

UNIVERSITI MALAYA

GQO0064 INTRODUCTION TO MEDICINAL PLANTS

SEMESTER 1 SESSION 2024/2025

THE HISTORY OF PLANT USE IN MEDICINE

PREPARED BY

GROUP 10

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1. Introduction

Medicinal plants served as the basis of healthcare, as they were vital in the early development of medicine and shaped its progression throughout history in ancient civilizations. For instance, the Ebers Papyrus from Egypt in 1550 BCE documented over 876 prescriptions, indicating the widespread usage of plants in medicine (Metwaly et al., 2021). Similarly, Traditional Chinese Medicine in China and Ayurveda in India have used natural products for thousands of years. These practices have greatly influenced the modern development of new drugs to treat diseases (Yuan et al., 2016).

The historical study of plant-based medicine underlines its value in bridging traditional practices and modern pharmacology. While early systems relied on natural plants, modern methods improved these by isolating active compounds, leading to standardized treatments. Many modern medicines, such as aspirin from willow bark, quinine from cinchona bark, and morphine from opium poppies originated from the use of medicinal plants. These examples point out the role of traditional knowledge in guiding the transition to modern science, with around 40% of pharmaceutical products derived from natural sources and enhanced through scientific methods (WHO, 2023).

Thus, understanding the history of plant use in medicine is essential. This includes traditional medicinal systems and key plant species with their evolutions in medicinal practices. The discussion further talks about the challenges of integrating medicinal plants into modern healthcare while exploring opportunities for their broader usage.

2. Literature Review

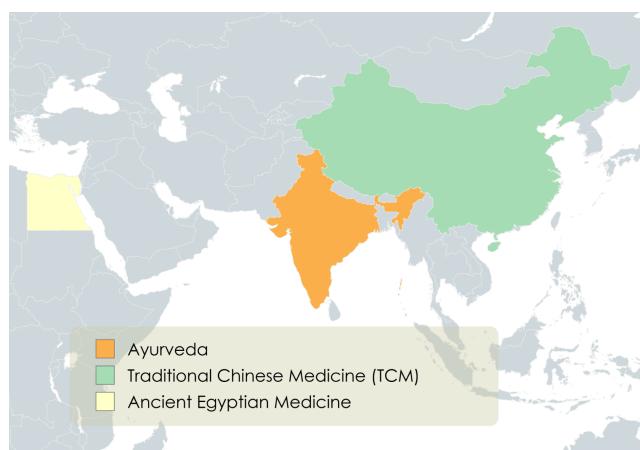
2.1 Traditional Medicinal Systems and Historical Development

Traditional systems of medicine such as Ayurveda, Traditional Chinese Medicine (TCM), and Ancient Egyptian medicine which have contributed greatly to the basic understanding of the use of plants for medicinal purposes. Each of these systems has had a holistic view of health for thousands of years.

Medicinal System	Year of Origin	Origin	Key Plants	Philosophy
Ayurveda	Circa 5000 BCE	India	Turmeric, Ashwagandha	Balances bodily systems using diet, herbal treatments, and yogic breathing.
Traditional Chinese Medicine	Circa 2600 BCE	China	Ginseng, Goji berries	Aims to balance the body's vital energy (qi) using a range of plants.
Egyptian Medicine	Circa 3300 BCE	Egypt	Garlic, Juniper	Utilized herbs extensively for their therapeutic properties.

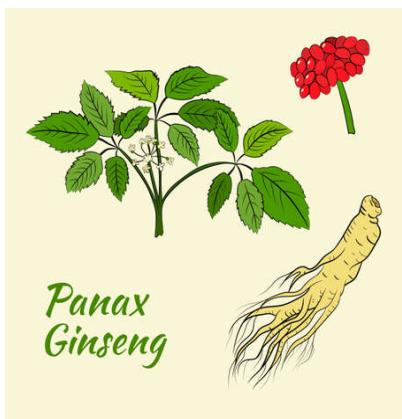
Table 2.1: Ancient Medicinal Systems and Key Plants

The philosophies and practices of these ancient systems of medicine still influence all aspects of contemporary health care and occupy an important place in the global acceptance and use of medicinal plants. It is argued that historical knowledge of plant-based medicines has been important for health and well-being in different cultures and time periods.



