

# Tajul Muluk: A Traditional Malay Text of Ethnobotany and Ethnomedicine

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## ABSTRACT

Ethnobotanical and ethnomedical knowledge of the Malays could be known either through oral sources or documented sources. The traditional sources of Malay medicine are useful for traditional and modern pharmaceuticals development in Malaysia and for conservation of biodiversity. This study aims to extract and categorise the ethnobotanical and ethnomedical contents documented in the medical chapter of *Tajul Muluk*, in the Malay ancient text. Transliteration and data extraction were carried out in order to identify and classify the information in the text. The manuscript has 292 medical interventions for 56 different diseases such as cough, fever, and mental health issues. There are descriptions available for different medical formulations using 209 plant-based materials, 12 animal-based materials and 40 other types. Many of the name and use of the materials are now rare or not well-known in modern today's society. Medical descriptions listed in *Tajul Muluk* will be a documented proof of herbs used by local Malay population utilised as ethnobotanical and ethnomedical resources. Hence retrieving useful ancient documental knowledge should be explored in finding useful cures and alternatives therapeutics for various diseases.

Keywords: Ethnobotany, ethnomedicine, Malay, *Tajul Muluk*, traditional medicine

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## INTRODUCTION

The term Malay medicine refers to comprehensive knowledge that covers all the theoretical, philosophical and practical aspects of how the Malays manage their health and illness. This scientific knowledge has been passed down verbally or practically from teachers or senior family members to apprentices and the next generation (Mohd Maidin, 2020). Malay medical knowledge has also been published and documented from time to time in the form of manuscripts on paper, wood or even palm leaves. In these manuscripts, Malay physicians have documented various ways of curing and healing diseases. Predominantly, correction to the diseased state was achieved using ethnobotanical and ethnomedical knowledge. Natural ingredients include mainly plants, animal parts, and minerals that are believed to be effective based on observations and experiences. Method of preparation, scales and measurements, time references and method of applications are also listed in these manuscripts, serving as evidence of the wisdom and scientific practices of ancient Malay medical

practitioners in their methods and treatments (Mat Piah, 2019).

Traditional medical texts may serve as valuable references in research into natural resources for pharmaceutical development. This role is not restricted to guide in selecting herbal plants for prospective screening only, but also in determining the extraction methods, applications, and formulations to be used (Nik Musa'adah *et al.*, 2020). Youyou Tu, a Nobel Prize winner in Medicine in 2015 for her remarkable discovery of artemisinin as an antimalarial drug, is a great example of an achievement based on the exploration of documentation of important herbal formulations used in ancient times. This therapeutic compound was isolated from *Artemisia* spp. which is a Chinese herbal formulation to treat malarial symptoms and was mentioned in Ge Hong's manuscript entitled *Zhou Hou Bei Ji Fang*, "A Handbook of Prescriptions for Emergencies" written around 284 – 346 CE (Tu, 2011). Several ancient records may be of high applied value due to a recent shift in paradigm in which modern and traditional medicine

knowledge work hand-in-hand in an integrative approach to solve several unresolved medical problems (World Health Organization, 2013).

Of the several hundred documents and texts available containing Malay medicine, one text, *Tajul Muluk* is of particular interest. *Tajul Muluk* is actually a compilation of herbal formulations on various subjects in one volume. *Tajul Muluk* was assembled by Shaykh Isma'il al-'Asyi, an Achehnese scholar of high repute. It was published as a lithographic print by Mathba'ah al-Miriyah al-Ka'inah, Mecca in 1311H/1893AD. The print edition of *Tajul Muluk* predates two other early printed Malay medical texts, *Rumah Ubat di Pulau Penyengat* (Mohd Shafri, 2018) and *Tayyib al-Ihsan* (Mohd Shafri, 2017). *Tajul Muluk* remains popular today, as evidenced by the continued availability in Southern Thailand, the Malay Peninsula, Sumatera, Java, Kalimantan and the Philippines (Jumala, 2019). This text is not to be confused with *Hikayat Tajul Muluk*, a literary text from Aceh (Harun, 1982), or *Fal Tajul Muluk* by Ali Zulfakar, a text on divination, or *Ikhtisar Tajul Muluk*, a modern text with some entries on medicine.

