



(RESEARCH ARTICLE)



Effect of a selected *Ayurvedic* herbal formula in the management of *Sidhma Kushta* (Psoriasis): A critical analysis

Samaranayaka Liyanage Gayani Sewwandi ^{1, *}, Fathima Shazmin Hazari ² and Jayakody Arachchige Dona Pushpa Premakanthi Jayakody ³

¹ Temporary Demonstrator, Department of Cikitsa, Faculty of Indigenous Medicine, Gampaha Wickramarachchi University of Indigenous Medicine, Yakkala, Sri Lanka.

² Visiting Lecturer, Department of Applied and Natural Science, University College of Matara, Vocational Training, Sri Lanka.

³ Senior Lecturer Grade I, Department of Cikitsa, Faculty of Indigenous Medicine, Gampaha Wickramarachchi University of Indigenous Medicine, Yakkala, Sri Lanka.

GSC Biological and Pharmaceutical Sciences, 2023, 24(02), 128–133

Publication history: Received on 28 June 2023; revised on 06 August 2023; accepted on 08 August 2023

Article DOI: <https://doi.org/10.30574/gscbps.2023.24.2.0319>

Abstract

The largest organ in the body, the skin, acts as an immediate barrier between internal tissues and the outside world. The body is shielded by the skin from microbial and chemical attack, as well as the effects of temperature. Skin conditions have a significant impact on a person's emotional and physical health. Psoriasis is one of the most significant skin conditions that have presented difficulties for the medical community. According to *Ayurvedic* medicine, skin conditions are referred to as *Kushta* (skin diseases). *Kushta* comes in eighteen different varieties. The symptoms of psoriasis are comparable to those of *Sidhma Kushta* which are discussed under *Kshudra Kushtās* (minor skin diseases). *Azadirachta indica* (*Nimbha*) leaves grinded with Sesame oil was the chosen paste from a traditional formula and this review's objective was to investigate how well this selected paste manages to treat *Sidhma Kushta*. Information about *Sidhma Kushta* was acquired from *Ayurvedic* scriptures, contemporary texts and earlier research studies (from primary and secondary sources). Afterwards a survey of the literature was done on this paste and then examined for their *Pancha Padārtha* (five elements of herb) and pharmacological qualities regarding in the management of *Sidhma Kushta*. *Ayurvedic Pancha Padārtha* study has revealed that selected paste has anti-inflammatory effects. The majority of studies have demonstrated the anti-inflammatory effects of selected paste and according to a literature review and *Pancha Padārtha* analyze, selected paste is useful in the treatment of *Sidhma Kushta*.

Keywords: *Pancha Padārtha*; Psoriasis; *Sidhma Kushta*; Skin

1. Introduction

Skin cells can multiply up to 10 times more quickly than usual as a result of the autoimmune skin condition psoriasis ^[1]. A prevalent inflammatory skin condition called psoriasis is characterized by keratinocyte hyper proliferation that is mediated by T cells. Chronic plaque lesions (psoriasis vulgaris), acute and typically self-limiting guttate type eruptions, seborrheic psoriasis, pustular lesions and at least 10% of these people develop arthritis are some of the various but overlapping clinical presentations of the illness ^[2]. Between 0.6% and 4.8% of the general population has psoriasis, which is highly common due to its chronic nature and lack of a treatment. Therefore, it is crucial to check the chosen paste in the treatment of psoriasis. The evidence for environmental influences is fairly scant, despite the fact that genetic-environmental interaction has been presented as a model for the pathogenesis of psoriasis. In epidemiological research, risk variables such as smoking, drinking, nutrition, illness, drug use and stressful life events have all been

* Corresponding author: Samaranayaka Liyanage Gayani Sewwandi

identified. A significant amount of life quality is impacted by psoriasis [3]. Skin cells immune cells and a variety of biological signaling molecules interact pathologically in psoriasis as a result of genetic programming and environmental triggers. Although debate and study center on the stimulus that initiates this inflammatory process, psoriasis is thought to be an immune-mediated illness in which intralesional T lymphocytes and their pro-inflammatory signals cause primed basal layer keratinocytes to quickly multiply [4].

The typical erythematous scaly patches, papules and plaques, which are frequently itchy and occasionally painful are used to make the diagnosis. There are various unique clinical types of psoriasis. Rarely is a biopsy required to confirm the diagnosis [5]. Psoriasis vulgaris, often known as plaque-type psoriasis, is the most common form of the condition's dermatological symptoms. Although the terms "psoriasis" and "psoriasis vulgaris" are interchangeable in the scientific literature, there are significant differences between the various clinical subtypes [6].

The skin starts to swell up and hyperproliferate at a rate that is about ten times higher than usual. It can affect all ethnicities and has an equal impact on men and women [7]. There are several types of Psoriasis: Stable plaque psoriasis, Guttate psoriasis, Erythrodermic psoriasis and Pustular psoriasis [8].