2.2 Key Plant Species and Their Medicinal Properties

Throughout history, various plants have been valued for their medicinal properties. The willow tree (*Salix spp.*), known for its bark containing salicin, has been used to treat pain and fever due to its anti-inflammatory and analgesic effects. Traditionally prepared as tea, tinctures, poultices, or ointments, willow bark is essential in the development of aspirin, which remains one of the most widely used medications today for preventing cardiovascular diseases.



Panax
Ginseng

Panax ginseng has also been used for centuries to treat fatigue and spiritlessness. Its bioactive compounds, particularly ginsenosides, contain antioxidant, anti-inflammatory, and immune-modulating effects. Early methods of processing focused on cleaning the root, while later techniques, such as steaming, enhanced its medicinal value. Today, Panax ginseng is widely consumed in dietary

supplements and health tonics. Turmeric (*Curcuma longa*), used for over 4,000 years in cooking, medicine, and fabric dyeing, contains the active compound curcumin, which has anti-inflammatory, anti-carcinogenic, and gastrointestinal benefits. Studies show that curcumin exhibits anti-parasitic, antispasmodic, and antioxidant properties, with proven effectiveness in animal models for treating inflammation and parasitic conditions. These plants show how ancient herbal medicines continue to be important in today's medicine.



2.3 Evolution of Plant-Based Medicine into Modern Pharmacology

Historically, ancient herbal plant extracts are used to treat illness due to the traditional culture across the world. However, due to their variation compositions and preparation methods, they were inconsistent, causing researchers to begin to extract bioactive compounds from plants in the 19th century. In 1804, a German pharmacist, Friedrich Sertürner successfully isolated morphine from opium, which became an effective way to help people relieve pain. A year before 1900, a German multinational pharmaceutical and biotechnology company, Bayer AG successfully derive salicylic acid by transforming from willow bark into aspirin. This created a consistent and effective pain reliever for humans. These breakthroughs started to shift medicinal practices into scientifically validated pharmaceuticals and the standardization continued. For example, a synthetic compound, Chloroquine, was developed based on quinine from cinchona bark, alongside analytical techniques such as chromatography and spectroscopy, which ensure reliability in quality. Besides their importance in pharmacology, phytochemicals have enhanced biochemistry by providing insights into mechanisms, such as inflammation and cellular division. The broad chemical diversity found in plants presents a unique model for tackling people's health issues, which successfully demonstrates their essential contribution to medicine and scientific research.

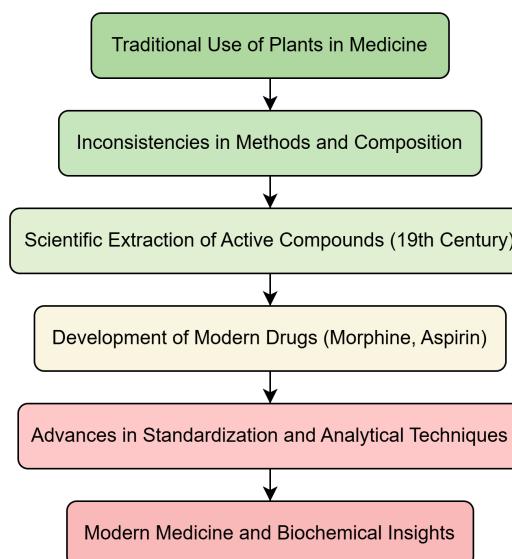


Image 2.3: Evolution of Plant-Based Medicine

2.4 Challenges in Modern Use of Traditional Medicinal Plants

Even Though traditional medicinal plants have been evolved to integrate into modern medicine, it still has significant challenges to be overcome to become mainstream medicine. Firstly, sustainability and conservation of traditional medicinal plants will always be the topic we are discussing. Because the demand for the traditional medicinal plant has been escalating in recent years. Hence, it leads to overharvesting and loss of natural habitats in the jungle and it puts many species at the risk of extinction. All these human actions have threatened the balance of biodiversity and ecological and the cultural heritage of communities which rely on these plants.

Secondly, the benefits and effects of traditional medical plants have always been questioned by many. Because it does not undergo clinical trials. Most herbal remedies do not meet the modern medical standards. It is because there is no standardization of herbal remedies. This is due to difficulty in creating uniform dosages and formulas because the herbal remedies can be adjusted depending on the situation of the patient. Moreover, the process of testing and research for safety and efficiency in the traditional medicinal plain is quite costly and time-intensive. This gap further hinders the acceptance of traditional medicinal plants to become mainstream medicine.