### **Ethnobotanical and Ethnomedical Importance of *Tajul Muluk***

Several works in relation to the medical part of *Tajul Muluk* have been published by Awang (2006), Wardani (2010) and Mat Piah (2015). Wardani (2010) and Mat Piah (2015) discussed a very limited explanation on the medical content of *Tajul Muluk*, providing only a cursory and partial listing of the types of disease and materials used. Awang (2006) covered most of the contents of *Tajul Muluk* but there was no full description of the contents. Our study made full use of the available materials on Malay medical manuscripts or *Kitab Tib* which had surfaced in recent years, in particular the manuscript *Ramuan Obat*, which is available online (<https://eap.bl.uk/archive-file/EAP153-9-4>) and has been previously studied (Mohd Shafri, 2021a). The evaluation of *Ramuan Obat*'s content shows that it is not simply similar to *Tajul Muluk*, but also a clearer version of *Tajul Muluk*. Thus, we can say with certainty that the printed version of *Tajul Muluk* contains a lot of printing errors that requires careful reading be performed to verify its content. *Ramuan Obat* shed more light on the correct reading of *Tajul*

*Muluk* and possible printing errors. Other formulations in *Tajul Muluk* have also been found to be identical to individual formulation in texts like MSS2515 (Mat Piah & Baba, 2014), which again enables verification of content to be carried out. In this paper, we present the list of ethnobotany and ethnomedical *materia medica* in *Tajul Muluk* accompanied by their identified scientific names. We also include a list of ethnobotanical materials which remain unidentifiable due to printing errors.

## **MATERIALS AND METHODS**

### **Selection of Manuscript**

*Tajul Muluk* has been selected for study following a screening process using the Index of Manuscript Selection (iMS) which is part of the Index of Scientific Analysis of Kitab Tib Melayu (SAKTI) developed recently (Mohd Shafri, 2021b). SAKTI has been developed specifically for Malay medical manuscripts study but in practice, it could also be adapted to other types of manuscript. The iMS in SAKTI (SAKTI-iMS) provides some guidelines for grading a text in a more objective manner by looking at details such as author's profile, integrity and legibility of text, and breadth and depth of medical content.

The screening using SAKTI-iMS tool was performed only on the medical section of *Tajul Muluk*, presuming that this section was independent from other sections in *Tajul Muluk* and has no known author. The list provided in the beginning of the section was compared to the actual entry and two chapters (*bab*) were found missing. The text still scores one mark for integrity as the completeness is still more than 80%. Although there is a significant amount of printing errors that could be identified, the legibility of the text is still good, and the text could still score a point for the legibility. In terms of the medical content, the section scores were satisfyingly high, as the amount of physical treatment, used as the index's benchmark, made up more than 80% of the treatment options listed. According to SAKTI Index, the text being analysed was given a score according to the four major criteria. The final score,  $\Sigma x$ , was between 0 – 6. The score will enable grading to be made to A ( $\Sigma x = 5-6$ ), B ( $\Sigma x = 3-4$ ), C ( $\Sigma x = 1 - 2$ ) or D ( $\Sigma x = 0$ ). Grade A indicates a strong candidate, or of high priority for inclusion in research; whereas B indicates medium or intermediate

priority; C denotes low priority; and D indicates very low priority. The total score for *Tajul Muluk* was 5, which means that the text was considered to have a strong value to be evaluated further (Table 1). An additional mark was scored by the text for having a high number of pages containing medical knowledge i.e. more than 30

pages in total. What is more, its widespread distribution across the Malay world and its continued use, unlike other Malay medical manuscripts, means that there would be practical benefits to studying and clarifying the medical sections of *Tajul Muluk*.

**Table 1.** Analysis of *Tajul Muluk* using Index of Manuscript Selection in SAKTI-iMS

Name of Manuscript	Author's profile (x=score)		Integrity of text (x=score)		Legibility of text (x=score)		Medical content (physical treatment) (x=score)				Σx Score	Grade	Additional values	Priority for research
	Unknown (0)	Known (1)	Incomplete (0)	Complete >80% (1)	Illegible (0)	Legibility >80% (1)	<5% (0)	5-50% (1)	50-80% (2)	>80% (3)				
Tajul Muluk	✓			✓		✓				✓	5	A	>20 pages, continued use	High

For this study, we initially used the printed copies from *Dar Ihya' al-Kutub al-'Arabiyah* (Egypt) and *al-Haramayn* (Singapore-Jeddah-Indonesia). As it turned out, there is no difference in term of the quality and content between the two printed editions. Another copy by another Egyptian printing house, *Mustafa al-Babi al-Halabi wa Awladih*, is available on-line at <https://eap.bl.uk/archive-file/EAP153-5-9> and has also been referred to as a comparison. This copy is also similar to the other two versions mentioned earlier with all the same errors; the only difference is the pagination.

