

5th INTERNATIONAL CONFERENCE INTERPROFESSIONAL HEALTH COLLABORATION AND COMMUNITY EMPOWERMENT

TRANSFORMATION of HEALTH, APPLIED TECHNOLOGY AND DIGITALIZATION of EDUCATION AFTER THE COVID-19

Collaboration Between Center of Excellence BALOKDAYAMAS and Center of Research and Community Services Poltekkes Kemenkes Bandung.

MAIN SPEAKER



"Herbal Medicine Development"
Prof. Muhammad Taher
International Islamic University - Malaysia



"Healthy Menu Application"
Dr. Nurul Hakimah, M. Kes
Health Polytechnic of Malang - Indonesia



"Dental Hygiene Calendar Application to monitor Community Dental and Oral Health"
Deru Marahlaut S.SiT, M.Kes
Health Polytechnic of Bandung - Indonesia



"Applied Technology of Health After The Covid-19 Pandemic"
Prof. Ashir Ahmed
Kyushu University - Japan



"How can food processing contribute to sustainable diets in Indonesia"
Idolo Ifie, Ph.D
School of Food Science and Nutrition University of Leeds - UK



"Digitalization of Education after the Covid-19 Pandemic"
Anssi Mähönen, PhD
Savonia University of Applied Science in Kuopio - Finland

KEYNOTE SPEAKER



drg. Arianti Anaya, MKM
Director General of Health Workers of Republic of Indonesia



Pujiono, SKM., M.Kes
Acting Director of Poltekkes Kemenkes Bandung

**16-17
NOVEMBER
2022**

Participants Benefits :
e-Certificate
e-Proceeding
Best oral presentation
Relation

EXPERT SESSION

LECTURE :

Prof. Dr. Hotma Rumahorbo, SKp, M.Epid -
Dr. Imam Makhrus, S.Kep, M.Kes -
Dr. Suparman, SKM, M.Sc -
Angreni Ayuhasuti, M.Si.Apt -
Asep lin Nur Indra M.Si -
Mamat, S.KM., M.Kes -
Payzar Wahyudi, S.Kep., M.P.H -
Rahmat Sudiayat, S.Kp., M.Kes -
Yonan Heriyanto, S.Si.T., M.Kes -
Yulinda, S.ST., MPH -

STUDENT :

Adistya Meirani -
Murni Widayanti -
Renan Pratama -



FREE Register at :

October 21 - November 10, 2022

<https://tinyurl.com/PolkesbanConference2022>

TIMELINE :

Deadline full paper : November 6, 2022
Submit to : <https://bit.ly/PolkesbanConference2022>
Download template : <https://bit.ly/Manuscript-Template>
Paper review : November 7 - 11, 2022
Announcement for selected papers : November 14, 2022
The conference and oral presentation : November 16 - 17, 2022

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Certificate of Participation

No.DP.01.02/01/4391/2022

This is presented to

Prof. Muhammad Taher

As a Speaker of

International Webinar

**TRANSFORMATION of HEALTH, APPLIED TECHNOLOGY AND DIGITALIZATION
of EDUCATION AFTER THE COVID-19**

**5th INTERNATIONAL CONFERENCE INTERPROFESSIONAL HEALTH
COLLABORATION AND COMMUNITY EMPOWERMENT**

Bandung, 16 - 17 November 2022



Director
of Poltekkes Kemenkes Bandung

Rujiono, SKM., M.Kes

Chairman

Dr. Elanda Fikri, SKM., M.Kes

**RUNDOWN 5TH INTERNATIONAL CONFERENCE
INTERPROFESSIONAL COLLABORATION AND COMMUNITY EMPOWERMENT
POLITEKNIK KESEHATAN KEMENKES BANDUNG
16-17 November 2022**

Day/Date : Wednesday, 16 November 2022
Time : 08.00 – 16.00 (Jakarta Time)
Media : Zoom Meeting & You Tube Live Streaming

	TIME (JAKARTA TIME) GMT +7	ACTIVITY	MC	MODERATOR
	08.00-08.15 AM 07.45-08.00 AM	Registration National Anthem and Hymn of Health of Polytechnic of Bandung		
1	08.00-08.30 AM	Opening	MC1	Moderator 1
		Welcome speech from Chairman : Dr. Elanda Fikri, SKM, M.Kes.		
		Welcome speech from Plt Director of Poltekkes Kemenkes Bandung Pujiono, S.KM., M.Kes		
		Prayer Ujang Nurjaman, S.KM., M.Kes.		
		Take a Photo		
		Delivery of Rules		
	08.30-09.00 AM	Keynote Speaker Director General of Health Worker, Ministry of Health, Indonesia Drg. Arianti Anaya, MKM (Health Transformation in Indonesia)	MC1	Moderator 1
2	Main Sesion		MC1	Moderator 1
	09.00-09.45 AM	Speaker 1 Prof. Muhammad Taher International Islamic University Malaysia (herbal medicine development)		
	09.45-10.00 AM	Discussion		
	10.00-10.45 AM	Speaker 2 Idolo Ifie School of Food Science and Nutrition University of Leeds (UK) (How can food processing contribute to sustainable diets in Indonesia)		
	10.45-11.00 AM	Discussion		
	11.00-11.45 AM	Speaker 3 Deru Marahlaut S.SiT, M.Kes (Indonesia) Dental Hygiene Calendar Application to monitor Community Dental and Oral Health		
	11.45-12.00 AM	Discussion		
	12.00-12.15 PM	Conclusion, Closing		
	12.15-13.00 PM	BREAK		
	13.00-13.45 PM	Speaker 4 Prof. Ashir Ahmed (Japan) Applied Technology of Health After The Covid-19 Pandemic	MC2	Moderator 2
	13.45-14.00 PM	Discussion	MC2	Moderator 2
	14.00-14.45 PM	Speaker 5 (SAVONIA – UAS)(Finlandia) Digitalization of Education after the Covid-19 Pandemic.	MC2	Moderator 2
	14.45-15.00 PM	Discussion	MC2	Moderator 2
	15.00-15.45 PM	Speaker 6 Dr. Nurul Hakimah, M. Kes Health Polytechnic of Malang (Indonesia) Healthy Menu Application	MC2	Moderator 2
	15.45-16.00 PM	Discussion	MC2	Moderator 2

