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DISCOURSE ON ETHNOMEDICINAL PLANTS IN ANCIENT MALAY MEDICAL MANUSCRIPT FOR GASTROINTESTINAL DISEASES

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ABSTRACT

Since ancient times, people have been using plants not only for a source of food, but also for a source of medicine. In the Malay culture, many ethnomedicinal plants are being used for various medicinal properties. This knowledge is recorded in many ancient Malay manuscripts that acknowledge many different local names of plants and its traditional uses and practices. This study will be discussing one of the ancient Malay manuscript named "Hikayat Nurul-lisan Menjawab Masalah" whereby the original work was written in Jawi alphabets. Fortunately, Harun Mat Piah in his book, "Kitab Tib Ilmu Perubatan Melayu" had transliterated the work to Latin alphabets and organised it to a better structure which makes the content readily accessible and easily interpreted for Malay researchers. The purpose of this study is to analyse and tabulate ethnomedicinal plants documented in the transliterated manuscript which mentioned gastrointestinal benefits. To attain the research objectives, qualitative thematic analysis will be employed on the manuscript in order to classify different themes in the text systematically. Among illnesses frequently mentioned in the manuscript are gastrointestinal related, such as digestion, bloating, diarrhea and others. The study highlights that there are 36 number of plants mentioned in the manuscript which relates to gastrointestinal diseases. There are many different practice of use, whereby some are with detailed explanation, and others very general. Some plants are mentioned as being used for the well-being of the digestive system. This study is imperative for comprehensively structuring the traditional knowledge obtained in the manuscript for easy reference and access to other researchers locally and internationally. Besides to enrich our traditional knowledge on ethnomedicinal plants, this research will indirectly serve to preserve one of an important Malay cultural heritage.

Keywords: Ethnomedicinal plants; Thematic analysis; Malay ancient manuscript; Malaysia medicinal plants; Gastrointestinal

INTRODUCTION

Discourses on ethnomedicinal plants from ancient manuscripts is important as at is one of the early traditional knowledge reference for medicinal plants usage. Many explorations for new phytochemicals and plant-based drugs are based on ethnomedicinal claims (Petrovska 2012). In the Malay Manuscript Centre of the National Library of Malaysia, more than 40 different manuscripts are being conserved and are categorised as medical manuscripts, but many are written or translated later as it dates earliest in 1920s (Piah 2019). These collections of very precious traditional knowledge are a golden chest that should be explored to unveil possible medicinal materials, in our quest to battle different illness that comes by in the future. Even so, contents of ancient medical manuscripts are rarely being structured and published to the scientific community, due to language barrier and are deemed unimportant.

Hence, this discourse deserves as one platform to publish the contents in one of the Malay Medical Manuscript, which is the Hikayat Nurul-lisan Menjawab Masalah (MSS 1792). Structurally identifying the themes which are the i) family of the plant, ii) the scientific name and ii) the use(s) of the plant being mentioned, specifically only on gastrointestinal diseases. This information once published, will be assessable to the global community, and further creates more ethnomedicinal based research opportunities, internationally.

Malay Medical Manuscript

Malay world is famous as a centre of herbs before the 15th Century. This history signified the richness of valuable edible plants and herbs that benefit the human body, specifically for health, besides its good taste and aroma for food. Major spices such as star anise, cinnamon, pepper, and clove are known for their good effects on human health, including antioxidant, antimicrobial, anti-inflammatory effects and possible protection against cardiovascular disease, diabetes, cancer, and neurodegeneration (Vázquez-Fresno et al. 2019). Ethnomedicine is a branch of ethnoscience, and ethnobotany is defined as conventional medical practices centered on the beliefs and practices of medicine by various ethnicities (Calderon et al. 2019).