### Data Extraction

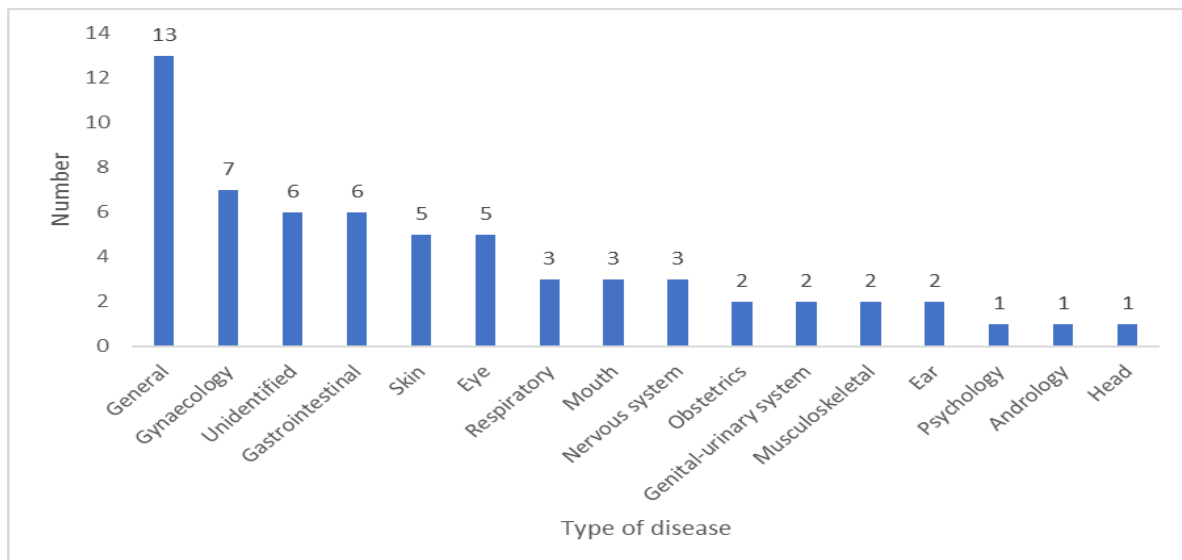
The ethnobotanical and ethnomedical data in *Tajul Muluk* were first extracted by performing a transliteration process, changing the Jawi script into Romanised Malay. Diseases and *materia medica* were identified and verified by cross-checking entries in *Pusat Rujukan Persuratan Melayu* (PRPM) on-line database ([www.prpm.dbp.gov.my](http://www.prpm.dbp.gov.my)), and *Kamus Besar Bahasa Indonesia* (KKBI). More importantly, cross-references were also made to botanical and medical dictionaries, in particular, A Dictionary of Malayan Medicine by Gimlette (1939) and the

online database, Malaysian Biodiversity Information System (MyBIS) accessible at <https://www.mybis.gov.my/one/>.

## RESULTS

### List of Diseases

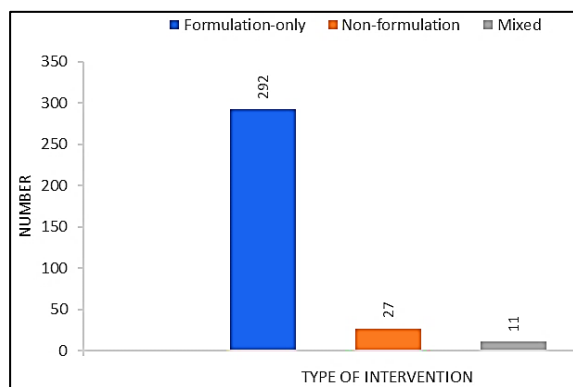
The medical sections in *Tajul Muluk* are further divided into more than 50 chapters which contain discussions of treatments for various illnesses. The diseases discussed include headache, eye diseases, ear problems, cough, breathing difficulty, toothache, syncope, seizures, gastrointestinal problems, hernia, kidney stones, fever, back pain, mouth ulcer, tumour, broken bones, sprains, amenorrhea and many more. In general, the arrangement does not follow the conventional head to toe arrangement common to Malay medical manuscripts. As an example, two presentations of leprosy, namely '*badam*' and '*kusta*' were placed in separate places, instead of being grouped together. A total of 61 physical diseases are mentioned in the manuscript, five of which cannot be identified (Figure 1). In addition, there are two diseases that were classified as non-physical illnesses related to mental health.



