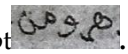
TREATMENT FORMULATIONS FOR '*RESDUNG*' IN MALAY MEDICAL MANUSCRIPT, MS 699

Nur Syazwani Feisal Hamdee, B. Sc[1], Mohd Affendi Mohd Shafri, PhD[1] and **Mardhiah Mohammad, PhD**[1*]

[1]Department of Biomedical Science, Kulliyyah Of Allied Health Sciences, International Islamic University Malaysia, Jln Sultan Ahmad Shah Bandar Indera Mahkota 25200 Kuantan, Pahang, Malaysia

Corresponding Author's email: mmoh@iium.edu.my

ABSTRACT

Resdung, a commonly used term among Malaysians, can be referred to as either allergic rhinitis or sinusitis. Allergic rhinitis is an inflammation of the nasal mucosa, whereas sinusitis is an inflammation of the nasal sinuses. These diseases affect worldwide population and the prevalence of this disorder is increasing. The use of conventional medical treatment for allergic rhinitis has been used widely. Despite the clinical effects, the adverse reaction causes concerns and by combining the conventional and alternative treatment, it can improve clinical effects and eventually reduce adverse effects. Thus, this study is aimed at presenting the treatment formulation of allergic rhinitis in MS 699 by transliterating *resdung* related content from *Jawi* to Roman writing. The MS 699 was selected from the National Library of Malaysia based on its inclusion and exclusion criteria. The method of transliteration used was the standard transliteration. The transliterated words were referred to an online dictionary, *Pusat Persuratan Rujukan Melayu* before the therapeutic information such as treatment formulations, signs and symptoms of diseases were analysed and discussed with the available scientific study. All *Jawi* words from the formulations were transliterated to Roman script except  . The study discovered two multiple compounded formulations for treatment of *resdung*. The materia medica of the formulation is mostly locally available vegetative, such as *jintan hitam* and *limau nipis.* Though information regarding signs of the disease in the manuscript was limited compared to current studies, the description was sufficient to imply inflammation. To conclude, the manuscript MS 699 provided two formulations to treat rhinitis and ingredients used consist of natural resources that can be easily obtained among Malaysians.

KEYWORDS: Malay medical manuscript, allergic rhinitis, sinusitis, *resdung* and herbal medicine

INTRODUCTION

The application of traditional medicine in treating various diseases has been used widely, including *resdung*. According to Gimlette (1930), *restong* is characterized as itch either on the face, at the eye or inside the nose, while in MSS 2999 Modern Medical Insight Into and Interpretation of a Malay Medical Manuscript (Hussain, 2015), the term *restung* refers to a kind of inflammatory disease of the nasal cavity affecting the sinuses. However, in Kitab Perubatan Melayu Sari Segala Ubat (Tabib Diraja Kesultanan Pontianak, 2019), the term *resdung* was used instead of *restung*. According to Dewan Bahasa dan Pustaka (2005), these two words are two spelling variations of the same meaning. *Resdung* in local Malaysian and Indonesian languages refers to allergic rhinitis (Ismail et al., 2017). However, *resdung* is also considered as a condition of sinusitis (Abd Aziz & Yunos, 2019). Although the symptoms of sinusitis and allergic rhinitis are mostly similar, they are considered as different diseases. However, these two conditions are linked to each other. Allergic rhinitis causes the nose to be blocked, eventually blocking the sinuses, which promotes bacterial growth and leads to infection (Dykewicz & Hamilos, 2010). Nevertheless, *resdung* can be referred to as both allergic rhinitis and sinusitis.

Allergic rhinitis is one of the common chronic respiratory system diseases. The prevalence has been increasing, and it is estimated to affect approximately 500 million people worldwide (Amini et al., 2016). Despite its high prevalence, there is yet no cure for rhinitis and therapeutic options are typically focused on attaining symptomatic relief (Watts et al., 2019). In Malaysia, the majority of Malaysians are actually suffering from *resdung*. However, most of them are having difficulties recognizing their condition due to lack of knowledge regarding symptoms of rhinitis and also lack of consultation with physicians (Solleh, 2020). Rhinitis is an immunoglobulin E (IgE) mediated inflammatory reaction of the nasal mucosa caused by external stimuli such as dust and pollen (Kariyawasam & Rotiroti, 2013). Allergic rhinitis can be classified into perennial and seasonal. Perennial rhinitis occurs throughout the year because it is triggered by non-seasonal allergens such as dust. Seasonal rhinitis happens during certain periods of time because it can only be triggered by seasonal allergens such as tree pollen (Ismail et al., 2018). Meanwhile, sinusitis is an inflammation of the nasal sinuses caused by infection, allergies and crooked nasal anatomy. It is often presented with nasal obstruction, postnasal drip, headaches and cough (Kaliner, 1998).

