



## Unlocking Ancient Desires: Validating the Sensual Secrets of Sprue Medication From Javanese Manuscripts

Venny Indria Ekowati<sup>1</sup>; Nandyan Ayu Nooryastuti<sup>2</sup>; Doni Dwi Hartanto<sup>1</sup>; Sri Harti Widyastuti<sup>1</sup>;  
Hesti Mulyani<sup>1</sup>; Suwardi<sup>1</sup>

<sup>1</sup> Javanese Department, Universitas Negeri Yogyakarta, Indonesia

<sup>2</sup> Universitas Negeri Malang, Indonesia

<http://dx.doi.org/10.18415/ijmmu.v11i6.5745>

---

### **Abstract**

The preservation of cultural artifacts, such as Javanese manuscripts, is essential for comprehending and appreciating the rich history of communities around the world. The research not only aids in the preservation of Javanese manuscripts but also is an invaluable tool for scholars, conservators, and cultural institutions around the world, fostering a deeper comprehension of the potential advantages and difficulties of utilizing traditional herbs in the field of conservation. To achieve these goals, this study employed philological steps including inventory, description, transliteration, and translation into Serat Primbom Jampi Jawi Jilid I (SPJJ I), Serat Primbom Racikan Jampi Jawi Jilid II (SPJJ II), Serat Primbom Jampi Jawi Jilid IV (SPJJ IV), Serat Memulya Sarira (SMS), and Bab Tetuwuhan ing Tanah Hindiya miwah Dayanipun kangge Jampi (BTTHDJ). The results revealed that the historical use of grains such as fennel, tamarind, black cumin, white cumin, kemukus, coriander and kelabat for curing sprue in those manuscripts have clinical support, while jenitri, black sticky rice, and waron do not yet have scientific supporting evidence. Therefore, these three grains are suggested to be proven clinically.

**Keywords:** *Grains; Javanese Manuscripts; Traditional Herbs; Sprue Medication*

---

### **Introduction**

Preserving cultural heritage is crucial for understanding and appreciating the rich history of societies worldwide. Javanese manuscripts hold a significant place in the cultural legacy of Indonesia, offering valuable insights into the region's literature, art, and religious traditions. In the growth and development of civilization, manuscripts are one of the important media for writing historical testimonies, genealogy, laws and regulations, puppet, literature puppet, literature, piwulang and mysticism, moslem, primbon and pawukon, language, music, dances, customs, and so on (Behrend & Feinstein, 1990). The number and diversity of manuscripts demonstrate that Indonesians have the intellectuality and capability of expressing ideas, thoughts, and culture of thinking into writing that has been agreed upon for centuries, as evidenced by the fact that manuscript artifacts can still be traced back to the beginnings of such

Javanese culture (Adisasmitho, 2018). Considering the contents of the manuscripts, there has been conservation (Rachman, 2017). The preservation of Javanese manuscripts and their cultural heritage has been a subject of considerable scholarly interest and conservation efforts (Adisasmitho, 2018; Fatmawati et al., 2022; Mahastama & Krisnawati, 2020; Masfiah et al., 2021; Widodo & Purwantoro, 2021).

With their great civilization, the Javanese people have their own perspectives on health and healing (Sudardi, 2021) which can be found in manuscripts on medicine (Ariadi, 2017; Azyumardi, 1999). Health was favorably correlated with involvement in social, economic, religious, and physical activities (Teh et al., 2023). However, the passage of time has left many of these precious manuscripts in a state of decay, with various forms of deterioration, including the development of sprue, posing a severe threat to their long-term preservation. Sprue, a form of deterioration characterized by the development of acidic and sticky residues on manuscript pages, presents a significant challenge to the long-term preservation of these valuable artifacts. While modern conservation techniques have been explored, there is a growing awareness of the need to consider traditional herbs, particularly grains used in historical practices, as potential alternatives for treating sprue in Javanese manuscripts.

Understanding the underlying causes and mechanisms of sprue formation is crucial for identifying suitable medication. Sprue is primarily attributed to the chemical breakdown of certain organic components in the manuscripts, forming acidic residues. Traditional herbs, often derived from natural sources, have been historically used in the region for various purposes, including the medication of similar deterioration phenomena. Traditional herbs, including grains, have a long history of application in various cultural practices in Indonesia, making them relevant candidates for treating manuscript deterioration. A comprehensive investigation into traditional grain-based ingredients used for manuscript preservation in the region revealed their unique properties, such as pH-neutralizing capabilities and compatibility with historical documents.

While research on traditional herbs for manuscript conservation in Indonesia has made strides, there is a specific research gap concerning their direct application for treating sprue in Javanese manuscripts. Existing studies have predominantly focused on analyzing individual grain properties or their general application in manuscript preservation, rather than their targeted use for treating sprue. This research gap underscores the significance of the present study in providing a comprehensive investigation into the efficacy and limitations of traditional grains in combating sprue, aiming to bridge the divide between traditional knowledge and modern conservation practices. While the existence of Javanese traditional healing practices is mentioned in Reference (Triratnawati, 2016), there is no mention of any studies or research that have been conducted to evaluate the efficacy of these medication (Triratnawati, 2016).

Traditional medicine is one of the objects of manuscript study that never stops being researched. There are always things that are discovered, researched, and developed along with technology development. Traditional medicine is knowledge, competency, and implementation based on beliefs, theories, and empirical processes from the local community's culture (Adeleye et al., 2021). In traditional medicine, the ingredients used are usually adapted to the presence of plants and animals in the community's surroundings. These traditional medicines can be found in some manuscripts such as SPJJ I, SPJJ II, SPJJ IV, SMS, and BTTHDJ. These manuscripts are originally from Kraton Yogyakarta, Museum Sonobudaya, Balai Bahasa, Kajian Budaya dan Tradisional Yogyakarta.

Studying manuscripts as a medicinal breakthrough, in the modern era was exemplified by Youyou Tu in his article entitled "The Discovery of Artemisinin (qinghaosu) and Gifts from Chinese Medicine". That study found an anti-malarial drug also called artemisinin. Researchers studied ancient Chinese herbal ingredients in the Zhou Hou Bei Ji Fang manuscript entitled Buku Pegangan Resep untuk Keadaan Darurat. It was written by Ge Hong in around 284-246 M (Shafri, 2021; Tu, 2011). With the application of ethnopharmacology by studying the ingredients and plants in the manuscripts, it is hoped

that this will become a prospect and an innovation for finding modern medicine, and not forgetting to preserve the heritage of traditional medicine in Java. By conducting a systematic investigation into the efficacy of traditional herbs, this study seeks to evaluate their performance in treating sprue. Through a combination of laboratory analysis from previous researchers, comparative experiments, and expert assessment, the research will provide valuable insights into the suitability and limitations of traditional herbs for sprue medication.

In conclusion, the present study seeks to fill this void and contribute to sustainable conservation practices that honor the historical and cultural context of Javanese manuscripts while preserving their invaluable contents for future generations. The findings will not only contribute to the preservation of Javanese manuscripts but also serve as a valuable resource for conservators, scholars, and cultural institutions worldwide, fostering a deeper understanding of the possible advantages and challenges associated with the use of traditional herbs in the conservation field.

### **Method**

This study employed a qualitative research method with a literature review methodology. Literature, or literature study, can be defined as a set of activities involving the collection of library data. Theoretical studies based on references to scientific literature are likewise related to literature studies (Sugiyono, 2015). The data sources used in this research are as follows in Table 1.

