

The Ethnobotanical Elements in Traditional Malay Medical Knowledge: A Review

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ABSTRACT

Herbal resources, including both wild and cultivated plants used for agricultural purposes, are abundant in the Malay region. As a result, the traditional medicinal knowledge of the Malay world is rich in ethnobotany, which is a part of ethnoscience. This research aimed to identify the types of indigenous medicinal plants mentioned in Malay medical manuscripts by comparing them with the results of previous studies. We obtained every piece of published information for this analysis from the online bibliographical databases Google Scholar and Scopus. A comprehensive analysis of the published literature revealed that twelve publications discussed various forms of illness treatments and different kinds of plants. A variety of Malay medical manuscripts yielded these discoveries. According to the findings, two of the papers discussed a single medicinal plant, three of the articles discussed Malay medicinal texts, and six of the articles concentrated on a single ailment. The gathered information claimed the effectiveness of around 131 medicinal plants in treating a variety of disorders, including stomach pains, eye problems, women's illnesses, fever, and other conditions. People use palms, herbs, shrubs, and trees as therapeutic plants. The research also presents and addresses Malay medical philosophy and diagnosis therapy. In general, the study highlights the wealth of Malay ethnobotanical knowledge, the profound cultural value of this information, and the need to maintain and investigate these ancient practices for the benefit of future generations. On top of that, this study highlights the critical need to maintain and advance investigations into Malay ethnobotany, which is essential for promoting sustainable health practices and conserving biodiversity. This aligns with Sustainable Development Goals concerning health, life on land, and the preservation of cultural heritage.

Keywords: ethnomedicine, medical book, Malay, traditional medicine, folklore uses

INTRODUCTION

Ancient writings and scientists asserted that, historically, plants constituted the sole remedy for treating numerous diseases. Their development and the use of herbal remedies have been extensively researched and adopted worldwide. Approximately 25% of contemporary pharmaceuticals and 60% of anticancer agents

originate from natural sources. In underdeveloped nations, between 65% and 89% of individuals utilize natural items as treatments for various ailments [1]. In 1978, the World Health Assembly called for a comprehensive approach to herbal plants, including the establishment of research and training centers dedicated to the study and use of medicinal plants [2]. Writings about nutritional and medicinal plants have existed since 1500 BC in Egypt, 800-400 BC in Indo-Pakistan, and 500 BC in China [3].

Malay remedies have long been popular and widely recognized throughout the Malay Archipelago. Information on traditional remedies has been documented in a variety of sources, both verbal and written. The written documents, known as Malay medical manuscripts, were penned in a Malay region more than 50 years ago. They are an important source of information and proof of the native medications utilized in Malay civilization [1]. The exploration of ethnomedicine and ethnopharmacology when analyzing Malay medical manuscripts presents significant opportunities for modern drug invention and discovery while also safeguarding Malay history and traditional medicinal expertise [4]. Approximately 1% of the manuscripts (about 40 in total) are medicinal-based writings. However, only minimal efforts have been made to scrutinize their content. Some of these manuscripts are fragile and will soon be degraded to the point of illegibility. This demonstrates the urgency of the need to preserve the content so that knowledge of Malay scientific civilization can be retained [5]. Plants are essential elements of the majority of traditional medicinal formulations. Preliminary researchers have conducted extensive testing and meticulous observations of natural treatments.

Malay Ethnoscience: Preserving Local Wisdom through Traditional Knowledge

The traditional medical knowledge of the Malay world is rich in ethnobotany, an important branch of ethnoscience. According to Calderon et al. [6], ethnobotany is a traditional medicinal approach based on the beliefs and practices of many ethnic groups, whereas ethnomedicine is classified as ethnoscience. According to the *Kamus Dewan* Fourth Edition, the term "ethnobotany" refers to the study of an ethnic group's knowledge and customs related to plants and their uses. To elaborate further, the term "ethnobotany" is a combination of two terms: *ethno* refers to "ethnic," meaning race, tribe, or nation, and it can also refer to a specific region. *Botany* refers to a sub-discipline of biological science related to plants and their parts [7]. Essentially, ethnobotany refers to a multidisciplinary field of study based on a specific ethnic group's knowledge of plant use. In addition, Mat Rofa [8] claimed that the traditional medical knowledge of the Malay world is rich in ethnobotany, a branch of ethnoscience, as the Malay region is abundant in herbal treasures, including both wild and cultivated plants used for agricultural purposes. Kumalah et al. [9] stated that local wisdom is considered a body of knowledge practiced by a community living within a specific geographical area. In Malay civilization, the term "science" generally means knowledge in any field of study that is systematically organized [10]. Through the philosophy and history of science, Muslim scholars view this dimension as a characteristic synonymous with the phenomenon of civilizational development. Meanwhile, the causal function of the science underlying natural phenomena dominates the pattern of national development [11].