	TIME (JAKARTA TIME) GMT +7	ACTIVITY	MC	MODERATOR
	16.00-16.15 PM	Announcement	MC2	



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LEADING THE WAY
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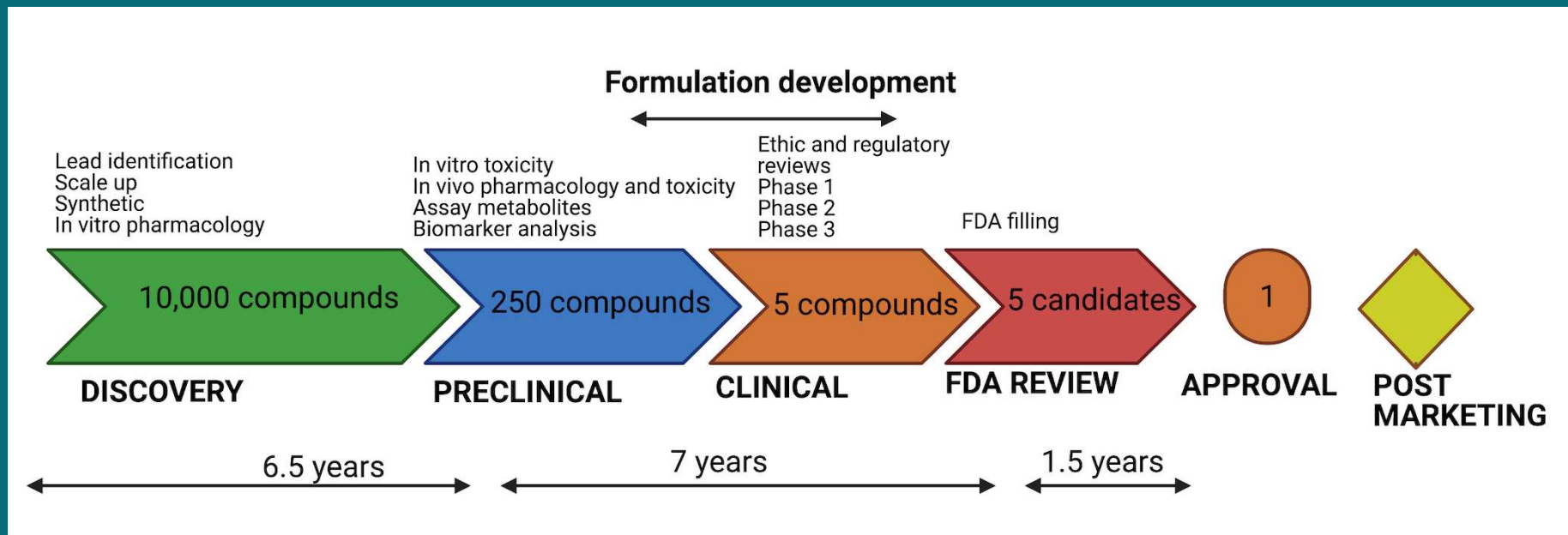
AN INTERNATIONAL AWARD-WINNING INSTITUTION FOR SUSTAINABILITY



HERBAL MEDICINE DEVELOPMENT

By: Muhammad Taher
Kulliyyah of Pharmacy, IIUM

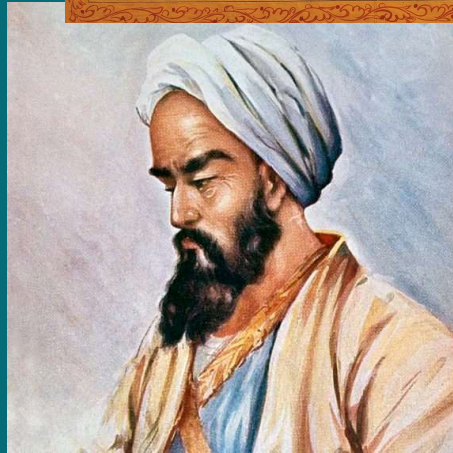
Chart: Drug/herbal discovery and development



COST: USD 1 billion
Duration: 12-15 years



Natural products/ herbals have been the forefront of medicine to treat human disease The milestones



Jabir ibn Hayyan (721 AD)
Founder of modern pharmacy



Ibn Sina (980 M)
Modern Physician

2400 B.C.; on clay tablets (Mesopotamia),
1534 B.C.; the Ebers Papyrus (9th year of Amenhotep 1
reign),

721 AD; Jabir ibn Hayyan, founder of modern pharmacy
980 AD; Ibn Sina, Modern Physician

1578 AD; the Chinese Materia Medica, document written
by Li Shizhen in 1578 (Zheng 1988).

1804 AD; Serturner who dealt with medicinal herbs to
the isolation of morphine





Maqasid al-Shariah (objective of Shariah)

Protecting life

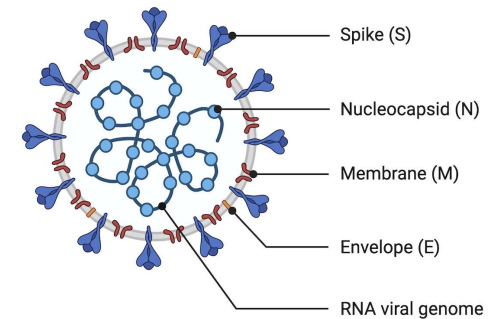
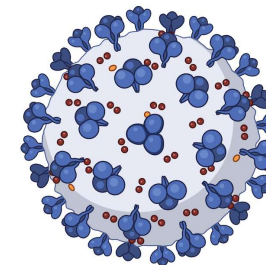
ijtihad encourages the effort to research on drug, cosmetic and vaccines.

“There is no disease that Allah has created, except that Allah also has created its cure.”