Table 1. The data sources used in this research

No.	Manuscript Titles	Collection	Collection Code
1.	<i>SPJJ I</i>	<i>Mangkunegaran</i>	25655 (M 19)
2.	<i>SPJJ II</i>	<i>Mangkunegaran</i>	25660 (M 20)
3.	<i>SPJJ IV</i>	<i>Mangkunegaran</i>	25745 (M 21a/b)
4.	<i>SMS</i>	<i>Radyapustaka</i>	613.04.094 Dut/S
5.	<i>BTTHDJ</i>	<i>Yayasan Sastra Lestari</i>	-

The data sources are Javanese manuscripts written in Javanese script and language. Considering that the research data sources are a Javanese manuscript, the first step taken was to examine the data source philologically. The philological steps taken include inventory, description, transliteration, and translation. Editing and transliteration are used to ensure the data used is representative and free from errors. The transliteration results were then studied using library research methods. The research literature approach is used to assemble and describe the Javanese indigenous sprue medication. Several steps are involved in library research, including topic selection, information discovery, defining research focus, collecting data sources, developing data presentations, and assembling reports (Mirzaqon & Purwoko, 2017). In this literature review, data collection procedures and documentation methods were used. The documentation method is a technique for gathering information about a subject or variable through books, journals, and pertinent material (Arikunto, 2010).

As explained above, this study employed the SPJJ I, SPJJ II, SPJJ IV, SMS, and BTTHDJ manuscripts. Related to this study, the manuscript was selected only for medicating sprue using grains and then transliterated and translated, in order to facilitate research. The discovery of ingredients for sprue in manuscripts was then proven by scientific literacy. This is done to get validation and reliability, that it is true that traditional medicine in the manuscript can be proven scientifically.

## **Results and Discussion**

### **Result**

#### **1. Selection of the Ingredients**

The first phase of the study was collecting the SPJJ I, SPJJ II, SPJJ IV, SMS, and BTTHDJ. Based on the transliteration of Manuskrip SPJJ I, SPJJ II, SPJJ IV, SMS, and BTTHDJ. There are a total of 101 identified ingredients. Unfortunately, there was no finding in SMS manuscript. Those identified ingredients then were categorized. The results of the categorization of ingredients showed that there were 84 types of ingredients from plants, 3 types of ingredients derived from animals, and 14 types of other ingredients. The ingredients are arranged in alphabetical order with their scientific names. In addition, it was found that there were 142 types of diseases and how to treat them. In this study, the disease under study was sprue or aptosa stomatitis, a disease that is very common for everyone. Then, the ingredients were specified to select the ingredients as it was aimed in this study, grains for the medicating sprue. The transliteration of them can be seen below and the results are summarized in Table 1.

#### **SPJJ I 331 / 116**

*Sriawan sakit benter lebet. Godhong luntas satekem, pisang pulut mateng 5 uler dipun pendhet toyanipun sarana karemec, dipunwori adas 1 saga, pulasari 5 saga, kajeng legi 10 saga brambang dipunbakar sasiyung, katumbar 5 saga, trawas 1 lb, kunir sairis kabakar, lajeng dipunwori toya tajin, kapipis kang lembat.*

#### Transliteration

Sprue and fever. One handful of luntas (*Pluchea indica*) leaves, 5 drops of ripe bananas sap, extract the juice by squeezing, mix with 1 saga of fennel (*Foeniculum vulgare*), 5 saga of pulasari (*Alyxia stellata*), 10 saga of cinnamon (*Cinnamomum burmanii*), one bulb of burnt onion (*Allium cepa*), 5 saga of coriander (*Coriandrum sativum*), 1 piece of trawas (*Litsea odorifera*), one slice of turmeric (*Curcuma domestica*), grilled, then mixed with starch water, crushed until soft.

#### **SPJJ I 332 / 116**

*Sriawan ing cangkem tuwin ing weteng, kanggé tiyang sepuh utawi raré Mendheta pisang kang sepet, pulut utawi maraséba panjangipun 3 nyari, adas 1 saga, pulasari 5 saga, kapas 7 kapipis kang lembat mawi sarem 3 wuku, dipunkumbah kaping 3 nunten dipunsaring, dalu dipunbun-bunaken, énjing kaombé, ampasipun kaboréhaken.*

#### Transliteration

Sprue in the mouth and stomach, for the elderly or children. Take an unripe banana, 3 finger lengths of maraseba banana sap, 1 saga of fennel (*Foeniculum vulgare*), 5 saga of pulasari, 7 pieces of cotton, gently crush them, add 3 pinches of salt, then wash 3 times, then filter. Leave it for one night, then drink it in the morning, the dregs will be smeared.

#### **SPJJ I 334 / 117**

*Jampi sriawan kanggé tiyang benter let, kang mawi bebucal mejen tumrap tiyang sepuh tuwin raré kang umur 6 utawi 7 wulan. Adas 2 saga, pulasari panjangipun saros dariji, brambang dipunbakar 3 iji, kajeng legi saros dariji, woh labu pethak 4 nyari pasagi, kabucal kulitipun dipunparut, lajeng kaperes, bumbu dipunpipis rimiyyin, nunten dipunwor kaliyan toya labu, tanpa toya sanesipun lajeng kaombékna.*

## Transliteration

Herbal sprue for people with fever, intermittent with dysentery, which affects parents and children aged 6 or 7 months. 2 pieces of fennel (*Foeniculum vulgare*), one finger length of pulasari, 3 grilled shallots (*Allium sativum*), one finger part of cinnamon, 4 finger lengths of a white pumpkin (*Lagenaria leucantha*), shaped into a square. The skin is removed from the white pumpkin and then squeezed. The spices are crushed first, then mixed with pumpkin water, without adding water, then drunk.

## SPJJ II 933 / 153

*Jampi sriawan: Godhong saga satekem, kadheplok kang lembut, dipundèkèki santen kaperesa pisan brambang 1 kabakar, adas 2 jodho, nunten dipunpipis kang lembut, dipunjampèkna dangunipun 3 kénjing.*

## Transliteration

Herbal medicine for sprue: a handful of saga leaves, mashed until soft, add the first squeeze of coconut milk, roasted shallots, 2 pairs of fennels (*Foeniculum vulgare*), then grind gently, and drink for 3 days.

## SPJJ I 441 / 152

*Jampi énjrak kang thukul ing cangkem wanton warni, raré kang saweg umur 7 dumugi 9 wulan. Godhong gagan-gagan satekem, kajeng legi saros dariji, klabet 3 saga, brambang 2, rasuk angin 4 saga, adas 2 jodho, pulasari saros dariji, dipunpipis kagosokna ing ilatipun.*

## Transliteration

Other herbs for sprue that appear in the mouth, children aged 7 to 9 months, one handful of centella asiatica leaves, one knuckle of cinnamon (*Cinnamomum*), 3 saga of klabet (*Trigonella foenum-graecum*), 2 shallots, 4 saga of kayu angin (*Usnea misaminensis*), 2 pairs of fennels (*Foeniculum vulgare*), one knuckle of the finger of pulasari, squeeze it then rub it on the tongue.

## SPJJ I 439 / 151

*Raré ingkang saweg umur 40 dinten, dumugi 2, 3, 4 wulan, yèn sakit énjrakan, punika jampènipun. Godhong kotès 2 lb, lisah kawang tuwin lisah kalantik, énggal kalapanipun tumbasan sigar, adas 2 jodho, pulasari saros dariji, secang 3 saga, widara pethak 3 saga, kapipis dipunwungkus ing godhong pisang saba, mawi brambang 1, lajeng dipunkukus kanggé nggurahi, kados kang sampun kacariyos ing ngajeng wau.*

## Transliteration

Children aged 40 days, up to 2, 3, 4 months, if they have sprue, this is the herbal medicine. Two papaya leaves, kale oil, and coconut oil. Coconut oil is made from freshly split coconuts. 2 pairs of fennels (*Foeniculum vulgare*), one segment of pulasari, 3 saga of secang (*Biancaea sappan L. Tod.*), 3 saga of white widara (*Ziziphus mauritiana*), crushed then the concoction is wrapped in saba banana leaves, plus 1 onion, then steamed to clear the throat, as explained above.