According to Anuar (2017), there are an estimated 22,000 Malay manuscripts in various subjects. The National Centre of Malay Manuscript owns the most extensive Malay manuscript collection at the National Library of Malaysia. This centre also held a paper conservation centre that specialised in the manuscript. Besides this centre, another distinguished manuscript conservation centre is located at the Islamic Arts Museum Malaysia. Most Malay manuscripts related to the traditional medical practices were catalogued under the terms Kitab Tibb or traditional medicine. Transliteration jobs were done by the Malay philologist who transliterated the Malay classic Jawi texts to the Malay Romanised texts to assist non-Jawi readers or researchers in pursuing the information and research at more advanced levels. According to Mohd Effendi (2020), the manuscript mapping project was traced back to three locations in the Malay world i.e., Aceh, Riau, and East Coast of Peninsula Tanah Melayu as the main manuscript production centre.

Malay Manuscript related to the local traditional knowledge on medical practice in Malay society has recently come to light in ethnoscience research. The traditional medical practitioners were known with various titles such as pawang, bidan, dukun, and bomoh. The man or woman could be the healer with inherent knowledge, and there was no formal learning institution or system in learning the local medical knowledge. According to Siti Marina (2020), the traditional medical practitioner was respected in society. The close relationship between the traditional society and the nature around them left significant impacts where they started to use natural remedies as a cure and care for their health problem. The ability owned by the Malays is at the same level as practices by other traditional communities in the world, such as the Chinese and Western people. This knowledge was then passed down to the next generation either by the verbal or written medium. Much information about this knowledge is still kept in the manuscripts written in unstandardized Jawi spelling known as classic Jawi.

The Manuscript “Hikayat Nurul-Lisan Menjawab Masalah”

Hikayat Nurul-lisan Menjawab Masalah (MSS 1792) is a medieval narrative manuscript in a dialogue form, of a young girl (jariah) who used her wisdom and knowledge to free her ‘Master’. The text was copied to Jawi writing by Tengku Ahmad Tengku Panglima Raja on 23rd August 1924. The original text is in Arabic language and the event happened during the Abbasiyah Empire ruling of Harun al-Rasyid (Bangdad) in the year 786-803AD. The

manuscript was then transliterated to Latin alphabets and documented by Harun Mat Piah. It is openly accessible to the public via his published book (Piah 2019).

In the book (Piah 2019), the whole manuscript in Malay language is available from page 274 until 313. According to Piah (2019), this is one of the manuscript that are a complete manuscript from cover to cover, and the Jawi writings are easily readable. The manuscript is in a narrative dialogue form between two persons which is the tabib (doctor in Arabic languange) and a young girl who is called as Jariah throughout the text. According to Piah (2019), the young girls is named Nurul-lisan, and aged 14 years old at the time of the dialogue. She is a beautiful and intelligent young girl. The tabib will ask on the benefits of a certain plant, and Jariah will answer accordingly. Below is one example of the dialogue as taken form the manuscript, in Malay language and the author's translation to English:

> *Malay language: (Kata tabib) "Daripada quranful (bunga cengkih)" Jawabnya: "Panas kering darjahnya; dan pergunaannya membaikkan bahu mulut dan mencerahkan mata dan menegah daripada berselaput mata dan menahankan muntah dan loya dan jika ditumbukkan dia dan dibubuh kepada kepala nescaya memberhentikan bersin dan jika dimasukkan dia ke dalam faraj perempuan nexcaya menghilangkan kembang peranakan".*
>
> *Author's translation to English: (The doctor said) "From the quranful (cloves)" He replied: "The heat is dry; and its use is to improve the smell of the mouth and brighten the eyes and prevent it from forming lining in the eyes and prevent vomiting and nausea and if it is crushed and applied to the head it will stop sneezing and if inserted into the vagina of a woman it will shrink the uterus".*