(Sahih Bukhari)



Human Coronavirus Structure

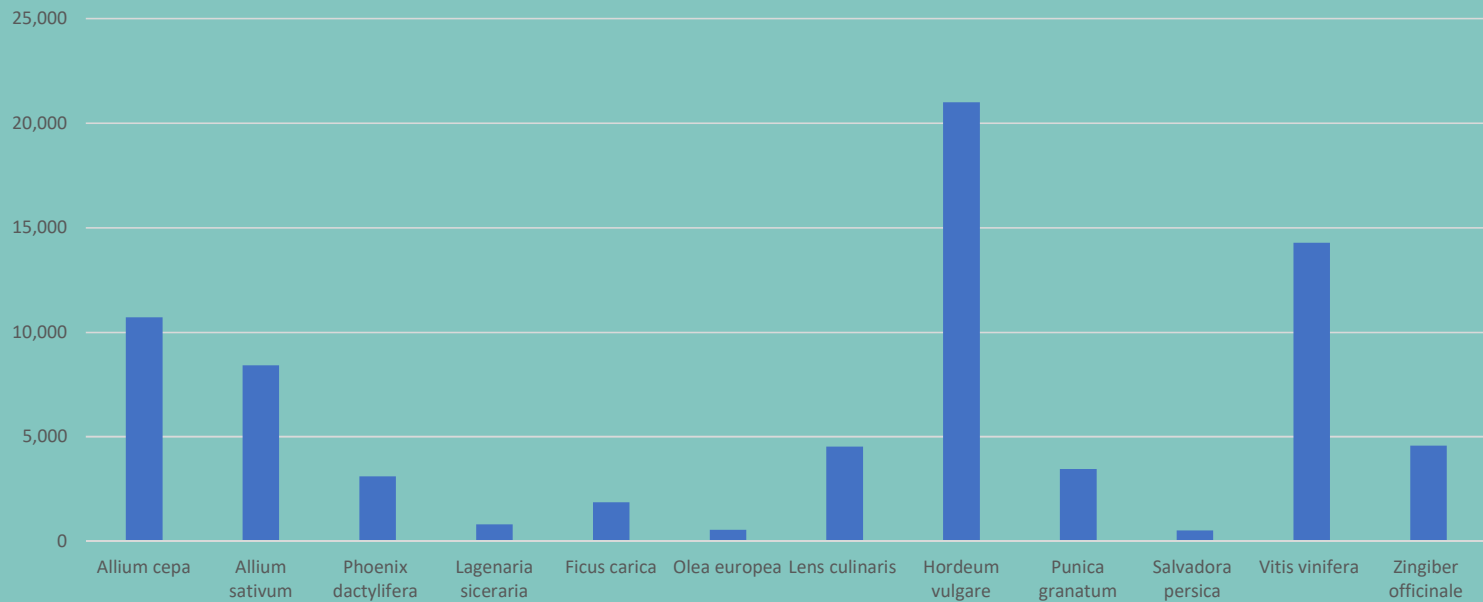




Natural Medicines According to Islamic Scriptures

Qur'anic plants
Prophetic plants

Number of articles in Scopus



El-Seedi et 2019



Herbs used in traditional Medicines Jamu in Malay Culture/Nusantara



What are the challenges?

1. Dosage
2. Stability
3. Standardisation
4. Hygiene
5. Additive/adulteration
vulnerable to adulteration are diabetes, calm and sleep,
sexual dysfunction, pain relief, and rheumatism



Infusion of rhizomes





Commercialised traditional medicines



- In the form of extract (Jamu)
- Standardized active the compound (preclinical/obat terstandar)
- Measured dose (Clinical/Biofarmaka)
 - GMP process
 - Increased stability





Herbal medicine preparation



- Extracts
- Decoction
- Tincture
- Syrup
- Eyewash





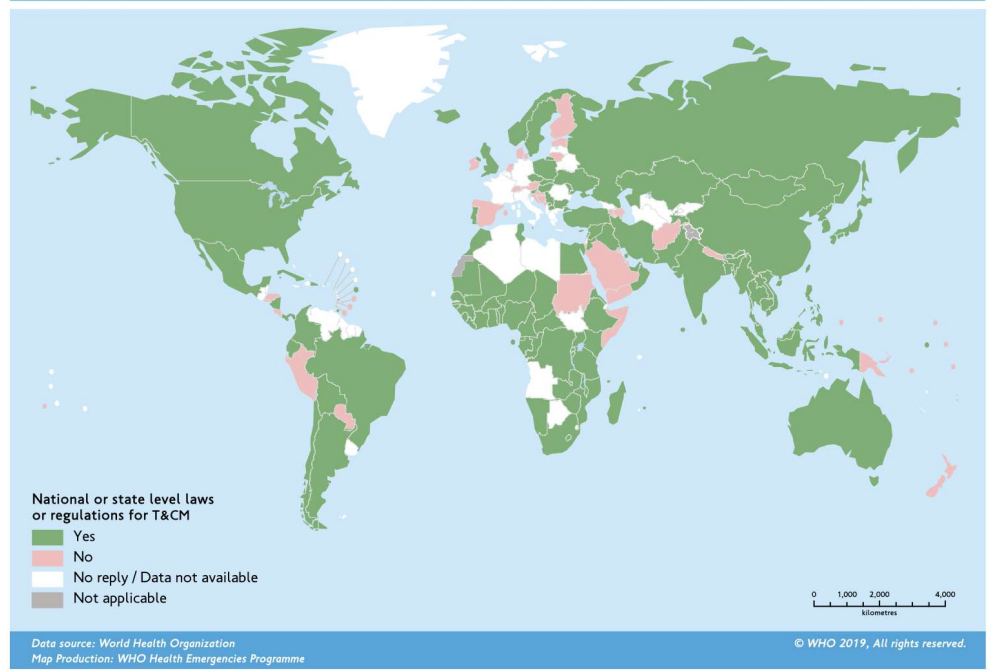
Traditional medicine (TM)-Global market demand



- Demand
 - In Africa (90%) and in India (70%) of the population depend on traditional medicine
- (TCM)~ 3000 years
- Top selling botanical: *Ginkgo biloba*, *Allium sativum* (garlic), and *Panax ginseng*
- 177 drugs approved worldwide for treatment of cancer, more than 70% are based on natural products or mimetics
- Regulations



Fig. 1.7. Member States with a national or state level laws or regulations for T&CM, 2018



(Wachtel-Galor & Benzie, 2011)

In Indonesia

- 30,000 plants potential
- 1,845 species used as medicine
- Use by 70% people in rural area
- Diseases:
 - Cancer
 - Arthritis/rheumatism
 - High cholesterol
 - Stroke
 - Diabetes
 - Kidney disease



<https://ipb.ac.id/news/index/2020/7/as-many-as-80-percent-of-the-world-medicinal-plants-in-indonesia/3fd04650da10a2f332506fa46c92288f>

Small molecules from NATURE used as drugs

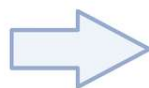
Of the 1,135 new drugs approved from 1981 to 2010, 50 % were of NP origin (natural, derivatives and analogues) (Cragg, 2007)