Even though conventional treatments for allergic rhinitis such as antihistamines and decongestants have been widely used, their adverse reactions can cause concerns (Brozek et al., 2010). The combination of conventional and alternative treatment medicine can improve clinical effects and also reduce the incidence of adverse reactions (Schafer, et al., 2002). Moreover, the use of traditional medicine such as acupuncture and herbal medicine has become popular recently and is acknowledged by countries all over the world as a treatment for treating various types of diseases (World Health Organization, 2019). In addition, a study reported that there is a high prevalence of herbal therapy use by different ethnic groups in Malaysia, including Malay, Chinese, Indian and Orang Asli (the Malay term for the indigenous peoples of Malaysia) (Mahmud et al., 2009). An initiative directed toward studying the content of available Malay medical manuscripts might be able to discover the rich repertoire of possible therapies that can be brought to the fore for use in contemporary society.

METHODOLOGY

Selection of Malay medical manuscript

The manuscript MS 699 was selected at the National Library of Malaysia. An overview on the content of Malay manuscripts was done on different catalogues provided by the library. It was selected based on the inclusion criteria, such as readable, containing keywords such as *kitab tib*, *perubatan melayu*, *ubat-ubat tradisional* as well as continuous and complete text as a whole. While the exclusion criteria for the selections were manuscripts that were unreadable and incomplete in pages. Then, a copy was requested for reference. The selected manuscript provides information about numerous treatment formulations using herbs, minerals and animal derivatives to treat various types of diseases.

Transliteration and pairing of *Jawi* to Roman alphabet

The manuscript was transliterated from *Jawi* to Roman script using the standard transliteration method. The whole *Jawi* words were transliterated based on the pairing of *Jawi* and Roman alphabets. The meaning of possible words was referred to *Pusat Rujukan Persuratan Melayu* (http://prpm.dbp.gov.my). Terminologies were sought from other journals and articles from online databases if the meaning was not documented in the online dictionary. However, any *Jawi* word that was unable to be transliterated is noted and written in its original word in the Roman transliteration text.

Content analysis

The overall content of the manuscript was analysed based on categories such as disease, scientific name and therapeutic information. Next, the materia medica mentioned in the formulations and its

therapeutic knowledge is referred to scientific publication in databases such as Scopus, Science Direct, PubMed and Google Scholar. Then, the ingredients in the formulation were searched for any available scientific studies in these databases. The combinations of keywords used were "allergic rhinitis", "sinusitis", "medicinal uses" and scientific names of each materia medica.

Numbering format for the formulations

The numbering format for each formulation was based on the number of manuscript and treatment formulations for *resdung* provided. For example, the first formulation found in the manuscript will be numbered as 699.1. The number 699 is the number of selected manuscript while number 1 is the first formulation for *resdung*. Hence, the second formulation of *resdung* will be numbered as 699.2.

RESULTS

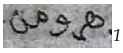
The MS 699 consists of 43 pages, including 3 unreadable pages with scribbles of *Jawi* words and letters. It contains 35 formulations for 21 types of diseases including *sakit dada, restung, tiada haid, senggugut* and *pitam.* More than half of the manuscript consists of information unrelated with medical aspects such as amulets, spells and Islamic related knowledge including *duas* or prayer of supplication taken from the *Al-Quran* and *Hadiths*. In addition, the manuscript MS 699 did not provide any page number, leading to difficulty if any part of the manuscript needs to be referred afterward. The transliteration focused on treatment of *resdung,* although the formulation for rhinitis was only approximately 5% of the total formulations, since the manuscript was quite short. Rhinitis is a disease suffered by the majority of Malaysians, and most of them are unaware of their condition. Furthermore, there is no cure yet for rhinitis and treating its symptoms is the only option available.

Transliteration of *Jawi* text

[699.1]

Bab ini ubat restung yang ***memakan pada mata atau pada gigi*** *maka ambil gagang sirih tujuh kali tujuh dan cengkur (cekur) dihiris-hiris dan giling ramas-ramas didalam mangkuk akan airnya asam limau nipis setelah itu sapukan pada yang sakit itu afiat olehnya.*

[699.2]

Sebagai lagi ***restung yang tambah pada bibir*** *maka ambil abu*  [1] *padi dan kapur kering sama beratnya dan bubuh jintan hitam sedikit maka hancurkan dengan air dan sapukan pada bibir Insya-Allah Taala afiat olehnya.*