The term "Malay medicine" denotes a comprehensive understanding of the theoretical, philosophical, and practical aspects of how the Malays administer remedies and address maladies. This scientific knowledge has been transmitted verbally or practically from instructors or senior family members to apprentices and subsequent generations [12]. Traditional medicine has been acknowledged by the Malaysian Ministry of Health and the World Health Organization (WHO). Traditional Malay communities have relied on natural resources to stay healthy, alleviate ailments, and follow healthy lifestyles. Malay medicine is a traditional medical practice passed down through generations, with knowledge inherited orally. Manuscripts or "*tib*" books serve as reference sources for practitioners and researchers, demonstrating the wisdom of the Malay community in treatment and healthcare, including disease definitions, methods, prescriptions, and prevention advice. In ancient Malay society (before Islam), healing chants and incantations were practiced as part of traditional medicine that was passed down orally. These practices aimed to maintain bodily health. The incantations were influenced by plants such as turmeric, aromatic ginger, sappan wood, and others, as well as love-related charms. However, after the spread of Islam in the region, these incantations began with "Bismillah" (in the name of God) and ended with "La ilaha illallah" (there is no god but Allah), incorporating verses from the Quran [8]. However, in his research, Mat Rofa mentioned that a mixture of old Malay medicine and Islamic-influenced medicine prevailed from the perspective of practitioners, as seen in the *Taj al-Muluk*, a popular book in Malay society.

Malay Medical Manuscripts

In general, Malay medicine is a health management system aimed at keeping the human body illness-free while maintaining and preserving health. Malay medicine emphasizes the health of both the soul and the body [13]. The *Kitab Tib* means a book of medicine, medical text, or medical knowledge. The knowledge written in the corpus of classical or traditional Malay literature is classified as "literature of knowledge." The word *tib* originates from Arabic and means medicine, healer, medical prescription, medical science, or knowledge of medicine. However, the *Kitab Tib* in Malay is not limited to medical knowledge; it also encompasses other fields including astrology and predictions, knowledge of love, physiognomy, dream interpretation, and secrets of marriage [14]. Medical knowledge is written in Jawi script and presented in manuscripts known as or entitled *Kitab Tib* [15]. Malay "*tib*" books discuss methods of treating various physical ailments such as joint pain, boils, high fever, gas, stomach ache, and sinusitis. They also aim to identify the causes of illnesses as they relate to factors like witchcraft, demonic possession, postpartum depression, or seizures [8].

Many Malay books have yet to be studied and published. Written around the mid-19th century, these were based on local experiences and skills prevalent within the Malay world, including the Malay Peninsula, the Indonesian archipelago, Patani (southern Thailand), and southern Philippines. Among these important Malay manuscripts are *MSS2515* in the National Library of Malaysia (Perpustakaan Negara Malaysia), *MSS1292* in the National Library of Malaysia, *MS33* (Dewan Bahasa dan Pustaka), and *MSS1988.400* (Terengganu Museum), as well as manuscripts from the Johor Foundation and several held in international collections, including those at Leiden University in the Netherlands and with the Royal Asiatic Society in London, United Kingdom [13]. In terms of age, most of the manuscripts are copies dating from around the 1820s until the early 20th century. The oldest manuscript that provides a date (*MSS 1292*) is said to have been copied in 1820 in Kampung Pujut, Patani, Thailand, while the most recent (*MSS 1792*), *Hikayat Nurul-Lisan Menjawab Masalah*, is dated 1924 [14].

In addition to those held in the National Library of Malaysia (PNM), *Kitab Tib* manuscripts can be found in other collections around the country, including the Dewan Bahasa dan Pustaka, the Terengganu State Museum, the Johor Foundation for Culture and Heritage, and the Islamic Arts Museum. Meanwhile, abroad, they are located in the National Museum of Indonesia (in Jakarta), the Aceh State Museum (in Banda Aceh), Brunei Darussalam (Dewan Bahasa dan Pustaka and Brunei Museum), and Sri Lanka (National Archives of Sri Lanka). Several manuscripts are also found in the Netherlands (Leiden, The Hague, and Amsterdam), in London (by the Royal Asiatic Society and in the British Museum), and possibly in other locations. However, the largest collections are held at the National Library of Malaysia, which has around 40 manuscripts, followed by the Islamic Arts Museum, which has around 20. In European collections (Leiden and The Hague), there are 26 manuscripts, while there are nine in the UK, bringing the total number of manuscripts to approximately 100 [15].

The selection of books aligns with the development of Malay civilization. For example, *Bustanus Salatin* by Sheikh Nuruddin al-Raniri, written in Aceh in 1638 AD, is one of the earliest written documents. This book is closely related to earlier texts, including *Tibb al-Nabawiyah*, which had existed for over 10 centuries. Following this, books such as *Tib al-Rahmaniah fi Tib wa al-Hikmah* by Sheikh Abbas Kuta Karang, *Tayyibul Ihsan fi Tibb al-Insan* by Sheikh Wan Ahmad Mustafa al-Fatani, and *Tib Khazinatul Insan* emerged. These early works also served as references for several Malay medical books, such as *Tajul Muluk*, which was widely circulated in the early 20th century [13]. The creed (*aqidah*) of Malay medicine is the oneness of Allah (*Tawhid*). Every prophet and messenger preached the religion of *Tawhid* (monotheism) to humanity, and Allah revealed to them the knowledge of medicine, known as Prophetic Medicine (*Tibb An-Nabawi*).