Facts

95 % of the world's biodiversity has not been evaluated

Opportunity

2 million species of plants, animals, fungi and microorganisms (David et al., 2014)

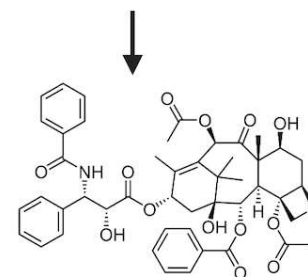


Herbal phytopharmaceuticals which have reached US \$60 billion, with annual growth rates of 5–15 % represent a significant share of the total world pharmaceutical market (Naoghare and Song 2010)

Pharma industry
Sponsoring/developing



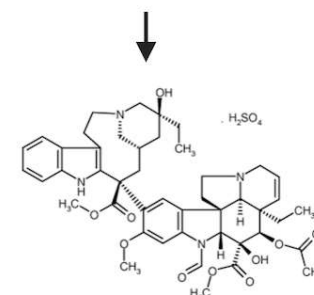
Taxus brevifolia



Paclitaxel



Catharanthus roseus



Vincristine





Global challenges in drug/herbal discovery and development



New drugs

- Anticancer (targeted)
 - Chemicals
 - Macromolecules
- Antibiotics (multidrug resistant bacteria)

New vaccines

- New strain of virus
 - Covid-19

Improved Drug Delivery

- Increase efficacy and reduce toxicity





SOURCE OF DRUGS



Natural products

Chemical synthetics

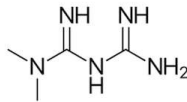
Biosynthetic/biotransformation

Recombinant DNA products

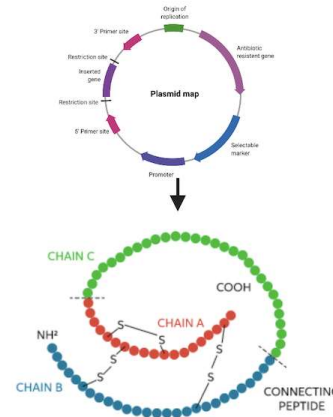
Small Molecule

Macromolecule

Small molecule vs macromolecule



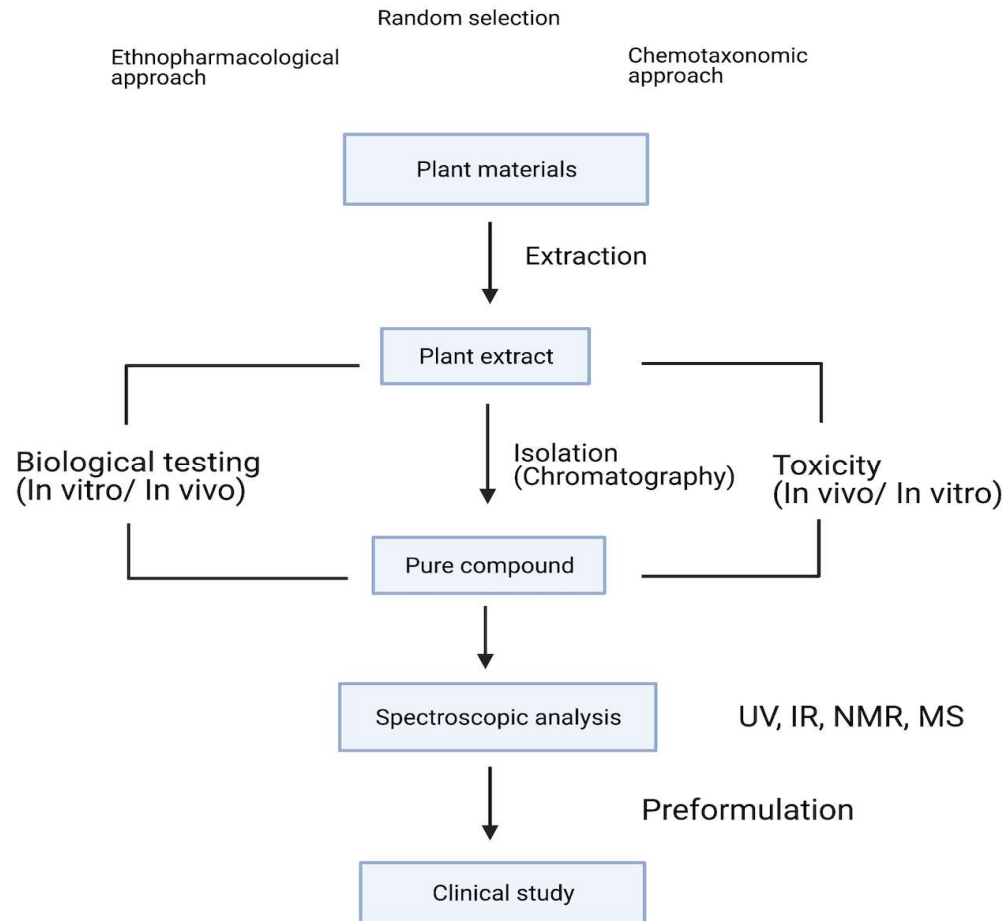
Metformin



Insulin

Small molecule	Macromolecule
Simple	Large
Single defined structure	Complex structure
Predictable chemical reaction	Derived from living cells
Produce identical product	Identical clone unlikely
Stable	Sensitive to heat
Easy to characterise	Difficult to characterise
Minimal data packet	Robust data packet

General procedure to develop a new drug from plant sources





In Vitro Studies

The initial step of drug discovery, all potential lead compounds undergo in vitro pharmacology testing

Chemical/reagent,
enzymes,
microbes and cell
lines



Antioxidants
Antidiabetics
Antiinflammatory
Anti-cancer/cytotoxicity,
Anti-hyperglycemic,
Anti-obesity,
Wound healing.