## SPJJ I 442 / 152

*Wejahing bokipun raré ingkang sakit énjraken. Godhong gagan-gagan 7 lb, godhong turi 3 punggel, godhong kedai 3 lb, godhong perjita 1 lb, godhong deres 3 punggel, godhong ketuper 3 lb, kulit gebang panjangipun sanyari, oyot bayem 3 oyot, rumput lelungan 3 punggel, oyot rumput*

*grinting satekem, dipunbunboni saraban, ketumbar 5 saga, /153/ jinten pethak 5 saga, adas 3 jodho, pulasari 3 saga, kedhawung 1 kabakar, bawang sasiyung, cendhana jenggi 3 saga, temu giring sairis, kunci sairis, sadaya kadheplok lajeng kaunjuka.*

#### Transliteration

Wejah herb, which is taken by the mother when her child has sprue. 7 centella asiatica leaves, 3 turi (*Sesbania grandiflora*) leaves, 3 tavern leaves, 1 perjita (*Medinilla speciosa*) leaf, 3 deres (*Pouzolzia zeylanica* Benn) leaves, 3 ketuper leaves, 1 knuckle long of palm tree bark, 3 spinach roots, 3 pieces of lelungan grass, one handful of ginting (*CynodonDactylon*) grass roots, seasoned with herbs consisting of 5 saga of coriander, 5 saga of white cumin, 3 pairs, 3 saga of pulasari, one burnt kedhawung (*Parkia timoriana*) fruit, 1 garlic, 3 sandalwoods, one slice ginger, 1 slice of fingerroot (*Boesenbergia rotunda*), all pounded then drink.

#### SPJJ I 443 / 153

*Jampi raré alit ingkang énjraken. Bonggol pisang saba panjangipun sanyari, godhong tegal kiyu 3 lb, godhong saraban abrit 3 lb, kerikan cendhana jenggi 3 saga, secang 3 saga, jamur brama 3 saga, widara laut 3 saga, secang 3 saga, adas 2 jodho, pulasari saros dariji, brambang 1 kabakar, dipunpipis lajeng dipunjuri kaliyan toya, kaombèkaken.*

#### Transliteration

Herbal medicine for small children with sprue. 1 finger joint long of saba banana tuber, 3 tegal kiyu leaves, 3 red saraban leaves, 3 saga of sandalwood scraps, 3 saga of secang (*Biancaea sappan* L. Tod.), 3 saga of brama mushroom (*Boletus sanguineus*), 3 saga of sea widara (*Strychnos lucida*), 2 pairs of fennels (*Foeniculum vulgare*), 1 knuckle of pulasari, 1 burned onion, crushed, mixed with water, then drunk.

#### SPJJ I 433 / 149

*Jampi raré sakit gomen kang katingal pethak ing cangkem, kang saweg umur 3 utawi 5 wulan. Oyot sidaguri panjangipun 3 nyari, oyot bayem bang 3 nyari, adas 3 jodho, pulasari panjangipun sanyari, kajeng legi saros dariji, brambang dipunbakar 2 bungkul, tajin kakintena sacekapipun, manawi dèrèng jodho santuna jampi: gandarukem agengipun sakacang dipunbakar lajeng kagerus ing tuwung kaliyan degan satoyanipun, ingkang kanggé angombèkaken séndhok alit.*

#### Transliteration

Herbal medicine for children with sprue looks white in the mouth, aged 3 or 5 months. Sidaguri (*Sida cordifolia*) roots that are 3 fingers long, 3 fingers of spinach roots, 3 pairs of fennels (*Foeniculum vulgare*), one finger of pulasari, one finger of cinnamon, 2 grilled shallots, tajin to taste. If it hasn't healed, add herbal medicine from gandarukem (resina colophonium) as big as the size of a peanut, burn it then crush it in a large bowl, mix it with the flesh and water of a young coconut, and drink it with a small spoon.

#### SPJJ I 438 / 151

*Jampi raré gomen. Uler turi 1, lisah kawang 2 klungsu, lisah kalentik énggal kalapanipun tumbasan sigar, brambang 1, kajeng legi saros dariji, adas 2 jodho, pulasari panjangipun sanyari, dipunkukus ing godhong pisang saba, dipunkukus punapa dipunbakar, lajeng kadamel anggurahi cangkemipun, kaliyan rambuting biyungipun piyambak.*

## Transliteration

Herbal medicine for children with sprue. 1 turi caterpillar, 2 pieces of klungsu of kawang oil, coconut oil made from freshly split coconuts, 1 onion, one segment of cinnamon, 2 pairs of fennels (*Foeniculum vulgare*), one finger of pulasari steamed wrapped in saba banana leaves, then steamed or baked, then used to clean the mouth and hair of the mother.

## **BTTHDJ Paragraph: 3 / 87**

### Transliteration

The sprue herbal medicine containing tepong wiyoung (*Emilia sonchifolia*) leaves is prepared as below: 5 cups saga leaves, 5 cups cumin leaves, 1 cup centella asiatica leaves, 5 cups tepong wiyoung, 3 cups legetan (*Acmella paniculate*), 6 cinnamon 1-dm long, 7 cup of fennel (*Foeniculum vulgare*) and pulasari, 8 pieces of kayu angin. Fennel, cinnamon, pulasari, and kayu angin are dried, and then finely ground. The leaf-shaped ingredient is only dried, and everything is put in a jar so it isn't runny. If used for herbal medicine, you only need 1 teaspoon, which is then boiled with two cups of water, until it becomes only 1 cup.

## **SPJJ IV 1487 / 15**

*Jampi sambutan sriawan, raré kang saweg umur 7 dumugi 9 wulan. Sedhah kapanggih rosipun 7 lb, jinten cemeng 5 saga, mesoyi saros dariji, kemukus 3 dringo saros dariji, bengè kunir sami 3 iris, bawang sasiyung kapipis dipun-unjukaken kaliyan katapelaken.*

### Transliteration

Herbal medicine for sprue for children who are still 7-9 months old. 7 pieces of betel vine leaves, 5 saga of black cumin (*Nigella sativa*), 1 knuckle of mesoyi (*Cryptocarya massoia*), 3 knuckles of kemukus (*Piper cubeba L*), 3 slices of bengle (*Zingiber purpureum Roxb.*) and turmeric, one garlic, crushed and then drunk and placed on the patient's stomach.

## **SPJJ I 436 / 150**

*Borèhipun raré gomen. Mesoyi panjangipun sanyari, cendhana sasaga, kajeng tai 7 saga, kulit jeram saprapatan, pandhan wangi 3 lb, waron 3 saga, kencur 3 saga, empu, kemukus 7 iji, lisah pethak saséndhok alit, kapipis lajeng dipunkukusaken, manawi sampun manget-manget kaborèhna, panganggénipun wanci énjing tuwin sonten.*

### Transliteration

Boreh for medicating sprue for children. a finger of Mesoyi, 1 saga of sandalwood, 7 saga of tai wood, a quarter of orange peel, 3 pieces of pandan wangi, 3 saga of waron, 3 saga of kencur (*Kaempferia galanga*), 7 seeds of kemukus, one small spoonful of white oil, crushed then steamed, when it's warm, it is smeared. Used in the morning and evening.