**Figure 1.** Type of diseases mentioned in *Tajul Muluk* according to bodily system.

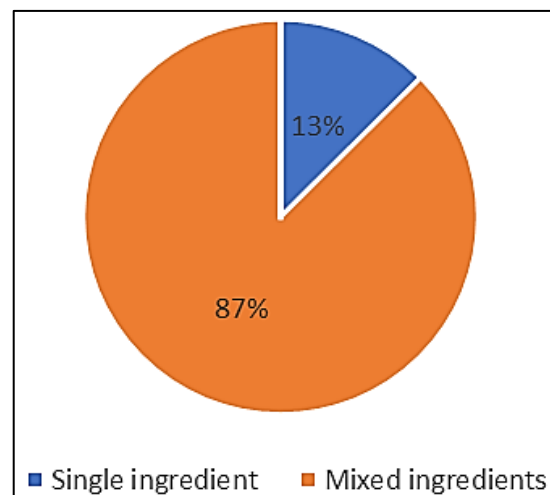
**Methods of Treatment**

The methods of treatment used in the manuscript can be divided into the following three types: (1) treatment that uses medical formulation; (2) spiritual-based treatment using *wafak* (letters, numerals, and diagrams) and prayers; and (3) treatment that combines the use of medical formulation and spiritual elements. The combination of these three types of treatment resulted in a total of 330 methods of intervention. Of these, 292 are medical formulations, 27 are non-formulation interventions (such as prayer), while 11 are combination of formulation and non-formulation interventions (e.g. pharmaceutical formulations used together with prayers) (Figure 2).



**Figure 2.** The number of traditional formulations, non-formulation interventions and mixed interventions in *Tajul Muluk*

With regards to the medical formulations, 87% or 265 of them are of the mixed ingredients type, whereas 13% or 38 of them are of the single ingredient types (Figure 3).

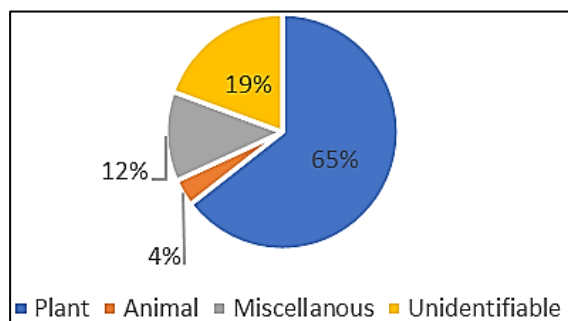


**Figure 3.** Percentage of single and mixed formulations in *Tajul Muluk*

**List of *Materia Medica***

In terms of medicinal ingredients, a majority are local, with only a few relying on external ingredients. The ingredients used in medical formulation can be classified into (1) plant-based ingredients; (2) animal-based ingredients; and (3) miscellaneous sources (Figure 4).

Medicinal materials derived from plants are the most commonly used ingredients in the formulation, consisting of 210 plants (or 65%) (Table S1) and 12 species of animals (Table 2). A total of 40 other ingredients that were neither plant nor animals; most of them were of the mineral type such as silver and borax, natural products such as milk and oil, or unknown materials. A total of 63 (or 19%) materials remain unidentifiable due to printing errors (Table S2). However, for these unidentifiable plant-based materials, there is a total 42 ingredients that can be classified as plant-based materials because the parts of the plants used in the treatments were mentioned in the formulation, such as leaf, root, flower, fruit and bark.