Traditional Malay medical knowledge is scientific and systematic in nature, possessing its own concepts and ideas, as well as a system, terminology, methods, and approaches that are considered solid and consistent. Although written by different authors from various times and regions (such as Patani, Kelantan, Kedah, Tanah Melayu Riau, Pontianak, and Kalimantan), the concepts, terminology, and methods applied are fundamentally the same. The differences and variations are minimal and can be considered variants that arose due to the differing communities, locations, and eras [15]. The treasure of Malay manuscripts that serve as a repository for this "literature of knowledge" can be regarded as abundant, comprehensive, and diverse. This demonstrates the sensitivity and wisdom of the Malay community in possessing and utilizing various types and branches of knowledge. Malay manuscripts are esteemed for their role in information preservation, significantly contributing

to the documentation, communication, education, dissemination, and transmission of knowledge related to many fields, such as history, law, religion (notably Islam), nationalism, traditional medicine, agriculture, and construction [16]. According to Arba'iyah [17], various forms of early evidence highlight the role of traditional Malay medicine practitioners and their close connections with herbal-based medicines. For example, most early Malay texts such as *Kitab Tib*, *Bustan al-Salatin*, *Sulalat al-Salatin*, *Misa Melayu*, *Hikayat Raja Muda*, *Hikayat Gul Bakawali*, and *Tuhfat al-Nafis* mention the effectiveness of using herbal medicines, often linked with the roles played by *bomoh* (traditional healers) and mystical powers in treating illnesses.

Distinctive Features of Malay Medical Manuscripts

According to Piah [14], the manuscripts contain diverse content. Some are complete, with full pages and legible writing, but the spelling and overall meaning are difficult to understand, such as with *MSS 300:331*. Meanwhile, other manuscripts have incomplete pages, perhaps lacking both a beginning and an end, such as *MSS 747:90*. Some manuscripts feature small pages with small, closely spaced writing but have an orderly arrangement that is easy to read and complete from the first page to the last, like *MSS 758:28*. There are also manuscripts with complete pages from beginning to end but the author's name or the date of copying are not mentioned, such as with *MSS 1653:76*. Others have similarly varied characteristics. In addition to the usual *Kitab Tib* content, there are also writings in the form of poetry, such as with *MSS 2590*, where part of the text is about medicine but presented in poetic form. Malay medicine is also written in narrative form, as with *MSS 1792*, which discusses medical knowledge in a question-and-answer format. Interestingly, some Malay medical manuscripts - like *MSS 747* - incorporate other forms of knowledge such as astrology, divination and predictions, or physiognomy [14]. From a linguistic perspective, various styles of language and dialect usage are generally classified as intermediate, being neither overly classical nor influenced by Arabic language styles. This demonstrates that the writings found in Malay medical manuscripts are not excessively old, even though certain historical characteristics are retained in terminology linked to aspects like materials (*bahan*), measurement (*sukatan*), and time references (*rujukan waktu*) [14].

Malay medical texts encompass medical philosophy, methods for detecting diseases, treatment approaches, health, as well as physical and non-physical ailments like the use of prayers and therapy substances. The texts address plants, animals, minerals, and changes in time and weather [18]. Shahrir [19] mentioned that Malay medical manuscripts need to be studied to reveal the extensive traditional knowledge they contain. Originating in about 1400 AD, these texts illustrate the profound medical knowledge possessed by Malay civilizations, predating Western colonialism. The first Malay medical manuscripts was initially composed by Sheikh Shafiyuddin al-'Abbasi.

Nonetheless, comprehending the components of Malay medical manuscripts that refer to the medicinal characteristics of herbs or medicinal plants is of paramount relevance for their preservation. This research aimed to investigate the philosophy behind Malay medical knowledge and practices; identify a disease diagnosis process as outlined in Malay medical manuscripts; and conduct a comparative analysis of the ethnobotanical applications in traditional Malay medical texts.

METHODOLOGY

A literature search was undertaken using the online databases Google Scholar and Scopus. The document search tool employed a combination of the keywords "Malay medical manuscript", "Malay traditional knowledge" and "medicinal plants". The inclusion criteria were all research articles published from 2000 to 2024. The major focus was on articles related to Malay medicine philosophy, a diagnosis of illness and a comprehensive review of medicinal plants mentioned in Malay medical manuscripts.

RESULT

The database search using the combination of keywords (as listed above) resulted in 12 documents. The articles were screened and categorised based on the ethnobotanical application in traditional Malay medical manuscripts. This review compares and discusses Malay medical manuscripts, medicinal plants, and types of disease.

Ethnobotanical Applications in Traditional Malay Medicine: Insights from Malay Medical Manuscripts

Table 1 shows the comparative analysis of the medicinal plants mentioned in Malay medical manuscripts, based on the article search. About 131 medicinal plants have been reported in twelve journals of study. The plant was categorised into different categories, including tree, shrub, herb, and palm. Those 131 medicinal plants were compared from different Malay medical books and diseases. Most of the diseases were related to physical illnesses such as seizures, stomachaches, eyes, fever, and teeth. Some of the diseases mentioned were female illnesses.

Table 1. A comparative analysis of medicinal plants written in Malay medical manuscript