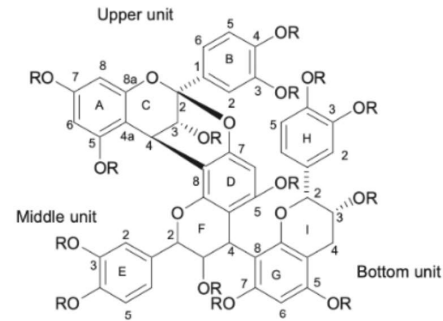


Cinnamon- Antihyperglycaemic-adipocyte cells

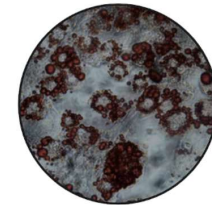
Cinnamon bark



Cinnamtannin B1

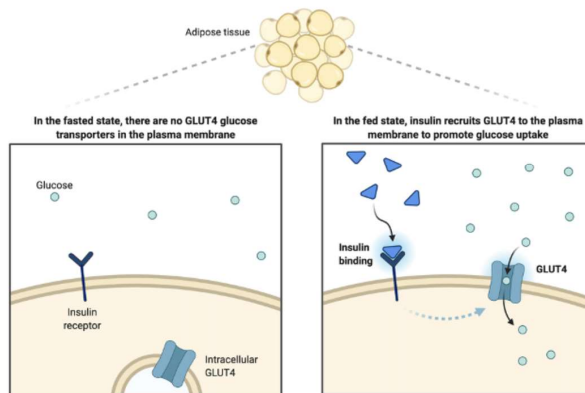


Adipocyte cells-stained



Insulin mimicking activity

Adipocyte cells



TheStar Sweet hopes for diabetics

TOPICS > [Flame on Olympics](#) | [Sabah & Sarawak](#) | [The New Normal](#) | [In 500 Words](#) | [Covid-19 Watch](#) | [EEA 2021](#) | [True or](#)

Sweet hopes for diabetics



NATION

Friday, 06 Jan 2006
12:00 AM MYT

By HAMDAN RAJA ABDULLAH newsdesk@thestar.com.my

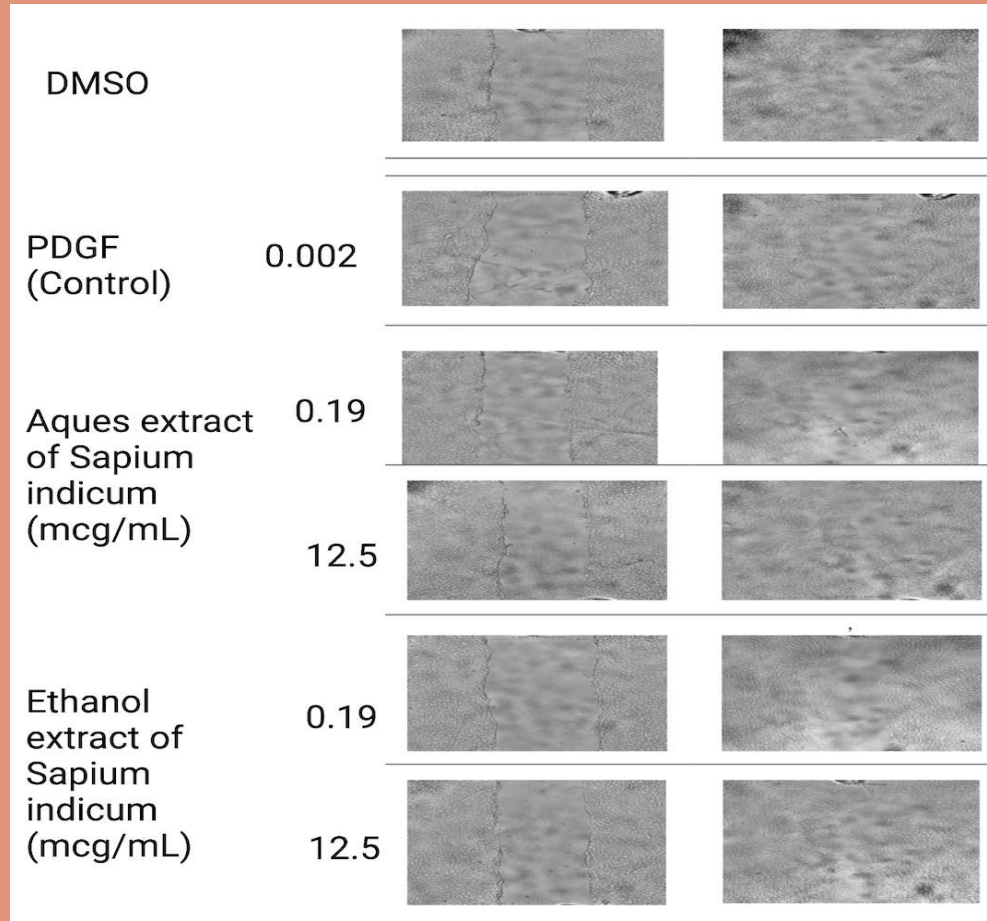
MUAR: Good news for diabetics. A three-year study carried out by Universiti Teknologi Malaysia in Skudai has confirmed previous findings that cinnamon has the potential to lower sugar levels.