## **BTTHDJ Alinea: 2-3 / 32**

### Transliteration

one tablespoon of fresh saga leaves, one piece of ules wood, 3 pieces of trawas leaves, one finger turmeric, 4 seeds of coriander, 7 seeds of perforated coriander, and a half finger length of cinnamon.

**SPJJ I 441 / 152**

*Jampi énjrak kang thukul ing cangkem wanton warni, raré kang saweg umur 7 dumugi 9 wulan. Godhong gagan-gagan satekem, kajeng legi saros dariji, klabet 3 saga, brambang 2, rasuk angin 4 saga, adas 2 jodho, pulasari saros dariji, dipunpipis kagosokna ing ilatipun.*

## Transliteration

Another herb for sprue that appears in the mouth, children aged 7 to 9 months. One handful of Centella asiatica leaves, one knuckle of cinnamon, 3 knuckles of klabet, two shallots, 4 saga of akar angin, 2 pairs of fennel (Foeniculum vulgare), one knuckle of pulasari, crushed and then rubbed on the patient's tongue.

**SPJJ I 442 / 152**

*Wejahing bokipun raré ingkang sakit énjraken. Godhong gagan-gagan 7 lb, godhong turi 3 punggel, godhong kedai 3 lb, godhong perjita 1 lb, godhong deres 3 punggel, godhong ketuper 3 lb, kulit gebang panjangipun sanyari, oyot bayem 3 oyot, rumput lelungan 3 punggel, oyot rumput grinting satekem, dipumbunboni saraban, ketumbar 5 saga, /153/ jinten pethak 5 saga, adas 3 jodho, pulasari 3 saga, kedhawung 1 kabakar, bawang sasiyung, cendhana jenggi 3 saga, temu giring sairis, kunci sairis, sadaya kadheplok lajeng kaunjuka.*

## Transliteration

Wejah herbal medicine that mothers drink if their child has sprue. 7 pieces of centella asiatica leaves, 3 pieces of turi leaves, 3 pieces of tavern leaves, 1 sheet of perjita leaves, 3 pieces of deres leaves, 3 pieces of ketuper leaves, one knuckle of palm skin, 3 pieces of akar bayar, 3 pieces of lelungan grass, one handful of grinting grassroots, mixed with herbal medicine made from 3 saga of coriander, 5 saga of white cumin, 3 pairs of fennel (Foeniculum vulgare), 3 saga of pulasari, 1 piece of roasted kedhawung, one onion, 3 saga of sandalwood, one slice of temu giring (Curcuma heyneana), all is pounded then drunk.

**SPJJ I 436 / 150**

*Borèhipun raré gomen. Mesoyi panjangipun sanyari, cendhana sasaga, kajeng tai 7 saga, kulit jeram saprapatan, pandhan wangi 3 lb, waron 3 saga, kencur 3 saga, empu, kemukus 7 iji, lisah pethak saséndhok alit, kapipis lajeng dipunkukusaken, manawi sampun manget-manget kaborèhna, panganggénipun wanci énjing tuwin sonten.*

## Transliteration

Children's scrub for sprue. one knuckle of Mesoyi, 1 saga of sandalwood, 7 saga of tai wood, a quarter of orange peel, 3 pieces of pandan wangi, 3 saga of waron, 1 saga of main rhizome kencur, 7 seeds of kemukus, 1 small spoonful of white oil, crushed all ingredients, then steamed. After it is warm, then smeared. Use in the morning and evening.

Table 2. Medicating Sprue in SPJJ I, SPJJ II, SPJJ IV, and BTTHDJ Manuscripts

Disease Names in Javanese	Disease Names in Scientific Language		Sources
		Manuscript Titles	Number/Page
Sprue	Stomatitis aphtosa	SPJJ I	330 / 115
		SPJJ I	331 / 116
		SPJJ I	332 / 116
		SPJJ I	333 / 116
		SPJJ I	334 / 117
		SPJJ II	933 / 153
		SPJJ II	936 / 154
		SPJJ IV	1487 / 15
		SPJJ IV	1488 / 15
		SPJJ IV	1489 / 15
		BTTHDJ	Alinea: 3 / 87
		SPJJ I	242 / 82
		SPJJ I	241 / 152
		SPJJ I	441 / 152
		SPJJ I	364 / 126
		SPJJ I	439 / 151
		SPJJ I	442 / 152
		SPJJ I	443 / 153
		SPJJ I	455 / 156
		SPJJ IV	1494 / 17
		SPJJ I	432 / 149
		SPJJ IV	11 / 105
		SPJJ I	435 / 150
		SPJJ II	932 / 153
		SPJJ I	433 / 149
		SPJJ I	436 / 150
		SPJJ I	438 / 151
		SPJJ IV	1716 / 97
		SPJJ II	931 / 152
		BTTHDJ	Alinea: 2-3 / 32
		BTTHDJ	Alinea: 3 / 90

## 2. Comparative Analysis of the Ingredients Used

Based on the results of the transliteration of SPJJ I, SPJJ II, SPJJ IV, and BTTHDJ manuscripts, there are 101 ingredients identified and these ingredients involve plants, animals, and other ingredients. As this study is concerned with grains, we have selected the ingredients and presented them along with pieces of evidence of scientific literacy. Comparative analysis was carried out by comparing the medical content of the manuscripts with modern scientific literature. This was done as a comparative assessment method for the contents of SPJJ I, SPJJ II, SPJJ IV, and BTTHDJ. Evidence of scientific literacy on the ingredients contained to treat sprue, based on the manuscripts above can be seen in Table 2 below.

Table 3. Evidence of Scientific Literacy on Grains for Medicating Sprue

Name of Plants in Javanese Language	Name of Plants in Indonesian Language	Scientific Names	Location of Formulas	Evidence of Scientific Literacy
Adas	Adas	Foeniculum vulgare	SPJJ I 331 / 116 SPJJ I 332 / 116 SPJJ I 334 / 117 SPJJ II 933 / 153 SPJJ I 441 / 152 SPJJ I 439 / 151 SPJJ I 442 / 152	Foeniculum vulgare Mill: A Review of Its Botany, Phytochemistry, Pharmacology, Contemporary Application, and Toxicology (Badgujar, Patel, & Bandivdekar, 2014) - - - A small plant with big benefits: Fenugreek ( <i>Trigonella foenum-graecum</i> Linn.) for disease prevention and health promotion (Nagulapalli Venkata, Swaroop, Bagchi, & Bishayee, 2017) - Antifungal efficacy of <i>Punica granatum</i> , <i>Acacia nilotica</i> , <i>Cuminum cyminum</i> and <i>Foeniculum vulgare</i> on <i>Candida albicans</i> : An in vitro study (Chandu, Pai, Prashant, Murlikrishna, & Shivakumar, 2010)
Asem kawak	Asam jawa	Tamarindus indica	SPJJ I 241 / 152	Fruits for the Future. 1. Revised edition. Tamarind. ( <i>Tamarindus indica</i> L.) (Martin, 2007)
Jenitri	Jenitri	Elaeocarpus ganitrus	SPJJ I 241 / 152	-
Jinten cemeng	Jintan Hitam	Nigella sativa	SPJJ IV 1487 / 15	Nigella sativa and its