No.	Comparative of Malay medical manuscripts	Herbs or medicinal plant	Number of medicinal plant	Types of disease	References
1.	Tamam Kitab Taj Al-Mulk Kitab Tib Muzium Terengganu Kitab Tib MSS 2515 Perpustakaan Negara Malaysia: Kajian Teks & Suntingan MSS 2999 Kitab Tib: Pandangan dan Tafsiran Perubatan Mden Terhadap Manuskrip Perubatan Melayu MSS B15 Kitab Perubatan Melayu Sari Segala	Azadirachta indica (neem)	1	seizure (ubat sawan), stomach-related illnesses (penyakit perut), such as gastric and diarrhea, dental care (ilmu kukuh gigi) and several types of fever, including typhoid fever (demam kepalu)	Ramyaet al. (2024)
2.	Kitab Tib MSS 2515 National Library of Malaysia: Text Study & Editing Tayyib Al-Ihsan Fī Tibb Al-Insan Al-Rahmah Fī Al-Tibb Wa Al-Hikmah Sari Segala Ubat MSS 2905 Petua Kitab Tib MSS 3749 Petua Ubat-Ubatan Azimat	Trigonella foenum-graecum (fenugreek), honey, gandarukam and Pistacia lentiscus (mustaki)	4	Cough (wet cough, dry cough, cold-induced cough, asthmatic cough and physiological coughs)	Raja Nurhanin et al. (2020)
3.	MSS 2515 MSS 2999 the National Library of Malaysia. Tib book from the Terengganu Museum	Boesenbergia rotunda (temu kunci), Curcuma xanthorrhiza (temu lawak), Curcuma zedoaria (temu putih) and Curcuma aeruginosa	4	typhoid fever, stroke-related illnesses (angin ahmar), stomach pain, swelling, sinusitis, headaches, body aches, and fatigue.	Musa et al. (n.d.)

		(temu iring)			
4.	<p>Kitab Tib Harun Mat Piah</p> <p>Kitab Perubatan Melayu Sari Segala</p> <p>Ubat Tabib Diraja Kesultanan Pontianak</p> <p>MSS 2219 the National Library of Malaysia</p>	Piper betle	1	<p>Typhoid fever, toothache, shingles, eye infection, menstruation condition, period discomfort, liver issue, stomach problems (stomach upset with vomiting of blood or heartburn), cough, phlegm, and postpartum disorder with vomiting</p>	(Zamri et al., 2023)
5.	Tajul Muluk	<p>Oryza sativa,</p> <p>Cocos nucifera,</p> <p>Myristica fragrans,</p> <p>Kaempferia galanga,</p> <p>Eclipta alba,</p> <p>Gendarussa vulgaris,</p> <p>Drybalanops aromatica,</p> <p>Tamarindus indica,</p> <p>Piper longum,</p> <p>Alpinia galanga,</p> <p>Ageraratum conyzoides and</p> <p>Aquilaria malaccensis</p>	12	<p>headache, eye diseases, ear problems, cough, breathing difficulty, toothache, syncope, seizures, gastrointestinal problems, hernia, kidney stones, fever, back pain, mouth ulcer, tumour, broken bones, sprains, amenorrhea</p>	Mohd Shafri & Nazarudin [23]
6.	<p>Kitab Tib. MS 747</p> <p>MSS 3136</p> <p>Pelbagai Azimat dan Perubatan 58 Hal Lengkap</p> <p>Kitab Perubatan Melayu Sari</p> <p>Segala Ubat:</p> <p>Tabib Diraja Kesultanan Pontianak</p> <p>Kitab Perubatan Melayu Al-Rahmah Fi Al- Tibb Wa Al-Hikmah: Abbas Kuta Karang Aceh Dar Al- Salam</p> <p>Kitab Perubatan Melayu Tayyib Al-Ihsan Fi Tibb Al-Insan</p> <p>Pembukaan Mata Hati pada</p>	<p>Moringa oleifera,</p> <p>Curcuma domestica</p> <p>Loir, Citrus hystrix and Lates calcifier</p>	4	cataract	Salehuddin Amin et al. (2023)

	Bicara Mengubati: Wan Ahmad Ibn Wan Muhammad Zayn Al-Fatani.				
7.	Malay Medical Manuscripts (no details of selected manuscript)	Quercus infectoria (manjakani), Crocus sativus (saffron), Trigonella foenum-graecum (halba), Foeniculum vulgare (adas pedas) and Piper betle (sirih)	5	Female sexual dysfunction	Abdul Ghani & Bakri (2023)
8.	Kitab Tib: MS 1653 Kitab Tib Azimat: MSS 2502 Kitab Tib : MS 33 Kitab Tib : MSS 3290 Manuskrip 1754	Zingiber officinale (ginger)	1	Tiredness, convulsion, headache, ear pain, menstrual, fever, constipation and stomach ache	Ridzuan
9.	Ramuan Obat EAP153/9/4	Papaver somniferum, Ipomea digitata, Memecyclon umbellatum, Euphorbia hirta, Tamarindus indica Allium spp., Amaranthus spp., Oryza sativa, Sesuvium portulacastrum, Citrullus vulgaris, Myristica fragrans, Piper longum, Phaseolus vulgaris, Moringa oleifera, Sterculia foetida, Eclipta alba hassk, Alpinia galangal, Curcuma longa, Sesamum indicum, Citrus aurantifolia Limau, Citrus × aurantiifolia, Rhodennia cinerea, Rosa spp., Jasminium sambac, Drybalanops lanceolata, Mesua ferrea L., Hemigyrosa longifolia, Areca catechu, Ficus	31	Eye diseases: dimness of vision, cataract, chalazion, pterygium, unclear vision including the night blindness (nyctalopia) and day blindness (hemeralopia), red eye, dry eye, bleary or watery eye and itchiness of the eye, sore eyes and unspecified eye disease	Shafri (2021)