[1] Written in text as

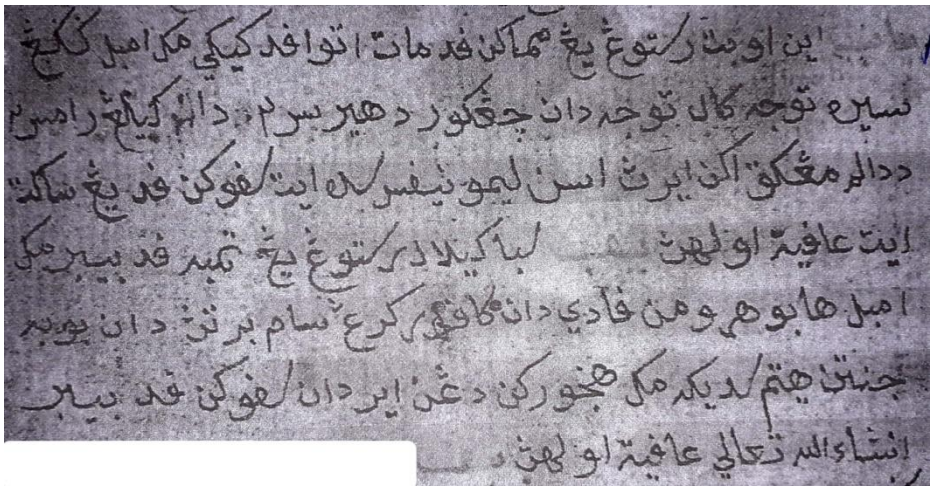


Figure 1 Original texts of formulation for *resdung*

Treatment formulations

There are two formulations prescribed in the manuscript for the treatment of *resdung*. The ingredients in each formulation were unique and different to each other (Table 1). There are 2 types of materia medica mentioned in the ingredients, which were plant and mineral. These two formulations are arranged together in MS 699, i.e. one after one another, and there are flanked by other formulations of two different diseases.

Table 1 Materia medica for treatment formulations of *resdung*

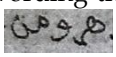
No.	Name as written in the manuscript	Family	Scientific name	Therapeutic informations (References)
1.	*Sirih (Gagang)*	*Piperaceae*	*Piper betle*	Reduced histamine produced by an IgE-mediated hypersensitive reaction (Wirotesangthong et al., 2010)
2.	*Cekur*	*Zingibera-ceae*	*Kaempferia galangal*	Suppress IgE-mediated anaphylaxis (Cao et al., 2020)
3.	*Limau Nipis (Jus)*	*Rutaceae*	*Citrus aurantiifolia*	Inhibit the release of histamine (Vazouras et al., 2009)
4.	*Padi*	*Poaceae*	*Oryza sativa*	Antioxidants, anti-inflammatory, immunostimulatory (Burlando et al., 2014).
5.	*Jintan hitam (Biji)*	*Ranuncul-ceae*	*Nigella sativa*	Antihistamine (Nikakhlagh et al., 2011)
6.	*Kapur kering*	-	*Calcium carbonate*	-
7.	*Air*	-	-	-

Signs and symptoms

The manuscript described characteristics of *resdung* as "*…memakan pada mata atau pada gigi…"* which translated in English as eating on eyes or teeth. This indicates *resdung* is affecting on eyes and teeth. Though the description was limited, the term *resdung* as commonly used in Malay community imply the condition of runny nose and watery eyes.

DISCUSSION

Transliteration of *Jawi* text

The entire *Jawi* wording that described *resdung* in the manuscript was successfully transliterated except for one. The word  (Figure 1) was not discovered in the available dictionary or in published journals. Other than that, the manuscript also mentioned other diseases besides *resdung* such as *senggugut* and *pitam*. Many of the transliterated and published Malay medical manuscripts in the National Library of Malaysia also have information on various diseases and their treatments, and have not focused on one disease type. These include Kitab Tib Muzium Terengganu Edisi dan Huraian Teks (Harun Mat Piah, 2017), Kitab Tibb MSS 2515 Kajian Teks dan Suntingan (Harun Mat Piah & Zawiyah Baba, 2014) and Kepelbagaian Jenis Penyakit dan Bahan-bahan Perubatan in Kitab TIb MSS 489 (Ab Karim, 2002).

Treatment formulations

Treatment and management of allergic rhinitis depends on the severity of the condition. However, according to Church et al. (2016), oral antihistamines are the first-line treatment used for all allergic rhinitis. The second-generation oral antihistamines such as cetirizine and loratadine are recommended for the treatment of allergic rhinitis, and are available for patients to buy over-the-counter. Other than that, intranasal antihistamines such as azelastine are also effective at reducing nasal symptoms and decongestants such as phenylephrine improve nasal congestion by acting on adrenergic receptors, resulting in decreased inflammation (Sur & Scandale, 2010).