Here are some comparisons why traditional medical plants faces challenges in modern era:

Aspect	Modern Medicine	Traditional Medicinal Plants
Efficiency and Safety Measures	Undergoes many clinical trials before release on the market	Limited of clinical trials, all are based on centuries of empirical used
Standardization and Quality	High standardization with consistent dosages	Variability in plant composition; challenges in ensuring consistent dosages
Side Effects	Potential for significant side effects; requires monitoring afterwards	Fewer side effects compared to modern medicine

Research and Development	Significant investment in R&D leading to continuous innovation	Limited funding for research; relies on traditional knowledge
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Table 2.4: Comparison Between Modern and Traditional Medicine

2.5 Future Opportunities and Integration in Modern Medicine

According to research (Zhang et al.,2011), there are three possible measures to enhance the collaboration of medicinal plants with modern medicine, which is by aligning this plan in a nation's development, emphasizing the use of medicinal plants in modern healthcare system, lastly integrating the traditional and modern branches of medicine into a fundamentally new branch.

To achieve the first objective, the Malaysian government should ensure its recognition, accessibility and affordability. In fact, Malaysia's governors have invested heavily on the herbal industry sector. For instance, the Perak state government is actively promoting the growth of this industry by allocating lands for medicinal plant growth such as Tongkat Ali, Kesum.



Image 2.5.1: Tongkat Ali (*Eurycoma longifolia*)



Image 2.5.2: Kesum (*Polygonum minus*)

Tongkat Ali	Kesum
Enhance physical energy levels	Anti-inflammatory medicine
Reduce overall stress, and anxieties	Reduce cases of high blood pressures
Increase rate of male fertility	Support liver health

Table 2.5 Popular medicinal plants highlighted by Ministry of Health (MOH) and their functions

Not forgetting, MOH has regulated traditional medicine products, including herbal medicines and health supplements. All related products must be registered under National Pharmaceutical Regulatory Agency, to protect the consumers (MOH, 2019)

Government actively collaborates with private hospitals to offer the best and medicinal plant-based treatment for the society (MIDA,2023), so that treatments like acupuncture, or treatment with herbs will not be neglected. Eventually, Traditional and Complementary Medicine (T&CM) could potentially be available everywhere in Malaysia.

To branch traditional and modern medicine together, the WHO has established a Global Centre for Traditional Medicine (GCTM) in India in 2022, to investigate the sustainability and innovation of traditional medicine. They had asserted that medicinal plants and traditional medicine have been the foundation for current pharmaceutical products, and have always been essential to treat complex diseases.

3. Conclusion

In conclusion, this report shows that the use of plants in medicinal practices has evolved and is an important knowledge passed down from previous generations. This report also highlighted that medicinal plants were the main source of healthcare for traditional systems such as Ayurveda, Traditional Chinese Medicine, and Egyptian medicine, which used plant-based treatments that focus on the balance of the human body. These systems represented traditional healthcare and highlighted some general medicinal herbs such as turmeric and ginseng, which are still used in traditional and modern medical systems.

Moreover, the transition from using whole plants to using active compounds was one of the ground-breaking changes in pharmacology. This causes major discoveries such as morphine from opium and salicylic acid from willow bark. This breakthrough shows the importance of plant-derived compounds in the drugs and biochemistry industry. However, the use of traditional medicinal plants in modern healthcare systems still faces many challenges. For instance, issues related to sustainability, standardisation and clinical trials show that it is a must to balance traditional practices with scientific methods to verify safety, efficacy and equality.

Hippocrates once said, "Let food be thy medicine, and medicine be thy food." This shows the importance and the relationship between nature and health. Hence, if we can understand traditional knowledge and promote collaboration between traditional and modern medical systems, it will help the use of medicinal plants to continuously contribute to the health and well-being of the people.

(1622 Words)

4. Contributions

Tasks	Members In Charge
Introduction	LIM HUI ERN
Traditional Medicinal Systems and Historical Development	LEE TIAN SIEN
Key Plant Species and Their Medicinal Properties	CHONG XIAO QING
Evolution of Plant-based Medicine Into Modern Pharmacology	NG PEI WEI
Challenges of Modern Use of Traditional Medicinal Plants	HONG KAE REN
Future Opportunities and Integration in Modern Medicine	CHOON YI KEITH
Conclusion	NG XIAN HENG

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