Related News

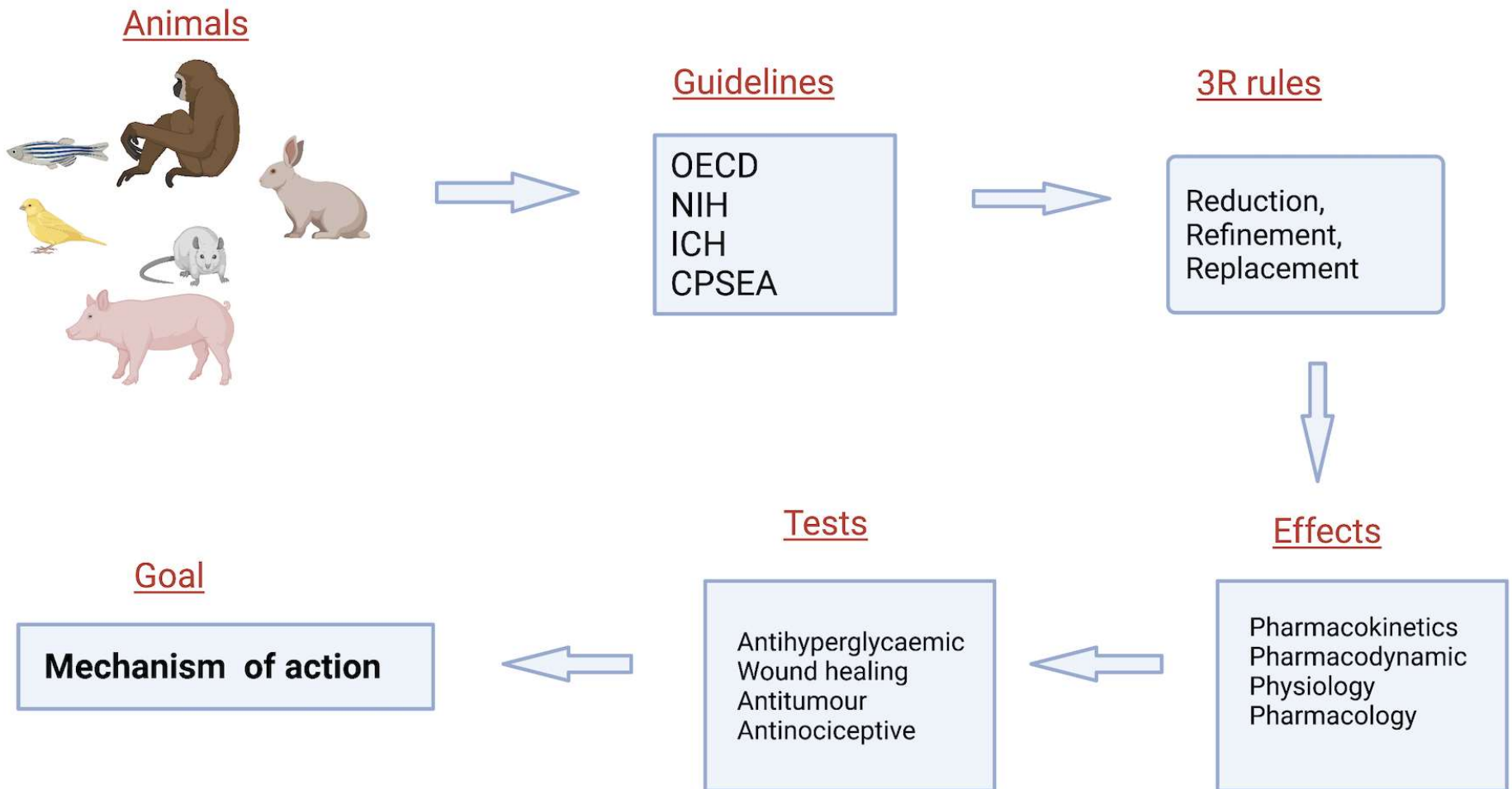
UTM research and development manager Prof Dr Mohammad Roji Sarmidi said yesterday their research showed that the spice, known as *kayu manis* locally, has positive



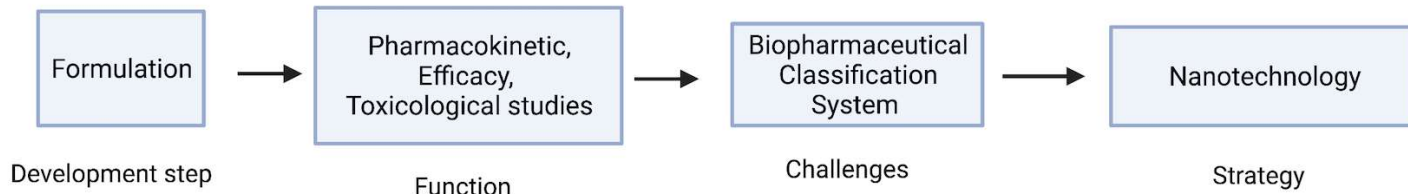
Wound healing-using cell culture



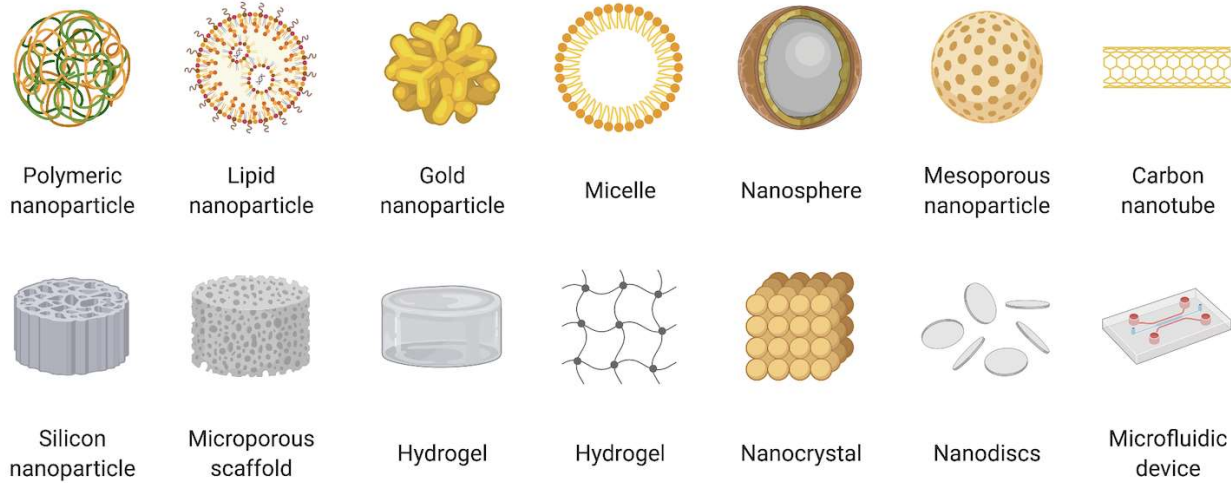
Animal study



DEVELOPMENT DRUG FORMULATION

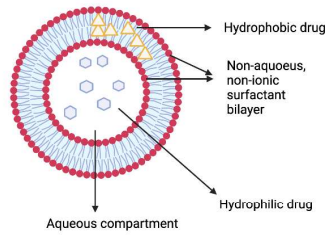


NANOFORMULATION

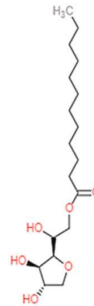


Biocompatible, biodegradable, non-immunogenic, have a long shelf life, exhibit high stability.

