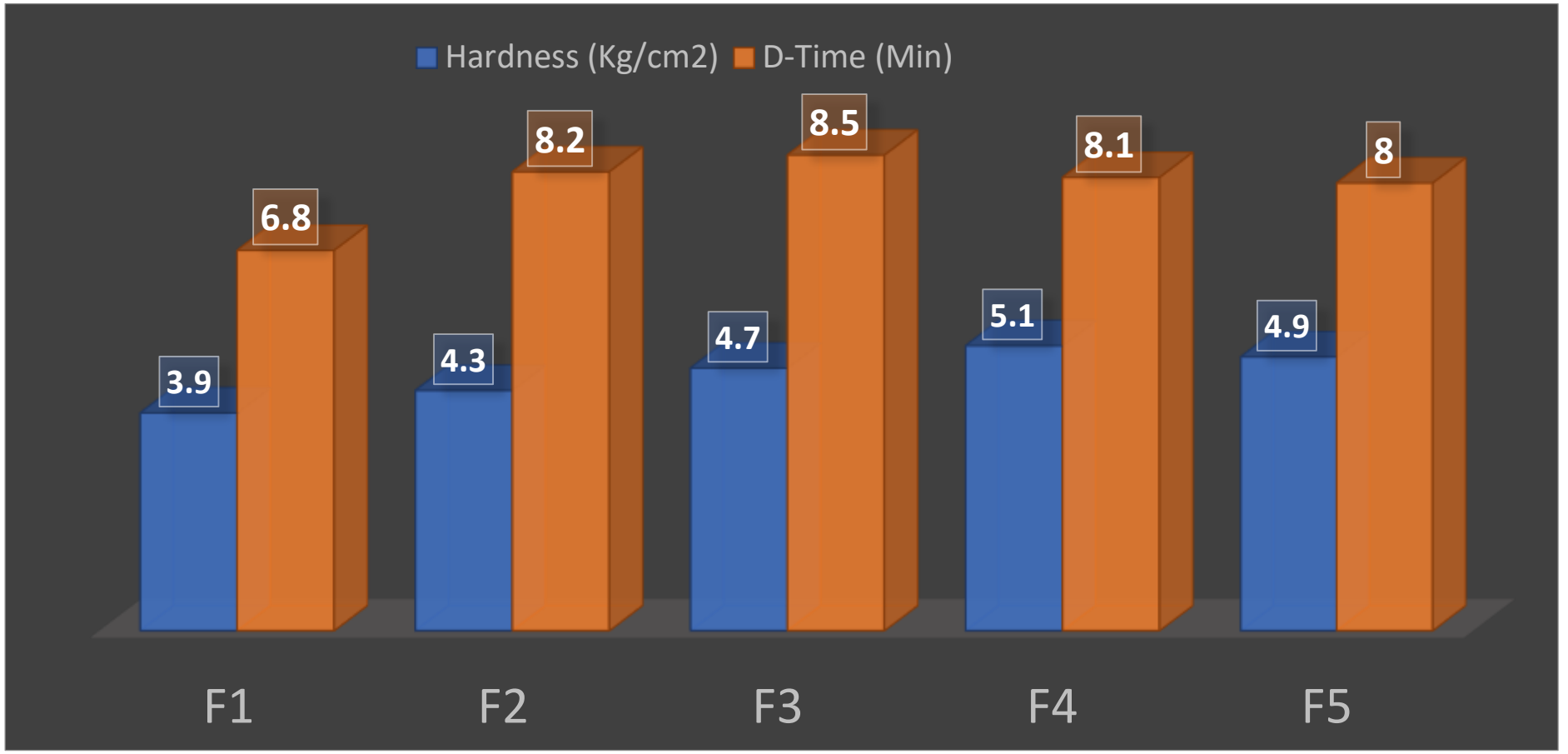
Weigh Uniformity:

- By Indonesian Pharmacopoeia Third Edition Rule, deviation of weigh no more 2 tablets have than 5% of mean and no tablet have more than 10%
- All formulas fulfil the standard of requirement

Friability and Abrasive:

- In this parameter all formulas get less than 1% of Loss on weight after treatment, and no tablet of the formula are friable

Hardness and Disintegration Time



CONCLUSION

All Formulas fulfil the standard of tablet requirement

By The Hardness and Disintegration Time, Formula 4 get highest of Hardness meanwhiles short disintegration time

The optimum concentration is Formula number 4 at 3.7 % of PVP

THANK YOU

AN INTERNATIONAL AWARD-WINNING INSTITUTION FOR SUSTAINABILITY

LEADING THE WAY
KHALIFAH · AMANAH · IQRA' · RAHMATAN LIL 'ALAMIN
LEADING THE WORLD

Integrity, Trusty, Compassion

Certificate of Participation

This certificate is proudly presented to

Fahjar Prisiska

as

Participant

in the

International Conference of Pharmaceutical Sciences
ICOPS@IIUM 2022

on 8th - 9th August 2022

PROF. DR. MUHAMMAD TAHER BIN BAKHTIAR
Chairman of ICOPS@IIUM 2022