**Figure 4.** Percentage of plants, animals and miscellaneous ingredients in *Tajul Muluk*

For plant-based ingredients, there are 12 species of plants that have more than one vernacular name stated in the text, namely; (1) *Oryza sativa* (i.e. *beras, padi, nasi, lemukut*); (2) *Cocos*

*nucifera* (i.e. *kelapa, kelambir, kerambil, nyiur*); (3) *Myristica fragrans* (*basbas, pala*); (4) *Kaempferia galanga* (i.e. *cekur, kencur*); (5) *Eclipta alba* (i.e. *keremak betina, urang-aring*); (6) *Gendarussa vulgaris* (i.e. *gandarusa, daun rusa*); (7) *Dryobalanops lanceolata* or *Dryobalanops aromatica* (i.e. *kapur, kapur barus, paji*); (8) *Tamarindus indica* (i.e. *asam celagi, buah mil*); (9) *Piper longum* (i.e. *cabai, campli*); (10) *Alpinia galanga* (i.e. *lengkuas, khulanjan*); (11) *Ageraratum conyzoides* (i.e. *rumpit tahi babi, rumput putih*) and (12) *Aquilaria malaccensis* (i.e. *gaharu, karas, khulambak*). In addition, there are 9 plants that can only be identified by their genus name. This is because the author did not specifically mention the names of the plants in the text, such as *limau* (*Citrus* spp.), *pisang* (*Musa* spp.), and *keladi* (*Colocasia* spp.).

Regarding the animal-based materials, there are 10 species of animals that were utilized as ingredients in the treatment. These parts are most commonly eggs, milk, blood, fat and bezoar.

The most commonly used miscellaneous ingredients in the medical formulation were vinegar, honey, salt, charcoal, borax (sodium borate), and breast milk (Table 3). These ingredients are likely to act as adjuvants in the drug formulation, such as balancing the pH, stabilizing the formulation, enhancing the effect of the active ingredients and making the medicine more palatable.

**Table 2.** Animal-based ingredients as stated in *Tajul Muluk*

No.	Vernacular Name	Scientific Name	Parts Used
1.	Ayam	<i>Gallus gallus domesticus</i>	Egg, blood, fat, meat, gall, saliva
2.	Biri-biri	<i>Ovis aries</i>	Fat
3.	Cengkadak	<i>Mantis religiosa</i>	Tail / head
4.	Gagak	<i>Corvus</i> spp.	Gall
5.	Kambing	<i>Capra aegagrus hircus</i>	Bezoar
6.	Katak	<i>Kaloula</i> spp.	Blood
7.	Kerbau	<i>Bubalus bubalis</i>	Milk, Ghee
8.	Lembu	<i>Bos</i> spp.	Gall
9.	Lintah	<i>Hirudinea</i> spp.	Whole body
10.	Pelanduk	<i>Tragulid</i> spp.	Bezoar, gall
11.	Sapi	<i>Bos</i> spp.	Bezoar, Ghee
12.	Titir	<i>Geopelia striata</i>	Blood

**Table 3.** Miscellaneous ingredients as stated in *Tajul Muluk*

No.	Vernacular Name	English Name
1.	'Anbar	Tree resin
2.	Abu dapur	Wood ash
3.	Air hujan	Rainwater
4.	Air susu ibu	Mother's milk
5.	Arang / bara tempurung	Charcoal from coconut shell
6.	Batu celak	Black-coloured stone used as an eyeliner
7.	Belacan	Shrimp paste
8.	Cuka debunga	Cannot be identified
9.	Cuka masam	Vinegar / acetic acid
10.	Dadih	Curd
11.	Garam bangsa/bukit	Rock salt
12.	Garam Hormuz	Persian rock salt
13.	Garam Siam	Siamese salt
14.	Hartal	Yellow powder that has a fragrant smell
15.	Kanji	Starch
16.	Kapur kerang	White powder made by burning shells
17.	Kemih	Urine
18.	Kertas china	Cannot be identified
19.	Kesturi	Fragrant material obtained from musk-stag, <i>Moschus moschiferus</i> .
20.	Manisan	Sugar / sweets; commonly honey is used or referred to as manisan in Malay medicine
21.	Madu	Honey
22.	Manjakani	<i>Quercus infectoria</i>
23.	Minyak	Oil
24.	Minyak sempelah	The leftover of the coconut milk starch that results from the process of making coconut oil from coconut milk.
25.	Minyak tanah	Kerosene
26.	Nabat misri	Egyptian rock sugar
27.	Napal merah	Edible clay
28.	Pijar	Borax, Sodium borate
29.	Sakar / sukkar / sukkar batu / sukkar merah	Sugar / brown sugar
30.	Sarang angkut-angkut	<i>Eumenes spp.</i> nest which is made from mud soil
31.	Sekam	Rice husk
32.	Sembilu	Bamboo splinter
33.	Sidalinggam	Cinnabar, mercury (II) sulphide
34.	Tahi	Faeces
35.	Tahi perak	Silver
36.	Tahi telinga	Earwax
37.	Tanah	Soil
38.	Tanah cempaga	Coarse sulfur
39.	Tawas	Alum
40.	Terusi	Copper sulphate