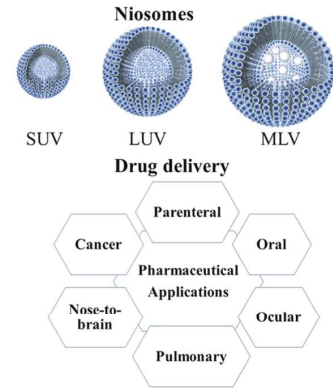
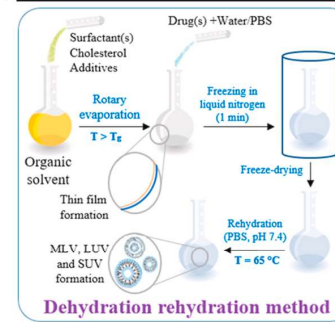
NIOSOMAL FORMULATION



Nonionic surfactants
(+ cholesterol + charge inducers)

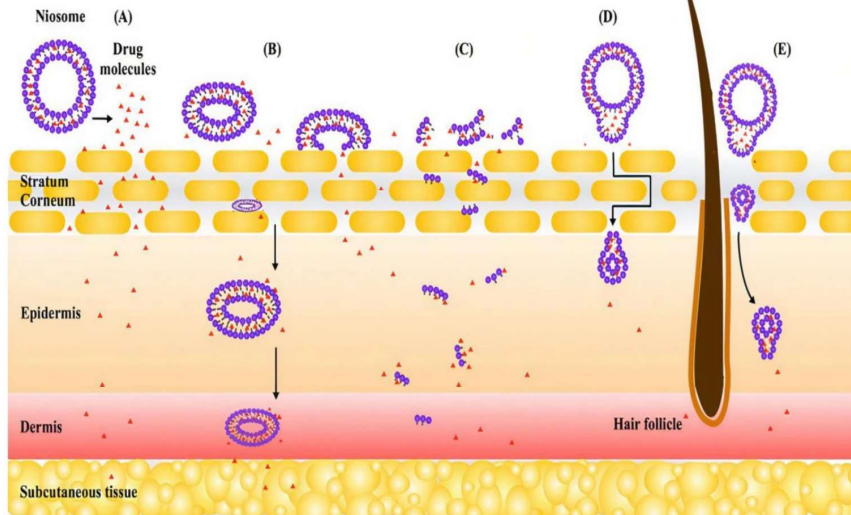


Various preparation techniques



Masjedi et 2021, <https://doi.org/10.1016/j.jddst.2020.102234>

Delivery process



Bhavni et al, 2020. <https://doi.org/10.1186/s43094-020-00117-y>

Aceclofenac Proniosom, Rana et al 2020
Raloxifene tansfersome, Mahmood et al 2017



Herbal Legislation

- The range between therapeutic and toxic doses is called “therapeutic window.”
- The word “natural” is good, every year, huge damage is caused by the inappropriate use of the so-called natural products.
- Approximately 123 million people use these products for various purposes,
 - obesity,
 - to prevent cancer,
 - to ease pain,
 - to enhance sexual performance,
 - to stimulate mood,
 - concentration, and memory,
 - to enhance immune responses,
 - to increase muscle mass and
 - physical performance



FDA has registered about 2900 cases of toxic effects, including 104 deaths caused primarily by the abuse of *Ephedra*.



Three fundamental principles in herbal development and/or clinical use (Lietman, 2013)



1. Standardization and regulation (rigorously enforced) of the product being studied or being used clinically.



2. Scientific proof of a beneficial clinical effect.



3. Scientific proof of safety (acceptable toxicity) for the patient





Quality Assurance and Quality Control



- Identity (Pharmacognostical testing, Qualitative and Quantitative with reference)
- Purity-Instrumental testing (HPLC, GC)
- Contents-Instrumental (HPLC, GC)
- Microorganism testing- Microbial growth test
- Stability testing-ICH guidelines





Variable composition



- Herbs do not have consistent and standard composition
- Numerous chemical constituent in different part (e.g roots, leaves and fruit)
- Factor affecting the variability: climate, growing conditions, time of harvesting, post harvesting and storage.





Contamination

- Misidentification of species
- Adulterations
- Heavy metal and pesticides





Marker compounds

- Ideal chemical markers should contribute to the therapeutic activity.
- Main application of chemical markers
 1. Identification adulterations
 2. Differentiation of multiple source
 3. Determining best harvest time
 4. Confirmation of collection site
 5. Quality evaluation of herbal parts
 6. Stability testing