The text in this manuscript is not too hard to theme, as the approach it is written is very straightforward to specific plants and its benefits. Most paragraph only describes one specific plants, but some have 2 or 3 plants written in one paragraph. This structure of the manuscript makes it easier for researchers to tabulate the plants systematically into one table. Although the manuscript is archived as one of the Malay Medical Manuscript in the National Library, the origin of the manuscript is not from Tanah Melayu. The text was copied in 1924

Gastrointestinal Diseases

Gastroenterology is the medical domain dedicated to the study, diagnosis, and treatment of disorders of the digestive system. The whole system is identified as the Gastrointestinal tract (GI). The GI includes the oesophagus (swallowing tube), stomach, small intestine, large intestine (colon), rectum, liver, gallbladder, or pancreas. Common GI diseases are like stomach heartburn (Gastroesophageal Reflux Disease, GERD), diarrhoea, constipation, stomach flu (Gastroenteritis) and peptic ulcers, just to name a few.

Although in the ancient manuscript, the disease mentioned are very brief and not scientifically described, but there are many specific keywords that can be related to GI disorders very clearly. Among the keywords mentioned in the manuscript, that can be used to associate the plants with GI diseases are stomach, intestines, constipation, intestinal worms, bloating etc. The purpose in this study is just to highlight the plants mentioned in the manuscript, without the intention to specifically address treatment towards the disease. This body of ethnomedicinal knowledge is important to deserve as a lead for scientists to probe further into its science behind the plants listed.

Publications on this manuscript is rarely accessible to both the local and international community. Hence, the ethnomedicinal knowledge contained in the manuscript are only being kept as an archived treasure. Publishing the content of this manuscript as a structured documentation is pivotal to contextualise ethnomedicinal Malay knowledge to the scientific community and furthermore, facilitate new discovery of drugs from plants. Using this study,

we hope to expose the ethnomedicinal knowledge of Malay heritage to the greater global community.

METHODOLOGY

This is an ethnographic study where literature review is mainly employed to support the research objectives. Harun Mat Piah in his book, "Kitab Tib Ilmu Perubatan Melayu" had transliterated the manuscript to Latin alphabets and organised it to a better structure which makes the content readily accessible and easily interpreted for Malay researchers. The full manuscript in the book was the main source for this study. Each of the plants mentioned in the manuscript were tabulated along with its benefits, method of usage and part of the plant suggested. The whole corpus of manuscript was meticulously read through, and all of the natural products cited were tabulated.

After the final tabulation, inclusion and exclusion criteria are identified for analysis of this study. Among inclusion criteria are i) keywords related to GI diseases and ii) natural product from plants. Keywords that relate to GI diseases were identified. There are 7 keywords that were being used to extract out natural products related with GI diseases which is summarised in Table 1 below.

Table 1. Keywords used as inclusion criteria

No.	Keywords	
	Word in Malay language as written in the manuscript	Translation to English
1	Perut	Stomach
2	Usus	Intestine
3	Muntah	Vomit
4	Loya	Nausea
5	Penghadaman	Digestion
6	Cacing	Worms
7	Sembelit	Constipation

The second inclusion criteria were then used to exclude out other natural products other than plants i.e., honey, minerals, and animal sources. Only plants were remained in the table for analysis. Consecutively, thematic analysis was then executed on the final table, to identify the main GI disease mentioned in the manuscript, along with the method and part of the plant described by in Hikayat Nurul-lisan Menjawab Masalah. The final table are presented in this study.

RESULTS

Family of the Ethnomedicinal Plants in Hikayat Nurul-lisan Menjawab Masalah

A total of 94 items of natural products which consists of plants, minerals, and others like honey, are being discussed throughout the conversation of tabib and Nurul-lisan. Among which 36 are medicinal plants with gastroenterology purposes which are identified using keywords related to gastrointestinal i.e., stomach, intestine, vomit, and diarrhoea as mentioned above. In our manuscript analysis, plants related with gastroenterology purposes comes from 22 different Family of plants, with plants from the Rosaceae Family being the highest (6 plants), and Apiaceae (5 plants) and Fabaceae (3 plants) following respectively. Plants from the Family

Zingiberaceae and Amaryllidaceae each with 2 plants, which are being listed for GI diseases. Table 2 explains the whole corpus of plants related with GI diseases, being mentioned in the Hikayat Nurul-lisan Menjawab Masalah.