		benjamina, Caesalpinia sappan, Piper betle, Solanum spp			
10.	MSS 3136	Curcuma spp, Acorus calamus, Anethum graveolens, Eclipta alba and aloe vera	5	Eye disease: conjunctivitis, cataract, and age-related macular degeneration	Nadzirin [5]
11.	Kitab Tib Muzium Terengganu MSS1292 Nurul	Cocos nucifera L. (coconut shell), Curcuma longa (tumeric), Citrus aurantifolia, Pipernigrum, Datura metel, Calophyllum inophyllum L., Calotropis gigantea, Musa acuminata, Cannabis sativa L., Oryza sativa L., Alocasia langiloba Miq. Croton tiglium L., Piper betle L. Pterocarpus santalinus, Cyclea laxiflora Ouratea crocea, Styrax benzoin, Microcos tomentosa, Foeniculum vulgare, Saussurea costus, Nigella sativa, Calotropis gigantea, Pistacia lentiscus, Zingiber officinale, Allium sativa	25	Yaw (Treponema pertenua), refer to skin diseases	Nurul Syahirah et al. [27]
12	Hikayat Nurul- lisan Menjawab Masalah Kitab Tib Ilmu Perubatan Melayu	Cydonia oblonga (safarjal), Mespilus germanica, Pyrus (kundos), Pyrus communis, Prunus persica, Malus domestica, Prunus mahaleb, Cuminum cyminum, Ferula asafoetida, Eryngium foetidum, Foeniculum vulgare, Coriandrum sativum, Indigofera tinctoria, Senna alexandrina,	38	Gastrointestinal	Din et al. [28]

		<p>Tamarindus indica, Alphinia galanga, Elettaria cardamomum, Allium sativum, Allium cepa sp, Pistacia vera, Saussurea costus, Boswellia sacra, Trichosanthes kirilowii, Ricinus communis, Crocus sativus, Cinnamomum sp., Punica granatum, Myristica fragrans, Syzygium aromaticum, Olea europaea, Papaver somniaferum, Sesamum indicum, Piper nigrum, Plantago ovata, Ziziphus jujuba, Citrus medica, Aquilaria malaccensis</p>			
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In a comparison study by Ramya et al. [26], *Azadirachta indica* (*semambu*) from five Malay medical manuscripts - *Tamam Kitab Taj Al-Mulk*, *Kitab Tib Muzium Terengganu*, *Kitab Tib MSS 2515 Perpustakaan Negara Malaysia: Kajian Teks & Suntingan*, *MSS 2999 Kitab Tib: Pandangan dan Tafsiran Perubatan Moden Terhadap Manuskrip Perubatan Melayu*, and *MSS B15 Kitab Perubatan Melayu Sari Segala* - mentioned four common types of disease. These were seizure (*ubat sawan*), stomach-related illnesses (*penyakit perut*) such as gastric and diarrhea, dental care (*ilmu kukuh gigi*), and several types of fever, including typhoid (*demam kepialu*).

In a study of coughs and related symptoms using six Malay medical manuscripts (*Kitab Tib MSS 2515 National Library of Malaysia: Text Study & Editing*, Malay Medical Book: *Tayyib Al-Ihsan Fī Tibb Al-Insan*, Malay Medical Book: *Al-Rahmah Fī Al-Tibb Wa Al-Hikmah*, Malay Medical Book: *Sari Segala Ubat*, *MSS 2905 Petua Kitab Tib*, and *MSS 3749 Petua Ubat-Ubatan Azimat*), Raja Nurhanin et al. (2020) explained that *batuk*, *lelah*, and *esak* are the most common terms related to coughs and cough-related problems in the Malay manuscripts. Coughs could then be categorized into five types: wet, dry, cold-induced, asthmatic and physiological. Sixty-two formulations have been documented, involving about 93 plant species, six animal species, and two minerals. Fenugreek, or *Trigonella foenum-graecum*, is the common material prescribed for all five types of coughs, while honey, *gandarukam*, and *mustaki* are also commonly prescribed for all coughs except dry cough. Patients with symptomatic COVID-19 have reported dry coughs, shortness of breath, or trouble breathing. In addition to vaccines and repurposed medicines, biomedical scientists are also trying to find new cures for COVID-19 by examining natural products or traditional medicine, which would be useful medically and financially in countries where access to modern drugs and medical supplies is limited [29].

Based on library research, Musa et al. (n.d.) referred to several *Tib* books - MSS 2515, MSS 2999, and the *Tib* book from the Terengganu Museum - when selecting several plant species to study, focusing on their uses in the *Tib* texts and scientific findings. *Temu*, a plant from the Zingiberaceae family: *Boesenbergia rotunda* (*temu kunci*), *Curcuma xanthorrhiza* (*temu lawak*), *Curcuma zedoaria* (*temu putih*), and *Curcuma aeruginosa* (*temu iring*) are frequently used to treat typhoid fever, stroke-related illnesses (*angin ahmar*), stomach pain, swelling,

sinusitis, headaches, body aches, and fatigue.

Piper betle is identified in Malay manuscripts such as *Kitab Tib Harun Mat Piah*, *Kitab Perubatan Melayu Sari Segala*, *Ubat Tabib Diraja Kesultanan Pontianak*, and *MSS 2219* in the National Library of Malaysia. Twelve conditions can be treated with *P. betle*, including typhoid fever, toothache, yaws, shingles, eye infection, menstruation conditions, period discomfort, liver issue, stomach problems (stomach upset with vomiting blood or heartburn), cough, phlegm, and postpartum disorder with vomiting [1]. The antimicrobial potential of *P. betle* is demonstrated in Malay medical manuscripts, whereby the majority of diseases treated with this substance were caused by microorganisms. The diseases encompassed neuralgia, yaws, shingles, ocular infection, and typhoid fever.