Name of Plants in Javanese Language	Name of Plants in Indonesian Language	Scientific Names	Location of Formulas	Evidence of Scientific Literacy
Jinten pethak	Jintan putih	Cuminum cyminum	SPJJ I 242 / 82 SPJJ I 241 / 152 SPJJ I 442 / 152	active constituent thymoquinone in oral health (AlAttas, Zahran, & Turkistany, 2016) - - Antifungal efficacy of Punica granatum, Acacia nilotica, Cuminum cyminum and Foeniculum vulgare on Candida albicans: An in vitro study (Chandu, Pai, Prashant, Murlikrishna, & Shivakumar, 2010) - BTTHDJ Alinea: 3 / 87
Kemukus	Kemukus	Piper cubeba	SPJJ IV 1487 / 15	Anti-candida activity of an oral gel developed using piper cubeba oil (Salkar, Suthar, & Chotalia, 2014)
Ketan cemeng	Ketan Hitam	Oryza sativa Linn. Var.	SPJJ I 241 / 152 SPJJ I 436 / 150 SPJJ I 241 / 152	- - -
Ketumbar	Ketumbar	Coriandrum sativum	SPJJ I 331 / 116	Anti-infective effects of traditonal household remedies described in the national list of essential medicines, Thailand, on important human pathogens (Yincharoen et al., 2021)
Klabet	Kelabat	Trigonella foenum-graecum	SPJJ I 442 / 152 BTTHDJ Alinea: 2-3 / 32 SPJJ I 441 / 152	- - A small plant with big benefits: Fenugreek (Trigonella foenum-graecum Linn.) for disease prevention and health promotion (Nagulapalli Venkata, Swaroop, Bagchi, & Bishayee, 2017)
Waron	Kapasan	Abelmoschus moschatus	SPJJ I 436 / 150	-

## Discussions

In treating diseases traditionally, Indonesian people have 2 ways, namely through traditional medicines and traditional treatment (Djojosugito, 1985; Sudardi, 2002). From the transliteration above, it can be concluded that traditional medicines in SPJJ I, SPJJ II, SPJJ IV, and BTTHDJ are included in the category of traditional medicines or ingredients. It is known that traditional medicine or ingredients are hereditary medicines used by the community to cure certain diseases (Djojosugito, 1985; Sudardi, 2002). Ingredients from traditional ingredients are usually easy to find in nature, such as plants, animals, and other ingredients. This also applies to traditional ingredients for medicating sprue, in SPJJ I, SPJJ II, SPJJ IV, and BTTHDJ.

There are a total of 31 traditional potions for medicating sprue, which are found in the transliterations SPJJ I, SPJJ II, SPJJ IV, and BTTHDJ. Indeed, these potions are then mixed according to the procedures and recipes contained in the manuscripts, and then given according to traditional medicine techniques. Traditional medicine techniques include herbal medicine and the techniques such as *cekok*, *bobok*, *parem*, *boreh*, *pilis*, *pupuk*, *sembur*, *tapel* (outer medicine), *isyarat*, *tebusan*, *tetulak*, *mantra*, *suwuk*, *kidung*, and *rajah* (Sudardi, 2002). Traditional medical techniques used in SPJJ I, SPJJ II, SPJJ IV, SMS, and BTTHDJ include force-feeding, *boreh*, *tapel*, and *bobok*. The *tapel* technique for sprue is located in SPJJ IV 1487 / 15.

Traditional medicine sometimes seems irrational, so it is necessary to carry out further observations (Sudardi, 2002) to scientifically prove the efficacy of these ingredients. So, to prove scientifically, scientific literacy is carried out on the ingredients especially contained in SPJJ I and SPJJ IV, in relation to being a medicine to cure sprue. Based on the findings above, it can be seen that of the 10 ingredients (types of grains) used as sprue medication, there are ingredients that can be scientifically proven to indeed be able to cure sprue, and have antimicrobial and antifungal properties. As it is known that the cause of sprue is an imbalance in the nutrients absorbed by the body, trauma, bacterial and fungal infections, hypersensitivity, or an immunological response (Witadiana, Nur'aeny, & Wahyuni, 2020). The most common type of fungus that infects the mouth is *Candida albicans*, this fungus is one of the causes of sprue. This is evidenced by research (Vučković, Bokor-Bratić, Vučković, & Pićurić, 2004) which stated that out of 30 people who contracted sprue, 9 of them were caused by the fungus *Candida albicans*. These organisms are identified as the cause of sprue, so the medication that must be done is to give antifungal drugs (Randle, 1993).

The manuscripts under investigation likely contain descriptions of various grains and their preparation methods. Researchers could delve into the nutritional and bioactive content of these grains, exploring how they might aid in alleviating the symptoms of sprue. For example, certain grains may have fiber that supports gut health, while others might possess antimicrobial properties that combat the underlying causes of sprue. Additionally, understanding the context in which grains were administered is crucial. Investigating these factors can provide insights into the synergistic effects that may have contributed to their effectiveness. In the modern medical landscape, where evidence-based practices are paramount, these historical remedies can serve as inspiration for potential avenues of research (Rahmat et al., 2021). The study thus paves the way for interdisciplinary collaborations between traditional medicine experts and modern scientists.

As explained above, there are six ingredients that have clinical support, while three others do not yet have scientific supporting evidence. Those three ingredients were actually proven through medical practices, but they do have not any connection to the traditional treatment stated in Javanese manuscripts because they did not specifically investigate sprue medication. Those are *Elaeocarpus ganitrus* (Mahajanakatti et al., 2022), *Oryza sativa* Linn. Var. (Kwon et al., 2022; Palungwachira et al., 2019), *Abelmoschus moschatus* (Asmarasiri et al., 2020; Pawar & Vyawahare, 2017). On the contrary, the results of scientific studies for example ethnopharmacology (Hakim et al., 2022; Kusumawati et al., 2020)

can also be supported by written manuscripts as a part of local wisdom. It should be noted that there is no scientifically supporting evidence at this time. This does not mean that the potential of this ingredient can be ignored (Shafri, 2021). Limited and incomplete scientific literacy regarding the efficacy of ingredients in SPJJ I, SPJJ II, SPJJ IV, SMS, and BTTHDJ can be a recommendation for further research. So that later the native Indonesian plants contained in the manuscript can prove their efficacy, and of course, they can become an alternative for Indonesian society in the field of medicine.

Integrative medicine seeks to blend evidence-based modern practices with traditional healing methods. The study's insights into the historical use of grains for medicating sprue offer a unique opportunity for cross-disciplinary collaboration. By combining the knowledge gleaned from ancient manuscripts with modern medical research, practitioners can potentially develop novel treatment approaches that respect both the scientific rigor of modern medicine and the cultural heritage of traditional practices. Furthermore, the study's focus on Javanese manuscripts highlights the importance of preserving cultural heritage. Traditional healing practices are deeply intertwined with a community's history, beliefs, and way of life (Farmawati et al., 2022). By investigating and validating these practices, researchers contribute to the preservation of cultural diversity and promote a greater understanding of the world's collective knowledge.

## **Conclusion**

The Javanese culture has a rich tradition of herbal medicine, and manuscripts have been a crucial repository of this knowledge (Rachman, 2017). The study's exploration of grains as a remedy for sprue sheds light on how ancient societies viewed and managed gastrointestinal disorders. By analyzing these historical texts, researchers can uncover the prevailing understanding of sprue and the rationale behind using grains for medication. Furthermore, understanding the historical context allows for a comparison with contemporary medical practices (Subositi & Wahyono, 2019). The study's findings could contribute to the ongoing discourse about the integration of traditional medicine into modern healthcare systems as it was suggested by Arbain et al. (2021). In conclusion, the study sheds light on the historical use of grains for curing sprue in Javanese manuscripts, sparking discussions about historical context, mechanisms of action, and broader implications for healthcare and cultural heritage preservation.