Table 2. Plants mentioned in Hikayat Nurul-lisan Menjawab Masalah with Gastroenterology purposes.

No	Scientific Name of plants	Literal name in manuscript	Gastroenterology use	Method of use
Rosaceae (6 plants)				
1	*Cydonia oblonga*	Safarjal	Abdominal bloating	Consume (eat) frequently
			Treatment for constipation	Not mentioned
			Common stomach ache	Bake the fruit in ember until cooked, and consume
2	*Mespilus germanica*	Kundus	Abdominal bloating	Not mentioned
			Improve digestion	Pickle the fruit in salt water, and consume
3	*Pyrus communis*	Kamusyra	Abdominal bloating	Eat the fruit
			Improve digestion	Eat the fruit
			Treatment for intestinal worms	Use the seeds
4	*Prunus persica*	Khukh	Treatment for intestinal worms	Apply leaf paste on navel
5	*Malus domestica*	Tuffah (Buah epal)	Weaken digestive system	Fruit (Sour), peel of the fruit
			Improve digestion	Fruit (Sweet)
6	*Prunus mahaleb*	Mahlab	Improve digestion	Not mentioned
Apiaceae (5 plants)				
7	*Cuminum cyminum*	Kammun (Jintan putih)	Treatment for intestinal worms	Not mentioned
8	*Ferula asafoetida*	Hiltit (Inggu)	Abdominal bloating	Eat (size of a coin) along with water from river to release wind from stomach
9	*Eryngium foetidum*	Nanjur (Jemuju)	Abdominal bloating	Eat or apply the paste on stomach
10	*Foeniculum vulgare*	Nasabat (Adas pedas)	Prevent vomiting/nausea	Drink the decoction
11	*Coriandrum sativum*	Tuffah al-jan (Ketumbar besar bulat)	Prevent vomiting/nausea	Fried and eaten
*Fabacea*e (3 plants)				
12	*Indigofera tinctoria*	Nilah (Tahi jarum)	Common stomachace	Pull the leaves of the plant and put in water. Bath children with the water prepared.
13	*Senna alexandrina*	Al-sana (Daun inai)	Treatment for constipation	Not mentioned
14	*Tamarindus indica*	Tamar al-hindi (Asam celagi)	Prevent vomiting/nausea	Not mentioned
Zingiberaceae (2 plants)				
15	*Alphinia galanga*	Khulanjan (lengkuas)	Abdominal bloating	Inhale the smell/odour
			Treatment for constipation	