A study of the *Tajul Muluk* manuscript by Mohd Shafri and Nazarudin [23] revealed diseases including headache, eye diseases, ear problems, coughs, breathing difficulties, toothache, syncope, seizures, gastrointestinal problems, hernia, kidney stones, fever, back pain, mouth ulcers, tumours, broken bones, sprains, and amenorrhoea. In terms of plant-based ingredients, 12 species of plants with more than one vernacular name are stated in the text: *Oryza sativa*, *Cocos nucifera*, *Myristica fragrans*, *Kaempferia galanga*, *Eclipta alba*, *Gendarussa vulgaris*, *Drybalanops aromatica*, *Tamarindus indica*, *Piper longum*, *Alpinia galanga*, *Ageratum conyzoides*, and *Aquilaria malaccensis*.

According to Salehuddin Amin et al. [29], the common *materia medica* used in cataract treatment, as mentioned in the Malay Medical Manuscripts, are *Moringa oleifera*, *Curcuma domestica* Loir, *Citrus hystrix*, and *Lates calcifier*. These ingredients are mentioned three times each across six Malay Medical Manuscripts, which contain ten formulations on cataracts. The six *materia medica* manuscripts studied were *Kitab Tib. MS 747*, *MSS 3136*, *Pelbagai Azimat dan Perubatan 58 Hal Lengkap*, *Kitab Perubatan Melayu Sari Segala Ubat: Tabib Dirajja Kesultanan Pontianak*, *Kitab Perubatan Melayu Al-Rahmah Fi Al-Tibb Wa Al-Hikmah: Abbas Kuta Karang Aceh Dar Al-Salam*, and *Kitab Perubatan Melayu Tayyib Al-Ihsan Fi Tibb Al-Insan Pembukaan Mata Hati pada Bicara Mengubati: Wan Ahmad Ibn Wan Muhammad Zayn Al-Fatani*.

In their study, Abdul Ghani and Bakri [30] mentioned that in Malay Medical Manuscripts, *Quercus infectoria* (manjakani), *Crocus sativus* (saffron), *Trigonella foenum-graecum* (halba), *Foeniculum vulgare* (adas pedas), and *Piper betle* (sirih) were herbs prescribed to treat female sexual dysfunction. The seeds of *T. foenum-graecum* possess phytoestrogenic characteristics that positively correlate with oestradiol and testosterone levels in women, enhance vaginal lubrication, stimulate sexual attraction, and alleviate symptoms of female sexual dysfunction in menopausal women [30]. Fennel cream can significantly enhance vaginal atrophy by lowering the vaginal pH, repairing vaginal tissues, and improving vaginal lubrication, itching, pallor, and dyspareunia, all of which contribute to vaginal atrophy [31].

Mentions of *Zingiber officinale* (ginger) in five medical manuscripts - *Kitab Tib: MS 1653*, *Kitab Tib Azimat: MSS 2502*, *Kitab Tib: MS 33*, *Kitab Tib: MSS 3290*, and *Manuskrip 1754* - were analyzed by [26], who reported that ginger can be applied to address many illnesses, such as tiredness, convulsion, headache, ear pain, menstrual, fever, constipation, and stomach ache. Active ingredients such as gingerol, zingiberol, and zingiberene mean that ginger rhizomes are also considered effective for expelling gas from the body.

Meanwhile, Shafri [4] noted that *Ramuan Obat EAP153/9/4* from the Riau Archipelago mentioned several eye diseases, including dimness of vision, cataract, chalazion, pterygium, unclear vision (including night blindness (nyctalopia) and day blindness (hemeralopia)), red eyes, dry eyes, bleary or watery eyes, eye itchiness, sore eyes, and unspecified eye diseases. A total of 51 individual plants were identified, such as *Papaver somniferum*, *Ipomea digitata*, *Memecyclon umbellatum*, *Euphorbia hirta*, *Tamarindus indica*, *Allium spp.*, *Amaranthus spp.*, *Oryza sativa*, and *Sesuvium portulacastrum*. The ancient Malay medicinal methods depicted in *Ramuan Obat EAP153/9/4* encompass both physical and spiritual components. The physical component is represented by the utilization of commodities like plants and animals.

Nadzirin [5] reported that in *MSS 3136*, eleven ingredients were listed in the formulations, of which five demonstrated therapeutic properties that are important for addressing eye conditions: *Curcuma spp*, *Acorus calamus*, *Anethum graveolens*, *Eclipta alba*, and aloe vera, indicated for conjunctivitis, cataract, and age-related

macular degeneration. Nurul Syahirah et al. [34] studied yaws treatment (*puru*) in Kitab Tib Muzium Terengganu and MSS1292. The Malay people use the term *puru* to refer generally to various types of skin diseases, including ulcers, sores, and yaws.

In addition to the topics of diseases and remedies, another interesting aspect of Malay medical manuscripts is the use of plants as ingredients for medicines and the treatment of ailments. These include various types of herbs, tree roots, and other living things, whether animate or inanimate. Plants are given specific names that are aligned with botanical or scientific terminology [15]. Medicinal plants are employed to treat numerous illnesses in the Unani System of Medicine, as well as in traditional systems like Ayurveda, homeopathy, and Chinese and European "*Materia Medica*" [32]. Notwithstanding its therapeutic significance, a conspicuous deficiency in documentation persists throughout Malay medical literature. These plants are given specific names that differentiate them from one another, and these include elephant ivory, *suda lalang*, the cores of certain trees, agarwood (derived from the fragrant tree *Aquilaria malaccensis*), sandalwood (a type of red tree known as *Pterocarpus spp.*), *sepang* wood or *Caesalpinia sappan*, black taro root or *Alocasia denudata*, and yellow turmeric or *Curcuma domestica* [14]. Several plants mentioned in the Quran and Hadith are associated with their use in traditional Malay medicine, including the *bidara* tree, pomegranate, ginger, lemongrass, honey, black cumin (*habbatussauda*), *ajwah* dates, red onion (leaves), golden banana (peel), and the henna tree [33]. Interestingly, the researcher discovered that *A. indica* contains phenolic acid, which can inhibit enzymes associated with the development of human diseases and has been used to treat various common ailments, including hypertension, metabolic problems, incendiary infections, and neurodegenerative diseases [34].