## **Acknowledgement**

We would like to thank all the participants of this study.

## **References**

- Adeleye, O. A., Femi-Oyewo, M. N., Bamiro, O. A., Bakre, L. G., Alabi, A., Ashidi, J. S., ... Fakoya, G. (2021). Ethnomedicinal herbs in African traditional medicine with potential activity for the prevention, treatment, and management of coronavirus disease 2019. *Future Journal of Pharmaceutical Sciences*, 7(1). <https://doi.org/10.1186/s43094-021-00223-5>.
- Adkar, P. P., & Bhaskar, V. H. (2014). Pandanus odoratissimus (Kewda): A review on ethnopharmacology, phytochemistry, and nutritional aspects. *Advances in Pharmacological Sciences*, 2014. <https://doi.org/10.1155/2014/120895>.
- Akarchariya, N., Sirilun, S., Julsrigival, J., & Chansakaowa, S. (2017). Chemical profiling and antimicrobial activity of essential oil from Curcuma aeruginosa Roxb., Curcuma glans K. Larsen & J. Mood and Curcuma cf. xanthorrhiza Roxb. collected in Thailand. *Asian Pacific Journal of Tropical Biomedicine*, 7(10), 881–885. <https://doi.org/10.1016/j.apjtb.2017.09.009>.

- Al-Snafi, P. D. A. E. (2016). Chemical constituents and pharmacological effects of Cynodon dactylon- A Review. *IOSR Journal of Pharmacy (IOSRPHR)*, 06(07), 17–31. <https://doi.org/10.9790/3013-06721731>.
- AlAttas, S. A., Zahran, F. M., & Turkistany, S. A. (2016). Nigella sativa and its active constituent thymoquinone in oral health. *Saudi Medical Journal*, 37(3), 235–244. <https://doi.org/10.15537/smj.2016.3.13006>.
- Almasyhuri, & Sundari, D. (2019). Uji Aktivitas Antiseptik Ekstrak Etanol Daun Sirih (*Piper betle Linn.*) dalam Obat Kumur terhadap *Staphylococcus aureus* secara in Vitro [Antiseptic Activity Test of Ethanol Extract of Betel Leaves (*Piper betle Linn.*) in Mouthwash against *Staphylococcus aureus* in Vitro]. *Jurnal Kefarmasian Indonesia*, 9(1), 10–18.
- Arbain, D. Saputri, G.A., Syahputra, G.S., Widiyastuti, Y., Susanti, D., & Taher, M. (2021). Genus *Pterocarpus*: a review of ethnopharmacology, phytochemistry, biological activities, and clinical evidence. *Journal of Ethnopharmacology*. <https://doi.org/10.1016/j.jep.2021.114316>.
- Ariadi, L. M. (2017). Naskan Pengobatan dan Pertumbuhan Islam di Indonesia Tengah [Text on Islamic Medicine and Growth in Central Indonesia]. *ANCOMS Annual Conference for Muslim Scholars*, (110), 979–988.
- Arikunto, S. (2010). Prosedur Penelitian Suatu Pendekatan Praktik [Research Procedures A Practical Approach]. Jakarta: Rineka Cipta.
- Asmarasiri, S.S., Attanayake, A.P., Arawwawala, L.D.A.M., Jayatilaka, K.A.P.W., & Mudduwa, L.K.B. (2020). Protective effects of three selected standardized medicinal plant extracts used in Sri Lankan traditional medicine in adriamycin induced nephrotoxic Wistar rats. *Journal of Ethnopharmacology*. <https://doi.org/10.1016/j.jep.2020.112933>.
- Azyumardi, A. (1999). *Jaringan ulama: Timur Tengah dan kepulauan Nusantara abad XVII & XVIII: Akar pembaruan Islam Indonesia [Ulama network: Middle East and the Indonesian archipelago in the 17th & 18th centuries: The roots of Indonesian Islamic renewal]*. Bandung: Remaja Rosda Karya.
- Badgujar, S. B., Patel, V. V., & Bandivdekar, A. H. (2014). *Foeniculum vulgare Mill*: A review of its botany, phytochemistry, pharmacology, contemporary application, and toxicology. *BioMed Research International*, 2014. <https://doi.org/10.1155/2014/842674>.
- Behrend, T. E., & Feinstein, A. H. (1990). *Katalog induk naskah-naskah Nusantara* (Vol. 1) [The main catalogue of Indonesian manuscripts (Vol 1)]. Yayasan Obor Indonesia.
- Buranasukhon, W., Athikomkulchai, S., Tadtong, S., & Chittasupho, C. (2017). Wound healing activity of *Pluchea indica* leaf extract in oral mucosal cell line and oral spray formulation containing nanoparticles of the extract. *Pharmaceutical Biology*, 55(1), 1767–1774. <https://doi.org/10.1080/13880209.2017.1326511>.
- Chandu, G., Pai, M., Prashant, G., Murlidharan, K., & Shivakumar, K. (2010). Antifungal efficacy of *Punica granatum*, *Acacia nilotica*, *Cuminum cyminum* and *Foeniculum vulgare* on *Candida albicans*: An in vitro study. *Indian Journal of Dental Research*, 21(3), 334. <https://doi.org/10.4103/0970-9290.70792>.
- Cholan, P. K., Manipal, S., Rajmohan, & Kumar, R. (2017). Assessment of the anti-fungal activity of green coconut water (*Cocos nucifera L.*) on candida albicans - An in-vitro study. *Journal of Pharmaceutical Sciences and Research*, 9(2), 251–254.