16	*Elettaria cardamomum*	Al-hail (Pelaga hindi)	Prevent vomiting/nausea	Not mentioned
Amaryllidaceae (2 plants)				
17	*Allium sativum*	Bawang putih	Common stomach ache	
			Abdominal bloating	Eat and inhale the smell/odour
			Treatment for intestinal worms	
18	*Allium cepa sp*	Lauzun (Bawang merah)	Make stomach full	Not mentioned
			Treatment for constipation	Not mentioned
Other Families (17 plants)				
19	*Pistacia vera (Anacardiaceae)*	Fustuq (Buah pastak)	Improve digestion	Eat (Fruit)
			Prevent vomiting/nausea	
20	*Saussurea costus (Asteraceae)*	Costus (Pucuk arab)	Antitoxin for the intestines	Can be eaten or made into paste to apply on stomach
21	*Boswellia sacra (Burseraceae)*	Mustaki (Getah kayu)	Abdominal bloating	Can be eaten or made into paste to apply on stomach
22	*Trichosanthes kirilowii (Cucurbitaceae)*	Jahab (Timun cina)	Improve digestion	Not mentioned
23	*Ricinus Communis (Euphorbiaceae)*	Kharwa (Jarak burma)	Abdominal bloating	Consume oil from the plant
24	*Crocus sativus (Iridaceae)*	Za'faran	Improve digestion	Drink
25	*Cinnamomum sp. (Lauraceae)*	Qirfah (Kayu manis)	Abdominal bloating	Drink
26	*Punica granatum (Lythraceae)*	Rumman (Buah delima)	Improve digestion	Eat parts of the pith
			Prevent vomiting/nausea	Eat the fruit (sour)
			Improve digestion	Eat the fruit
27	*Myristica fragrans (Myristicaceae)*	Basbasah (Bunga pala)	Mucus lining in stomach	Drink the decoction. Use the paste on stomach.
28	*Syzygium aromaticum (Myrtaceae)*	Quranful (Bunga cengkih)	Prevent vomiting/nausea	Not mentioned
29	*Olea europaea (Oleaceae)*	Zaitun	Common stomach ache	Apply seeds (grated) on stomach
30	*Papaver somniferum (Papaveraceae)*	Pium (Candu)	Common stomach ache	Drink the decoction
31	*Sesamum indicum (Pedaliaceae)*	Salit (Lenga)	Improve digestion	Consume the oil from the plant

32	*Piper nigrum (Piperaceae)*	Filfil (Lada hitam)	Abdominal bloating	Not mentioned
33	*Plantago ovata (Plantaginaceae)*	Bazru qatuna (Biji aling lengkok)	Prevent vomiting/nausea	Consume the seeds with water
34	*Ziziphus jujuba (Rhamnaceae)*	Anab (Buah bidara cina)	Common stomach ache	Not mentioned
35	*Citrus medica (Rutaceae)*	Utruj (Limau kelunca)	Improve digestion	Use the fruit peel in a drink or as paste to apply on the stomach
36	*Aquilaria malaccensis (Thymelaeaceae)*	Ud al-baghur (Kayu gaharu)	Abdominal bloating Improve digestion Prevent vomiting/nausea	Drink

Plants listed from the Rosaceae Family, are being mentioned in the manuscript in Arabic language such as safarjal, kurdus, kamusyra, khukh, mahlab and tuffah. In the manuscript, only tuffah is being translated to Malay language i.e., Buah epal. The plants that is mentioned to have gastroenterology benefits from this family are mostly edible fruits i.e., peach (khukh), pear (kamusyra) and apple (tuffah). Some plants listed, are being discussed to only have one use like the Prunus persica, but some plants have multiple uses, with different method of use. The part of the plant from the Rosaceae Family being mentioned to give the benefits are the fruit, leaf, and seed.

Apart from the flowering Family Rosaceae, 5 plants being discussed by the Tabib and Jariah are from the Apiaceae Family, which are herbs that is being used widely in the Malay traditional cooking and medicine. The plants as listed in Table 1, are being written in the manuscript in Arabic language with the Malay translation in brackets, hence showing that the plants are also being used in the Malay world at the time when the manuscript is being copied. Analysing the method of use mentioned in the manuscript, most of the method from the Apiaceae Family, does not mention a specific part of the plant. This can be related to the fact that the plants from this family are herbaceous plants, and one can assume that the whole plant is being used for the suggested benefits.

There are 17 different Family of plants, whereby only one plant is being listed out from the specific family with gastroenterology benefits. Among them are plants from the Asteraceae Family, Euphorbiaceae Family, Piperaceae and Rhamnaceae Family. The dialogue in the manuscript between the Tabib and Jariah, is not structured according to the Family of the plants, neither to its uses. This is common for ancient manuscripts, as most are not structurally written (Jarić et al. 2011; Toth et al. 2020). The analysis of the Family of plants being mentioned for GI diseases in this study makes the content of the manuscript accessible to scientist and more valuable to the global world.