## DISCUSSION

Our study enables a clearer view of the medical content from *Tajul Muluk*, a text which must not be overlooked when studying traditional documentation of Malay medicine due to its age

and long-standing use to this day. The amount of data is significantly deep and rich, providing information on diseases that the Malays commonly encountered in the late 19<sup>th</sup> century when the text was compiled and printed. The terminologies used by the Malays are both

original or adopted from other civilisations that criss-crossed the land and waters of the Malay Archipelago. Hence, there are loan words such as the Arabic *balgham* (phlegm) being used in the overwhelmingly Malay text. These loan words are often found in other Malay medical texts and understood by the Malays in general until today and used despite the availability of Malay words such as *lendir*, *kahak* dan *dahak*.

The cosmopolitan nature of Malay medicine is also reflected in the list of *materia medica* where there are mentioned several materials imported from China (such as *lengkuas Cina*, *kulit manis Cina*, and *kertas Cina*), Indian and Arabic nations (such as *inggu*, *kedelai*, and *garam Hormuz*). These materials were brought into the Malay World through trades mostly in the forms of dried seed, barks or resin and received good demand from the Malays who used them as spices and medicine. The number of imported materials is not very high at about 20 materials, or 6.5% from the total of about 320 materials mentioned in *Tajul Muluk*. A majority of the *materia medica* are local plants. The three types of ginger (*Zingiber officinale*) traditionally planted by the Malays – common *halia*, *halia bara/merah* (red ginger) and *halia padi* (small-leaf ginger) are used. Likewise, the materials that are synonymous with the Malay World such as *pala* (*Myristica fragrans*), *cengkih* (*Syzygium aromaticum*), *asam celagi* or *asam jawa* (*Tamarindus indicus*) and *bunga lawang* (*Illicium verum*) are also mentioned. Most other types of plants are plants that are not usually traded to outsiders and can only be found in the region. Therefore, their use as medicine originated purely from the interactions and experiences of the Malays.

In using these *materia medica*, the experiences of the Malays have shaped their methods of use, influencing dosage form and dosing regimen. It is the way that these medications were formulated by the Malays that are interesting to be learnt and tested. Thus, *ganja* (*Cannabis sativum*) for example is used by the Malays with caution as they understood its effect. In *Tajul Muluk*, it is found only in combination with other materials, which are mixed to dampened its effect. The resulting formulation is also recommended to be taken only in low amount so as to avoid its strong and negative effect to cognitive functions. Another instance is *halia bara* (*Z. officinale* var. *rubrum*

*Theilade*), which in Malay tradition is typically reserved for topical application and not prescribed orally as a single material (Gimlette, 1939) as the material is inflammatory in nature. In *Tajul Muluk*, *halia bara* is prepared as a mixed formulation. In one formulation, juice is extracted from the mixture and taken as a drink to relieve phlegm. Another anti-phlegmatic treatment involves drying the mixture of *halia bara* and other materials before these are then smoked and inhaled. The use of *halia bara* as anti-phlegmatic treatment is frequently found in scores of other Malay medical manuscripts, but this potential has not been explored much by contemporary researchers.

## CONCLUSION

Local Malay knowledge of ethnobotany and ethnomedicine is lost at an unprecedented rate as the terminologies and plant names are no longer well-known. Fortunately, there are old texts of Malay medicine such as *Tajul Muluk* that are still extant and have recently gained scholarly attention. The high number of remedies and the variety of diseases discovered within the pages of *Tajul Muluk* reflects the richness of this text in terms of Malay ethnobotany and ethnomedical knowledge, making it an invaluable resource for understanding the interactions of Malays with the natural resources available around them.

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