Analytical in Quality Control

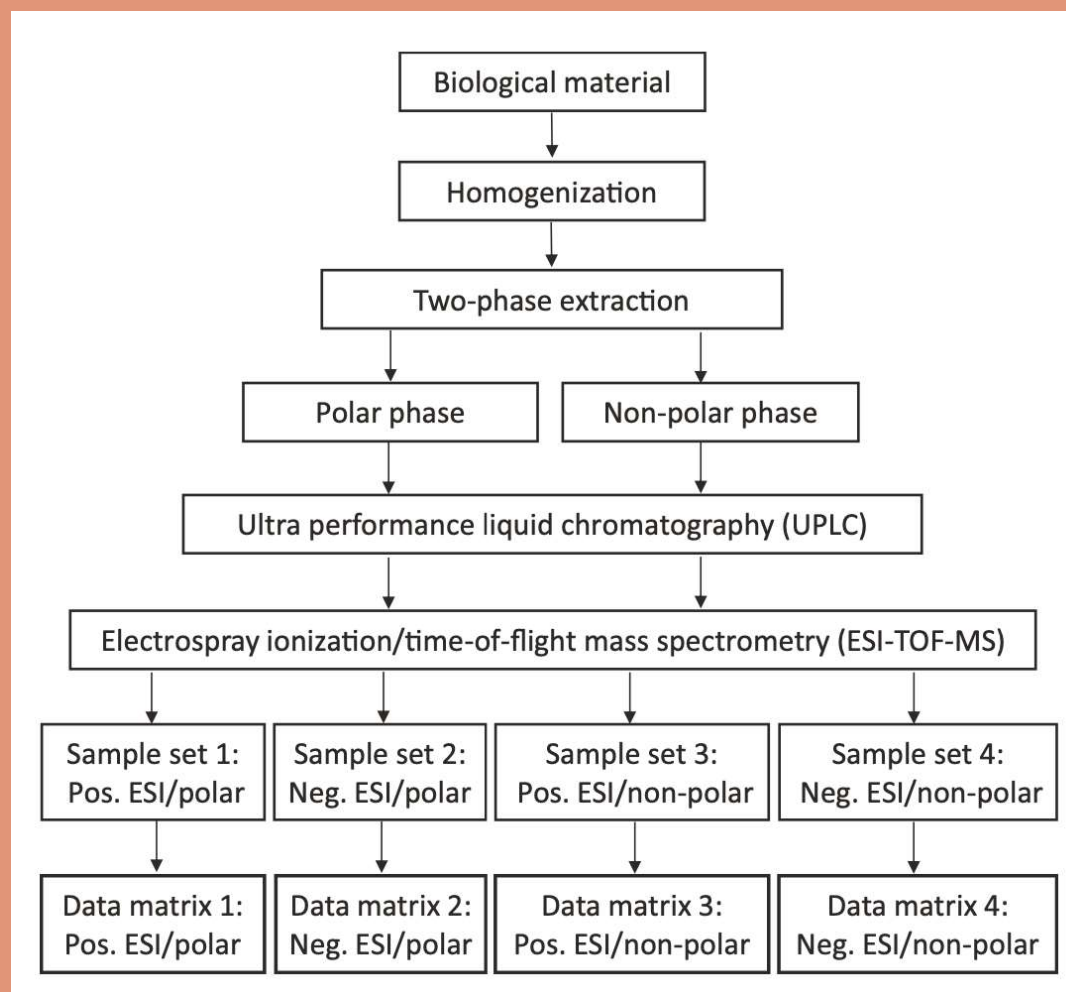


- High Performance Liquid Chromatography
- Gas Chromatography
- Thin Layer Chromatography
- Capillary Electrophoresis
- LC-MS fingerprint

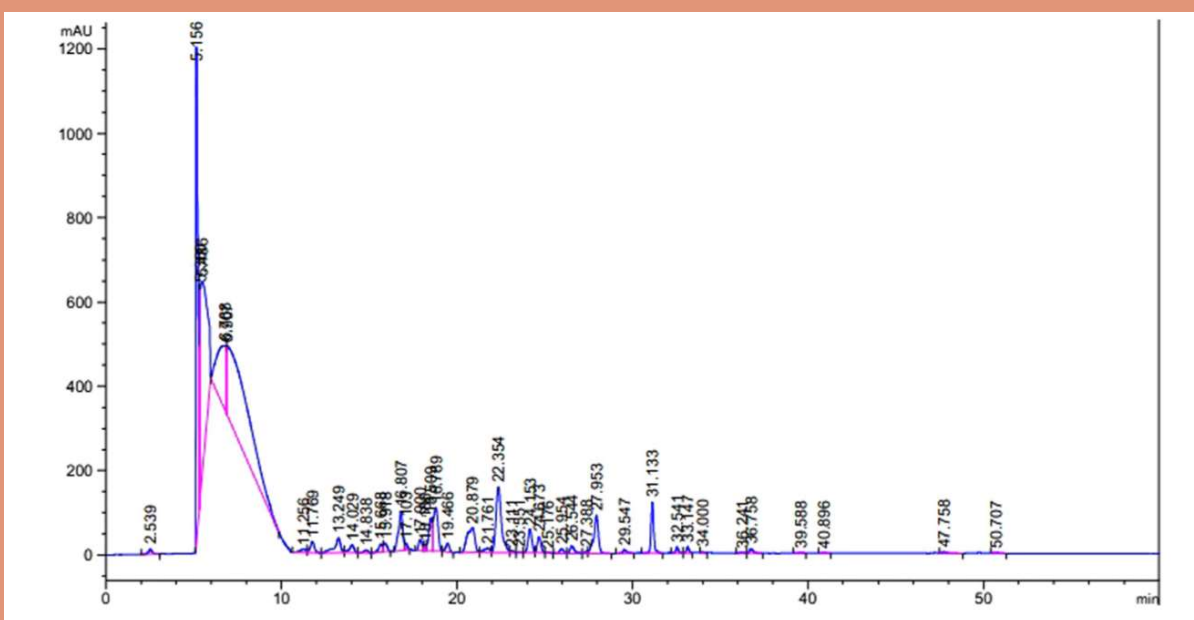




- Metabolite fingerprinting is a comprehensive and comparative nontargeted metabolomics approach



Metabolite fingerprinting HPLC-DAD identification of phenolic compounds in *Olax nana* leaves



Peak	RT (min)	Peak height (mAU)	Peak area %	Proposed identity of compound*	HPLC-DAD λ_{max} (nm)
1	2.5	13.29053	0.320	Ascorbic Acid	244
2	5.2	1168.32886	14.41	Gallic acid derivative	273, 279, 288
3	5.3	504.33762	3.19	Gallic acid derivative	280
4	5.8	456.65558	17.81	Hydroxybenzoic acid derivative	280
5	6.3	151.39925	8.20	Hydroxybenzoic acid derivative	274
6	6.9	163.31013	25.57	Gallic acid derivative	271, 278, 287
7	11.1	8.41879	0.33	Kaempferol-7-O-glucoside	254
8	11.6	26.59516	0.70	<i>p</i> -Coumaric acid derivative	313
9	13.2	35.75774	1.36	Isovitexin-4-O-glucoside	254
10	14.3	18.4162	0.57	Caftaric acid	242; sh 298; 328
11	14.9	6.63179	0.17	Gallic acid derivative	280
12	15.5	19.11495	0.46	Hydroxybenzoic acid derivative	278
13	15.7	19.45154	0.43	Hydroxybenzoic acid derivative	278
14	16.9	92.68282	2.47	<i>p</i> -Hydroxybenzoic acid	256
15	17.0	15.39486	0.23	Caffeoylmalic acid	327, 300, 268
16	17.5	26.84283	0.60	bis-HHDP-glucose	232
17	18.1	14.13607	0.21	Quercetin-3-O-triglucoside	268; 340
18	18.3	77.88322	1.70	Galloyl-HHDP-glucose	232
19	18.9	102.11224	2.93	Apigenin-7-O-rutinoside	254
20	19.9	19.88177	0.46	<i>p</i> -coumaric acid derivative	228, 316

HPLC-DAD chromatogram of methanolic extract of *Olax nana* (Ovais et al., 2018)

Conclusion

- WHO promotes the use of traditional medicines (particularly herbal medicines) in primary health care
- Some countries rely on herbal medicine in their primary health care.
- Herbal medicine development requires scientific support to ensure the quality, efficacy and safety of the product



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Garden of Knowledge and Virtue

KULLIYAH OF PHARMACY

Thank You

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