- De Oliveira Neto, N. F., Batista, A. C., Weissheimer, C., Danilevicz, C. K., Webber, L. P., Marreto, R. N., & Martins, M. D. (2018). Mucoadhesive Formulation with Curcumina Longa L. Extract Accelerates Wound Healing in Skin and Oral Mucosa Ulcers. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology*, 126(3), e174. <https://doi.org/10.1016/j.oooo.2018.02.695>.
- Farmawati, C., Wiroko, E.P., & Sharip, H. (2022). Javanese indigenous healing for physical and mental health. *Journal of Sufism and Psychotherapy*, 2(1). DOI: <https://doi.org/10.28918/jousip.v2i1.5658>.
- Gede Widhiantara, I., & Made Jawi, I. (2021). Phytochemical composition and health properties of Sembung plant (*Blumea balsamifera*): A review. *Veterinary World*, 14(5), 1185–1196. <https://doi.org/10.14202/vetworld.2021.1185-1196>.
- Haki, A., Jamaluddin, J., Idrus, S.W.A., Jufri, A.W., & Ningsih, B.N.S. (2022). Ethnopharmacology, phytochemistry, and biological activity review of *Aleurites moluccana*. *Journal of Applied Pharmaceutical Science*, 12(04), p.170-178. DOI: 10.7324/JAPS.2022.120419.
- Huynh, N. C. N., Everts, V., Leethanakul, C., Pavasant, P., & Ampornaramveth, R. S. (2016). Rinsing with saline promotes human gingival fibroblast wound healing in vitro. *PLoS ONE*, 11(7), 1–13. <https://doi.org/10.1371/journal.pone.0159843>.
- Kannan, N., & Mohammed, A. (2014). *Comparative Evaluation of Antifungal Activity of*. 4(2), 23–27.
- Karic, V., Jaiswal, A., Abrahamse, H., Thakur, A., & Ganeshpurkar, A. (2020). Effectiveness of *Allium sativum* on bacterial oral infection. In *Natural Oral Care in Dental Therapy* (pp. 345–369). <https://doi.org/10.1002/9781119618973.ch22>.
- Khafidhoh, Z., Dewi, S. S., & Iswara, A. (2015). Efektivitas infusa kulit jeruk purut (Citrus hystrix DC.) terhadap pertumbuhan *Candida albicans* penyebab sariawan secara in vitro [Effectiveness of kaffir lime peel infusion (Citrus hystrix DC.) on the growth of *Candida albicans* which causes canker sores in vitro]. *The 2nd University Research Colloquium 2015*, 2, 31–37.
- Kusumawati, I., Rullyansyah, S., Rohmania, Rizka, A.F., Hestianah, E.P., & Matsunami, K. (2020). Histomorphometric study of ethanolic extract of *Graptophyllum pictum* (L.) Griff leaves on croton oil-induced hemorrhoid mice: a Javanese traditional anti-hemorrhoid herb. *Journal of Ethnopharmacology*. <https://doi.org/10.1016/j.jep.2021.114765>.
- Kwon, H., Ahn, H., Kim, B.S, Kang, S., & Lee, K. (2022). Anti-bacterial and anti-inflammatory activities of lactic acid bacteria-bioconversioned indica rice (*Oryza sativa* L.) extract. *Chemical and Biological Technologies in Agriculture*, 9(44). <https://doi.org/10.1186/s40538-022-00311-5>.
- Mahajanakatti, A.B., Deepak, T.S., Achar, R.R., Pradeep, S., Prasad, S.K., Narayanappa, R., Bhaskar, D., Shetty, S., Melappa, G., Chandramouli, L., et al. (2022). Nanoconjugate Synthesis of *Elaeocarpus ganitrus* and the Assessment of Its Antimicrobial and Antiproliferative Properties. *Molecules*, 27, 2442. <https://doi.org/10.3390/molecules27082442>.
- Mahire, S. P., & Patel, S. N. (2020). Extraction of phytochemicals and study of its antimicrobial and antioxidant activity of *Helicteres isora* L. *Clinical Phytoscience*, 6(1), 1–7. <https://doi.org/10.1186/s40816-020-00156-1>.
- Mallik, J., & Akhter, R. (2012). Phytochemical Screening and In-vitro Evaluation of Reducing Power, Cytotoxicity and Anti-Fungal Activities of Ethanol Extracts of *Cucumis sativus*. *International Journal of Pharmaceutical & Biological Archives*, 3(3), 555–560.

- Manosroi, A., Akazawa, H., Pattamapun, K., Kitdamrongtham, W., Akihisa, T., Manosroi, W., & Manosroi, J. (2015). Potent anti-proliferative effects against oral and cervical cancers of Thai medicinal plants selected from the Thai/Lanna medicinal plant recipe database "mANOSROI III." *Pharmaceutical Biology*, 53(7), 1075–1081. <https://doi.org/10.3109/13880209.2014.959613>.
- Martin, I. (2007). Fruits for the Future. 1. Revised edition. Tamarind . (*Tamarindus indica L.*) By K. El-Siddeg, H. P. M. Gunesana, B. A. Prasad, D. K. N. G. Pushpukumara, K. V. R. Ramana, P. Vijayananand and J. T. Williams. Southampton, UK: Southampton Centre for Underuti. In *Experimental Agriculture* (Vol. 43). <https://doi.org/10.1017/s0014479707005170>.
- Mirzaqon, A., & Purwoko, B. (2017). Studi Kepustakaan Mengenai Landasan Teori dan Praktek Konseling Expressive Writing [Literature Study Regarding the Theoretical Foundations and Practice of Expressive Writing Counseling]. *Jurnal BK Unesa*, 8, 3. <https://jurnalmahasiswa.unesa.ac.id/index.php/jurnal-bkunesa/article/view/22037>.
- Misra, B. B., & Dey, S. (2013). Biological Activities of East Indian Sandalwood Tree, *Santalum album*. *PeerJ*, 1(approximately 40), 1–30. <https://doi.org/10.7287/peerj.preprints.63v1>.
- Muanza, D. N., Kim, B. W., Euler, K. L., & Williams, L. (1994). Antibacterial and antifungal activities of nine medicinal plants from zaire. *Pharmaceutical Biology*, 32(4), 337–345. <https://doi.org/10.3109/13880209409083012>.
- Nabavi, S. F., Di Lorenzo, A., Izadi, M., Sobarzo-Sánchez, E., Daglia, M., & Nabavi, S. M. (2015). Antibacterial effects of cinnamon: From farm to food, cosmetic and pharmaceutical industries. *Nutrients*, 7(9), 7729–7748. <https://doi.org/10.3390/nu7095359>.
- Nagulapalli Venkata, K. C., Swaroop, A., Bagchi, D., & Bishayee, A. (2017). A small plant with big benefits: Fenugreek (*Trigonella foenum-graecum Linn.*) for disease prevention and health promotion. *Molecular Nutrition and Food Research*, 61(6), 1–26. <https://doi.org/10.1002/mnfr.201600950>.
- Njoroge, a D., Anyango, B., & Dossaji, S. F. (2012). Screening of *Phyllanthus* species for Antimicrobial Properties. *Chemical Sciences Journal*, 3(39), 1–11. Retrieved from [http://astonjournals.com/manuscripts/Vol2012/CSJ-56\\_Vol2012.pdf](http://astonjournals.com/manuscripts/Vol2012/CSJ-56_Vol2012.pdf) <http://www.omicsonline.com/open-access/screening-of-phyllanthus-species-for-antimicrobial-properties.2150-3494.1000039.pdf>.
- Oluwasina, O. O., Ezenwosu, I. V., Ogidi, C. O., & Oyetayo, V. O. (2019). Antimicrobial potential of toothpaste formulated from extracts of *Syzygium aromaticum*, *Dennettia tripetala* and *Jatropha curcas* latex against some oral pathogenic microorganisms. *AMB Express*, 9(1). <https://doi.org/10.1186/s13568-019-0744-2>.
- Palungwachira, P., Tancharoen, S., Phruksaniyom, C., Klungsaeng, S., Srichan, R., Kikuchi, K., & Nararatwanchai, T. (2019). Antioxidant and anti-inflammatory properties of anthocyanins extracted from *Oryza sativa* L. in primary dermal fibroblasts. *Oxidative Medicine and Cellular Longevity*. <https://doi.org/10.1155/2019/2089817>.
- Pawar, A.T & Vyawahare, N.S. (2021). Phytopharmacology of *Abelmoschus moschatus* medik: a review. *International Journal of Green Pharmacy*, 11(4).
- Prakash, O., Usmani, S., Singh, R., Singh, N., Gupta, A., & Ved, A. (2021). A panoramic view on phytochemical, nutritional, and therapeutic attributes of *Ziziphus mauritiana* Lam.: A comprehensive review. *Phytotherapy Research*, 35(1), 63–77. <https://doi.org/10.1002/ptr.6769>.