DISCUSSION

Starting on 1st August 2017, according to Piah [14], the field of Malay medical knowledge and practices was recognized by the Malaysian Ministry of Health as a medical system under the category of Traditional and Complementary Medicine, alongside traditional Chinese and Indian medical systems. This reflects the commitment of the authorities to strengthen, formalize, and structure this field in a way that keeps it compatible with modern or contemporary medical disciplines and concepts. In the legislative terminology in Act 775, Malay medicine is referred to as Malay Medicine (Traditional and Complementary) or Traditional Malay Medicine (PTM). The knowledge and practices of Malay medicine explicitly reject the term and practice of *bomohism* (Malay shamanism). In Malay medicine, *bomohism* is merely one aspect or method of treatment within the overall practice of this area of medicine. However, the view that associates Malay medicine solely with *bomohism* tarnishes the image, reputation, and credibility of Malay medical knowledge and practices [14]. Therefore, professional practitioners of Malay medicine are known as *tabib* (physicians), practitioners, healers, or *hukama* (wise individuals), and they are generally referred to as *sheikh*, *ustaz*, or *guru*. Piah also described how the scope of Malay medical knowledge and practices includes Islamic medicine, complementary medicine, alternative medicine, spiritual medicine, mystical medicine, *Qalam Laduni* medicine, Sufi medicine, natural medicine, Malay massage therapy, Malay cupping therapy, Malay midwifery, and *bomohism* (shamanism). Malay medical knowledge has its own history, concepts, and philosophy, with its fundamental beliefs being based on Allah and the Prophet Muhammad s.a.w:

1. Every disease has a cure, except death.
2. All diseases are sent by Allah, and only Allah determines whether they are cured or not.
3. The role of physicians is to make an effort to treat disease.
4. Understanding and ensuring that diseases can be cured.
5. Knowing and recognizing the disease and the patient.
6. Understanding the cause of the disease.
7. Applying the concepts and objectives of healing.
8. Surrendering to Allah.
9. Realizing that every illness is a test from Allah.
10. Praying and putting trust in Allah.

Tib books should serve as an important reference for not only traditional medicine practitioners but also modern medical practitioners and researchers. These books demonstrate the wisdom of the Malay community in the fields of treatment and healthcare, with most writings containing disease definitions or diagnoses, treatment methods, prescriptions or formulations, as well as prohibitions and advice for disease prevention. Malay medicine connects physical human characteristics to four elements: *suprawi* (fire), *suddawi* (earth), *dammawi* (air), and *balpawi* (water), with detailed explanations related to the humors and the nature of diseases (see Figure 1) [35].

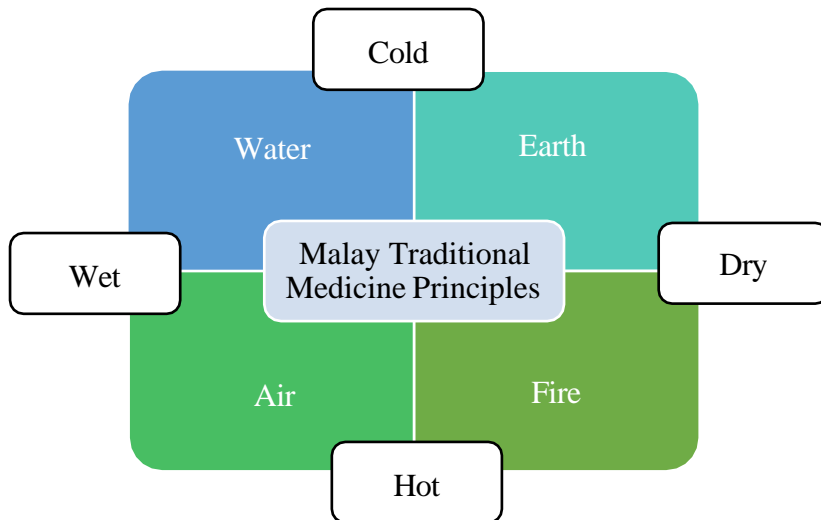


Figure 1. Malay traditional Medicine Principle

The diagnostic technique used in Malay medicine, as outlined in these *kitab tib*, focuses on discovering imbalances among the body's four primary components: wind, fire, water, and earth. The four factors influence the status of fluid in the body and, subsequently, the diagnostic outcomes [36]. According to Nornizam [13], certain signs can be detected by examining the pulse to diagnose health or illness. However, the variety of pulse patterns can only be detected by a skilled and experienced physician (*tobib*), as in the following examples:

1. If the pulse is rough or hard and moves quickly, this indicates that a person has high blood content, which is dominant in the element of wind.
2. If the pulse is fine or soft and moves quickly, this indicates that a person has a higher bile content (*safrā'*), which is more dominant in the element of fire.
3. If the pulse is fine and soft (slow in movement), this indicates an increase in the spleen element (*sawda*), which is dominant in the element of earth.
4. If the pulse is rough or strong but weak in pressure, this indicates an abundance of phlegm (*balgham*), which is dominant in the element of water.
5. If the pulse is moderate in terms of roughness and fineness, as well as speed and softness, this indicates a balance of all the humors and shows that the person is healthy.