Different Uses Related to GI Diseases Mentioned

From our manuscript analysis, there are 6 different category of uses related to GI diseases being mentioned by Jariah. Using the seven (7) keywords for inclusion criteria as explained in Table 1, six (6) categories of uses were identified. The uses are i) for abdominal bloating, ii) common stomach ache, iii) to improve digestion, iv) for prevention of vomiting/nausea, v) Treatment for constipation treatment and vi) treatment for intestinal worms. There are also other conditions that are uncategorised and are labelled as other related GI diseases are namely, antitoxin for the intestine, to treat mucus lining of the stomach, weaken the digestive system

and make the stomach ‘full’. These conditions are described very brief and were non categorised due to its vague description.

Examples of uses with very specific descriptions, and with brief description. How to relate with the medical terms?

Observing the trends of the benefits mentioned according to the Family of the plants, it can be analysed that plants from the Rosaceae Family in the manuscript are mentioned to be used mainly to improve digestion, for treatment of abdominal bloating and intestinal worms. Out of the 6 plants mentioned from this family, 4 of the plants are said to exhibit digestion benefits i.e., Merspilus germanica, Malus sp., Prunus mahaleb and Pyrus communis. It is interesting to highlight that in the narrative about Malus sp. i.e., apples, it is mentioned that fruit which are sweet, is able to improve digestion whereas, the sour fruit can weaken the digestive system.

Plants from the Apiaceae Family exhibit benefits regarding treatment for abdominal bloating (Ferula cyminum and Eryngium foetidum), prevention of vomiting or nausea (Foeniculum vulgare and Coriandrum sativum) and one plant is being mentioned for treatment of intestinal worms (Cuminum cyminum). No significant trend is detected in other family of plants written in the manuscript.

DISCUSSION

This manuscript was copied to Jawi writing by Tengku Ahmad Tengku Panglima Raja on 23rd August 1924 (Piah 2019). The original text is in Arabic language and the event happened during the Abbasiyah Empire ruling of Harun al-Rasyid (Bangdad) in the year 786-803AD. In the manuscript nothing was mentioned on how Tengku Ahmad got the original Arabic manuscript, and where he did his translation from Arabic to Jami writings. The manuscript is the most current ancient manuscript being dated in 1924 that is archived in the Malay Manuscript Collection of the National Library of Malaysia (Piah 2019). What is obvious is that the fact that there is documented trade relation between Arabs and the Malays since the 8th Century (Di Meglio 2016). It can also be observed that besides discourses on the plants and its benefits, the holistic approach of Islamic medicine, as other medical manuscripts, shows the integration of the plants with Islamic teachings such as Qur’an verses and name of Allah as a method of healing (Mat Sidek 2011).

As a result of the trade relations, not only material and goods of trade value were being exchanged, but the culture, language and even genetic biology are assimilated together from both nations (Di Meglio, 2016). This cross-culture includes the traditional medical knowledge, and also its medicinal plants and herbs. The Arabs introduced numerous new plants in pharmacotherapy, mostly from India, a country they used to have trade relations with, whereas the majority of the plants were with real medicinal value, and they have persisted in all pharmacopoeias in the world till today (Petrovska 2012).

Interestingly, when Tengku Ahmad copied the manuscript from the original Arabic manuscript, some plants were being indeitified by Tengku Ahmad to its local Malay name, such as Basbasah (Bunga pala), Quranful (Bunga cengkih) and Filfil (Lada hitam). This justifies that some plants are already being used and known in the Malay world, either as food or medicinal plants. It is also observed that some plants are being copied only in the Arabic name without any Malay local name in brackets, like the Safarjal dan Kundus, both fruits from the Rosaceae Family. Until now, both of these fruits are not common in Malaysia.