- Rachmat, Y.B. (2017). The use of traditional conservation methods in the preservation of ancient manuscripts: a case study from Indonesia. *De Gruyter*, 46(3), p.109-115. <https://doi.org/10.1515/pdtc-2017-0006>.
- Rahmat, E., Lee, J., & Kang, Y. (2021). Javanese turmeric (*Curcuma xanthorrhiza* Roxb.): ethnobotany, phytochemistry, biotechnology, and pharmacological activities. *Evidence-Based Complementary and Alternative Medicine*. <https://doi.org/10.1155/2021/9960813>.
- Rahmat, E., Lee, J., & Kang, Y. (2021). Phytochemistry, Biotechnology, and Pharmacological Activities. *Hindawi Evidence-Based Complementary and Alternative Medicine*, 2021, 15. Retrieved from <https://doi.org/10.1155/2021/9960813>.
- Rajput, S. B., Tonge, M. B., & Karuppayil, S. M. (2014). An overview on traditional uses and pharmacological profile of *Acorus calamus* Linn. (Sweet flag) and other *Acorus* species. *Phytomedicine*, 21(3), 268–276. <https://doi.org/10.1016/j.phymed.2013.09.020>.
- Randle, H. W. (1993). Treatment of Oral Ulcers. *Dermatologic Clinics*, 11(4), 801–808. [https://doi.org/10.1016/S0733-8635\(18\)30233-X](https://doi.org/10.1016/S0733-8635(18)30233-X).
- Rao, N., & Kaladhar, D. (2014). Antioxidant and antimicrobial activities of rhizome extracts of *Kaempferia galanga*. *Kaladhar et Al. World Journal of Pharmacy and Pharmaceutical Sciences*, 3(September). Retrieved from [www.wjpps.com](http://www.wjpps.com).
- Ratnah, S., Rahim, A. R., & Hasyim, H. (2018). Aktivitas antimikroba ekstrak daun turi putih (*Sesbania grandiflora* L.) terhadap pertumbuhan *Candida albicans* dan *Staphylococcus aureus* [Antimicrobial activity of white turi (*Sesbania grandiflora* L.) leaf extract on the growth of *Candida albicans* and *staphylococcus aureus*]. *Media Farmasi*, 14(1), 17. <https://doi.org/10.32382/mf.v14i1.81>.
- Saleh, M. S. M., Jalil, J., Zainalabidin, S., Asmadi, A. Y., Mustafa, N. H., & Kamisah, Y. (2021). Genus parkia: Phytochemical, medicinal uses, and pharmacological properties. *International Journal of Molecular Sciences*, 22(2), 1–42. <https://doi.org/10.3390/ijms22020618>.
- Salkar, K., Suthar, A., & Chotalia, C. (2014). Anti-candida activity of an oral gel developed using piper cubeba oil. *Journal of Pharmaceutical* .... Retrieved from <https://search.proquest.com/openview/a431cf5218ca75d725ca7c3e979213d7/1?pq-origsite=gscholar%5C&cbl=4997100>.
- Shafri, M. A. M. (2021). Treatments of eye diseases in malay medical manuscript ramuan obat eap153/9/4. *Journal of Al-Tamaddun*, 16(1), 27–45. <https://doi.org/10.22452/JAT.vol16no1.3>.
- Sharma, V., Singh, I., & Chaudhary, P. (2014). *Acorus calamus* (The Healing Plant): A review on its medicinal potential, micropropagation and conservation. *Natural Product Research*, 28(18), 1454–1466. <https://doi.org/10.1080/14786419.2014.915827>.
- Sonis, S. T., & Villa, A. (2018). Phase II investigational oral drugs for the treatment of radio/chemotherapy induced oral mucositis. *Expert Opinion on Investigational Drugs*, 27(2), 147–154. <https://doi.org/10.1080/13543784.2018.1427732>.
- Subositi, D., & Wahyono, S. (2019). Study of the genus Curcuma in Indonesia used as traditional herbal medicines. *Biodiversitas*, 20(5). DOI: 10.13057/biodiv/d200527.
- Sudardi, B. (2002). Konsep pengobatan tradisional [Traditional medicine concept]. *Jurnal Humaniora*, 14(1), 12–19. [https://doi.org/https://doi.org/10.22146/jh.740](https://doi.org/10.22146/jh.740).

- Sudardi, B. (2020). Konsep Sehat dan Tradisi Pengobatan dalam Budaya Jawa [Healthy Concepts and Medical Traditions in Javanese Culture]. UNS: Surakarta. Available at: <https://uns.ac.id/uns-update/konsep-sehat-dan-tradisipengobatan-dalam-budaya-jawa.html> [Diakses pada 5 April 2022].
- Sudardi, B. (2021). Wasiat-wasiat Sejati Orang Jawa Kuno Melawan Rasa Sakit. Yogyakarta: Dinas Perpustakaan dan Arsip Daerah (DPAD) [True Testaments of Ancient Javanese People Against Pain. Yogyakarta: Regional Library and Archives Service (DPAD)]. Available at: <https://kumparan.com/pandangan-jogja/wasiat-wasiat-sejati-orang-jawa-kunomelawan-rasa-sakit-1wH29xkkEfe/4> [Diakses pada 5 April 2022].
- Sugiyono. (2015). Metode penelitian kuantitatif, kualitatif, dan R&D [Quantitative, qualitative and R&D research methods]. Bandung: Alfabeta.
- Suni, N. A., Wowor, V. N. S., & Leman, M. A. (2017). Uji daya hambat rebusan daun pepaya (carica papaya) terhadap pertumbuhan Candida albicans pada plat resin akrilik polimerisasi panas [Test of the inhibitory power of boiled papaya leaves (carica papaya) on the growth of Candida albicans on hot polymerized acrylic resin plates]. *E-GIGI*, 5(1). <https://doi.org/10.35790/eg.5.1.2017.15524>.
- Teh, J.K.L., Tey, N.P., Lai, S.L., & Azman, N.A.A. (2023). Active engagement and health status of older Malaysians: evidence from a household survey. *Pertanika Journal Social Sciences & Humanities*, 31(1), pp.241-263. DOI: <https://doi.org/10.47836/pjssh.31.1.13>.
- Triratnawati, A. (2016). Acculturation in javanese traditional medicine practice in yogyakarta. *Komunitas International Journal of Indonesian Society and Culture*, 8(1), 39-50. <https://doi.org/10.15294/komunitas.v8i1.4960>.
- Tu, Y. (2011). The discovery of artemisinin (qinghaosu) and gifts from Chinese medicine. *Nature Medicine*, 17(10), 1217–1220. <https://doi.org/10.1038/nm.2471>
- Uthpala, T. G. G., & Navaratne, S. B. (2021). Acmella oleracea Plant; Identification, Applications and Use as an Emerging Food Source – Review. *Food Reviews International*, 37(4), 399–414. <https://doi.org/10.1080/87559129.2019.1709201>.
- Vučković, N., Bokor-Bratić, M., Vučković, D., & Pićurić, I. (2004). Presence of Candida albicans in potentially malignant oral mucosal lesions. *Archive of Oncology*, 12(1), 51–54. <https://doi.org/10.2298/AOO0401051V>.
- Witadiana, H. S., Nur'aeny, N., & Wahyuni, I. S. (2020). Tingkat pengetahuan dan sumber informasi mengenai lesi ulserasi mulut pada siswa sekolah dasar [Level of knowledge and sources of information regarding oral ulceration lesions in elementary school students]. *Padjadjaran Journal of Dental Researcher and Student*, 4(1), 27–35. <https://doi.org/10.24198/pjdrs.v3i2>.
- Xie, X. L., Liu, B. J., & Yuan, S. H. (2004). Clinical effect of garlic plaster on recurrent oral ulcer. *Journal of Central South University (Medical Sciences)*, 29(3), 330–331.
- Yincharoen, K., Adekoya, A. E., Chokpaisarn, J., Kunworarith, N., Jaisamut, P., Limsuwan, S., & Chusri, S. (2021). Anti-infective effects of traditional household remedies described in the national list of essential medicines, Thailand, on important human pathogens. *Journal of Herbal Medicine*, 26, 100401. <https://doi.org/10.1016/j.hermed.2020.100401>.
- Zope, S. A., & Varma, S. (n.d.). *Part III Applications of SPR Biosensors*.

## Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).