As stated by Haliza [22], the diagnostic methods in Malay medicine generally do not involve elements of polytheism or superstition. Diagnosis is determined by observing several characteristics based on the symptoms and signs present in a patient's body, which include:

1. The cause of the illness;
2. The signs that appear on the patient's body;
3. The suffering or pain the patient is experiencing;

4. The affected part of the body;
5. The duration of the illness;
6. The appropriate and necessary treatment for the patient.

A balanced diagnosis is also assessed based on elements of the patient's daily activities, emotions and feelings, diet, spirit in facing life, and personal hygiene.

Some healing practices take the form of amulets and charms, commonly including prayers from verses of the Quran [14]. The method used to prepare a medicine varies according to the disease and the type of treatment. The general procedure is as follows: first, all types of ingredients are collected and soaked before being removed and dried. Next, the ingredients are ground until fine before being added to water, stored in a container, and boiled. Subsequently, the mixture is consumed or applied to a specific body part or the entire body (in the form of a paste). This treatment method is usually accompanied by prayers and reliance on God. Oral treatment methods include preparing medicine with water as an antidote, along with prayers, blessings, and selected ingredients. Malay texts describe traditional medicines that can be used orally (as a decoction or pill) or topically, or inhaled. This is comparable to the practice of traditional medicine [21]. Musa et al. [24] mentioned that the traditional medicine preparation process involves collecting ingredients, selecting plant parts, and processing formulations by grinding, milling, roasting, soaking, braising, squeezing, and boiling. Solvents like water, vinegar, lime juice, coconut oil, ghee, and sesame oil ensure optimal bioactive compound extraction. Traditional medicine uses various methods to treat diseases, including compresses, patches, rubbing, and spraying. These address root causes and symptoms, as well as preventing future infections, demonstrating a holistic approach to disease treatment. Two important aspects of medical knowledge, according to the *Kitab Perubatan Melayu Kebun Segala Raja-Raja VII*, are, first, the proper and regular intake of food and drink, and, second, the avoidance of excess in any situation [38].

Several recommendations can be made based on the results of this study. It would be useful to investigate the effectiveness of these traditional formulations and their therapeutic benefits in treating coughs and cough-related problems. With proper recommendations, practices, and guidelines from health practitioners, the health authorities should consider the availability of local materia medica in treating coughs, which would improve the quality of life for the overall community [21]. Malay philologists were responsible for transliterating Malay classical Jawi texts into Malay Romanized texts. This was intended to aid non-Jawi readers or researchers in accessing information and conducting more advanced research [28].

Ariffin et al. [39] suggested that the Malaysian Ministry of Health should collaborate with Islamic medical authorities especially in Malaysia to take positive steps to align Islamic medicine, which is based on the Quran and Hadith, with scientific knowledge (laboratory testing). This would ensure that the methods are clearly consistent with Islamic teachings. In reality, the vast medical heritage of the Malay world is still preserved. The relevant authorities should prioritize gathering and restoring this treasure while showcasing the capability of Malay as an academic language, including in the field of medicine. The phytochemicals in certain plants are the components responsible for their pharmacological advantages. Different plant families possess distinct common phytochemicals that are prevalent and would contribute significantly to their pharmacological advantages.

CONCLUSION

The analysis underscores the considerable depth and importance of Malay ethnobotanical knowledge as documented in traditional medical manuscripts. The identification of more than 131 medicinal plants, including trees, shrubs, herbs, and palms, showcases the Malay traditional medical system's extensive methodology in tackling various ailments, ranging from stomach problems and fevers to eye conditions and women's health issues. This extensive body of indigenous knowledge embodies a rich cultural heritage and a nuanced comprehension of plant-based medicine, meticulously recorded through the ages. Traditional knowledge systems hold significant potential to enhance contemporary medical practices, possibly resulting in groundbreaking approaches to health and wellness. This study highlights the critical need to maintain and advance investigations into Malay ethnobotany, which is essential for promoting sustainable health practices and conserving

biodiversity. This aligns with Sustainable Development Goals concerning health, life on land, and the preservation of cultural heritage. Consequently, future research could focus on various critical domains to deepen this fundamental understanding. In the beginning, studying bioactive compounds meant doing lab tests to find the active compounds found in medicinal plants mentioned in Malay manuscripts. This could lead to the discovery of new medicines. Secondly, it is essential to conduct pharmacological and clinical studies that explore the efficacy and safety of these traditional treatments through clinical trials, especially for common ailments such as digestive and respiratory issues. Thirdly, the preservation of medicinal plants necessitates the exploration of conservation strategies for wild species threatened by deforestation, climate change, and urbanisation, which could potentially contribute to biodiversity objectives. Ultimately, the focus is on incorporating contemporary healthcare by investigating avenues for the integration of safe and effective traditional Malay treatments within modern healthcare frameworks, particularly in community health environments, to promote accessible and culturally sensitive care. By focusing on these aspects, subsequent investigations can contribute to the preservation of Malay ethnobotanical knowledge as a dynamic and essential component of sustainable health and cultural heritage.

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Conflict of Interest

No conflict of interest

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