It is well known that phytochemicals in a certain plant are the element responsible for its pharmacological benefits. It is also evident that different Family of plants have different common phytochemicals that are abundant, and hence plays an important role in its

pharmacological benefits. For instance, in Cucurbitaceae Family, a review revealed that the most common phytochemical for the Family is the terpenoid substance called cucurbitacins (Rajasree et al. 2016).

The Rosaceae is the 19th largest family of plant, which consists of economically valued crop fruits like apples, pears, and peach, and also famous for highly valuable ornamental flowers like roses (Hammer & Janick 2009). Due to its large Family, there are many different phytochemicals that have been identified in the family. Safarjal or the Quince fruit, has been studied for its gastrointestinal benefits (Shakeri et al. 2018), and pectin is identified one of the component responsible for the gastrointestinal protection (Roediger 1990).

An interesting discussion regarding Malus domestica i.e., apples, is the contradicting benefits of the sweet and sour fruit, which is related to either improving digestion or weakening the digestive system. Previous studies have identified that sugars, acids, pectin, tannins, starch, cellulose, and different biologically active compounds such as vitamin C and certain phenolic compounds which are known to act as natural antioxidants (Boyer & Liu 2004). The sweetness of apples is due to the sugar compounds in the apples which consists of sucrose, glucose, sorbitol, and others (Charles et al. 2019).

A review on phytochemicals beneficial for the treatment of Inflammatory Bowel Disease (IBC) shows that polyphenols, terpenoids, flavonoids, and alkaloids are effective candidates for IBD therapy (Somani et al. 2015). IBD is a chronic inflammatory condition of the gastrointestinal tract, hence may hypothesise that these phytochemicals might also be responsible for the pharmacological benefits of the plants mentioned in this manuscript. In a study of indigenous community of Mixe from Mexico, highlighted that a large number of the plants used for the treatment of gastrointestinal pain contain essential oil or bitter principles, and tannins are used for treatment of diarrhea and dysentery (Heinrich et al. 1992).

Although the information of the plants, its benefits and the descriptions of the illnesses is very brief in Hikayat Nurul-lisan Menjawab Masalah manuscript, but the traditional knowledge contained in the manuscript is non the less very important. The manuscript showcases ethnomedicinal plants used originally by the Arabs, and brought into the Malay Archipelago via trade exchanges, and assimilated into Malay traditional practice. The traditional knowledge and heritage should be share to the international community, especially regarding gastrointestinal diseases, to promote research and exploration of possible cures for it.

Many limitations are apparent in this study, among the main limitation is the understanding of the manuscript itself. Authors are only able to refer to the manuscript that have been transliterated to Latin alphabets by Harun Mat Piah, and the study was from his written book. Brief descriptions of the illness also create a challenge to identify the benefits of the plants mentioned, specifically for GI diseases, hence authors only were able to analyse using keywords that is related with the gastrointestinal tract. There were also descriptions in the text that could not really be mapped to an exact medical term and were uncategorised in the analysis.

Way forward, various experts form different knowledge background i.e., scientist, botanist, ancient manuscript expert and medical doctors, should work synergistically to decipher the ancient traditional knowledge. Discourse on ancient manuscript should also be published internationally to benefit the global community, not only native communities in a specific location. The world now is moving towards digitalisation, and hence scholars should work towards digitalising traditional knowledge for the benefit of future generations.

CONCLUSION

Hikayat Nurul-lisan Menjawab Masalah is an interesting manuscript that recorded 36 different medicinal plants which is mentioned to have 6 categories of gastrointestinal benefits. Upon analysis of published data regarding the phytochemicals responsible for the treatment of GI disease, many phytochemicals are being studied to evidence the pharmacological benefit, such as terpenoids, tannins, polyphenols and many more. So many more should be explored regarding this manuscript, and integrating the traditional knowledge contained in the manuscript, with modern pharmaceutical and medical knowledge. Documentation and publication on the traditional knowledge, specifically regarding this manuscript should be promoted to increase visibility of our heritage to the international community.

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