Based on MS 699, two treatment formulations of *resdung* have completely different ingredients. One of the ingredients was *Piper betle* (*sirih)* which is known to possess anti-bacterial, anti-oxidant and anti-fungal activities due to the presence of phenolic compounds in its leaves (Kumar et al., 2010). Regarding its anti-allergic activity, an in-vitro study was conducted to investigate the effects of *Piper betle* on the production of histamine and granulocyte macrophage-colony-stimulating factor (GM-CSF) by bone marrow mast cells, and also on eotaxin and interleukin-8, which are associated with the asthmatic response produced by BEAS-2B lung epithelial cells. The results showed *Piper betle* was significant in decreasing histamine and GM-CSF produced by an IgE-mediated hypersensitive reaction (Wirotesangthong et al., 2008). Next, a citrus fruit that helps in dealing with allergic reactions, which is lime, has the potential to inhibit the release of histamine from basophils of patients suffering from allergic rhinitis (Vazouras et al., 2009). Then, a widely distributed flavonol found in the rhizome of *Kaempferia galangal,* known as kaempferol, was reported to have an anti-allergic effect on allergic diseases (Oh et al., 2013). According to an in vivo and in vitro study, kaempferol was able to suppress IgE-mediated anaphylaxis by targeting the DJ-1/Lyn signal (Cao et al., 2020).

Next, the ingredient used in the second formulation was *jintan hitam,* or black cumin. A clinical trial study reported that *jintan hitam* possesses antihistamine activity which enables it to reduce the presence of nasal itching, nasal mucosal congestion, sneezing attacks and runny nose (Nikakhlagh et al., 2011). Another study has found that one of its active components, which is thymoquinone, was able to reduce inflammatory response in activated mast cells by blocking transcription and production of TNF

alpha (TNF-α) through modulation of the proinflammatory transcription factor nuclear factor kappa B (NF-KB) (El Ghazzar et al., 2007). Meanwhile, *padi* or *Oryza sativa,* has been demonstrated to have antioxidant, anti-inflammatory and immunostimulatory activities, which help to reduce hypercholesterolemia and cardiovascular risk (Burlando & Cornara, 2014). The uses of air and kapur kering (calcium carbonate) perhaps act as binding agents or dilution agent for the whole formulations.

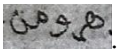
Signs and symptoms

The characteristics of *resdung* as mentioned in the manuscript were basically affecting heavily on the eyes and teeth '*..memakan pada **mata** atau pada **gigi**…'* and '*…restung yang tambah pada **bibir**…'*. The sign actually does not limit to the area of eyes, but extends to the teeth and lips. According to Scarupa and Kaliner (2020), the typical symptoms of rhinitis are nasal itching, nasal congestion, rhinorrhea and sneezing including extranasal symptoms such as itchy palate, allergic conjunctivitis and asthma. Regarding symptom in the teeth area, a longitudinal study demonstrated that there was an association between rhinitis and the risk of traumatic dental injuries. However, the exact mechanism is unclear (Siao et al., 2017). The symptoms of rhinitis mentioned in the manuscript are parallel with current studies such as itchy palate, conjunctivitis and dental injuries where it affects the area of the eyes, lips and teeth.

Other than that, MS 699 has provided limited information regarding the signs and symptoms of *resdung* as compared to other transliterated Malay medical manuscripts. According to Kitab Tib Terengganu, the disease could also affect the brain, stomach and throat "*…jikalau **restung** itu didalam **otaknya** atau didalam **perutny**a atau jadi didalam **lehernya**…"*. Based on a retrospective, case-control study conducted by Powell et al., (2007), they concluded that lower gastrointestinal symptoms such as abdominal pain and diarrhoea are common in patients with allergic rhinitis. In addition, Skoner (2001), reported that allergic rhinitis is frequently accompanied by symptoms involving the throat, ears and eyes including sore throat, stuffy nose and watery eyes.

In terms of duration, rhinitis could last for days, months and years as written in Kitab Tib Terengganu "*…Jika jadi didalam hidungnya sesak **berbulan-bulan** dan **bertahun-tahun**…" "..atau batuk didalam **lehernya** atau batuk **bertahun-tahun**".* Based on current medical studies, Seidman et al. (2015) mentioned that the frequency of symptoms in allergic rhinitis patients can be divided into intermittent and persistent. For intermittent, it is considered as less than 4 days per week or less than 4 weeks per year, while persistent can be considered as more than 4 days per week and more than 4 weeks per year. Although the information on symptoms of rhinitis and its duration in the selected manuscript was considered as limited compared to current medical studies, the information provided is still relevant to current studies.

CONCLUSION

In conclusion, treatment formulations for *resdung* in MS 699 were transliterated from *Jawi* script to Roman writing except for one word,  . The manuscript, MS 699 provides two formulations to treat *resdung*. These formulations consist of various natural resources that are cost-effective and can be found locally such as *sirih, cekur, limau nipis, padi, jintan hitam, kapur kering* and *air*. In terms of signs and symptoms of *resdung,* MS 699 provides limited information as compared to current scientific studies. However, the information provided by MS 699 is still relevant to the current studies. The Malay medical manuscript MS 699 is able to contribute some knowledge to be used as an alternative medicine in healthcare.

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