Due to the similarities in signs and symptoms, psoriasis can be linked to *Sidhma Kushta*. *Kushtā's* etiological causes can be divided into three categories: *Āharaja Nidāna* (causes related to food), *Vihāraja Nidāna* (causes related to regime) and *Sidvritta Apālana* (unhealthy life). Each *Nidāna* (cause) has a significant impact on how the disease manifests [9]. One of the *Kshudra Kushta*, *Sidhma Kushta*, exhibits *Aswēdanam* (lack of sweating), *Mahāvastu* (extensive localisation), *Matsyashakālōpama* (resembling fish scales) and *Lakshana* (features), which have an impact on a person's physical, psychological, and social elements [10].

Sidhma Kushta was discussed in *Vruddhatraya* (3 major classical books) and *Laghutraya* (3 minor books), according to Ayurveda. *Charaka Samhitā*, *Susruta Samhitā* and *Astānga Hridaya Samhitā* (classical texts) are examples of *Vruddhatraya*. According to *Charaka Samhitā* *Sidhma Kushta* has the predominance of *Vāta* and *Kapha* (body humors) [11]. According to the *Susruta Samhitā*, entire body becomes blackish red in *Sidhma Kushta* [12]. According to *Ashtānga Hrdyam*, *Sidhma Kushta* is very wide none sweating and resembles the skin of a fish [13].

Sārangadhara Samhitā, *Bhāvaprakāsha* and *Mādhava Nidhāna* are all part of the *Laghutraya*. According to *Sārangadhara Sidhma Kushta* has the predominance of *Kapha Vāta* [14]. According to *Bhāvaprakāsha Sidhma Kushta* spread broad and similar to the skin of a fish [15]. According to *Mādhava Nidāna* absence of perspiration, spread in large area and resembling the scales of a fish are the features of *Sidhma Kushta* [16].

Paste was selected from a traditional formula contain *Nimbha* (*Azadirachta indica*) leaves grind with sesame oil. The current study based on an *Ayurvedic* medicinal paste that used in *Sidhma Kushta*. The study critically analyzed the pharmacological activities of the ingredients in selected paste in the management of *Sidhma Kushata*.

Aims & objectives

The study was created to determine the anti-inflammatory activity of the ingredients in selected paste in the management of *Sidhma Kushta*.

2. Research methodology

The literary review was referred through authentic Ayurveda classics such as *Charaka Samhitā*, *Susruta Samhitā*, *Ashtānga Hridaya Samhitā*, *Mādhava Nidāna* also from *Sāranghadara Samhitā*, *Bhāvaprakāshaya*, *Ayurveda Pharmacopiea*, Kumar & Clark Clinical medicine and Davidson principle and practice of Medicine. The review on *Sidhma Kushta* was conducted through recent scientific explanations and findings which published in official websites and indexed journals, articles, books, reports of WHO and encyclopedias. The gathered information was compared with traditional and modern scientific explanations using based on pharmacological characteristics, *Rasa* (taste), *Guna* (quality), *Veerya* (potency), *Vipāka* (last taste) and *Prabhāva* (specific action).

3. Review

Herbal Formula chosen from a traditional formula has two ingredients: (Table 1).

Table 1 Review of selected herbs

Ingredients	<i>Azadirachta indica</i>	<i>Curcuma longa</i>
Family	Meliaceae	Pedaliaceae
Sanskrit name	<i>Nimba</i>	<i>Thila</i>
Part used	Leaf and bark	Seeds

3.1. *Azadirachta indica* (*Nimba*)

It is a tree that grows quickly, reaching a height of 20 to 23 m. Its straight trunk measures about 4-5 feet in diameter. Each of the compound, imparipinnate leaves has between 5 and 15 leaflets. It produces green drupes that mature to golden yellow in the months of June through August. The Meliaceae family, which includes the Neem tree, is widely distributed in tropical and semitropical areas like India, Bangladesh, Pakistan and Nepal. Neem, *Azadirachta indica*, plays a therapeutic role in the management of health since it is a rich source of many different kinds of substances. Azadirachtin is the most significant active component, followed by nimbolin, nimbin, nimbidin, nimbidol, sodium nimbin, gedunin, salannin, and quercetin. Each component of the neem tree possesses a therapeutic quality, making it commercially viable [17].

Azadirachta indica has *Tikta* (bitter), *Kashāya* (astringent) *Rasa*, *Laghu* (lightness), *Rūksha* (dry) *Guna*, *Katu Vipāka* (last taste) *Sheeta Virya* (cold potency) *Pitta Kapha Hara* (reduce body humors) [18].

The immunomodulatory, anti-inflammatory, anti-hyperglycemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic and anticarcinogenic activities of neem leaf and its components have been proven [19] [20]. Experimental research on the extracts and chemicals made from neem plant has revealed anti-inflammatory, anti-proliferative and other effects that are pertinent to the treatment of psoriasis [21] [22]. In the traditional system of medicine, aqueous extracts of *Calendula officinalis*, *Momordica charantia*, *Cassia tora*, and *Azadirachta indica* seed oil have each been used to treat skin conditions including psoriasis [23] [24]. The percentage of symptoms alleviated leads researchers to the conclusion that *Azadirachta indica* is highly effective in treating psoriasis symptoms. Baby et al shown that *Azadirachta indica* has skin soothing and melanogenesis inhibition activities which aids in the management of psoriasis [25] [26]. By dramatically reducing inflammation and related proliferation, nimbolide has demonstrated promise anti-psoriatic action [27] [28].

3.2. *Sesamum indicum* (*Thila*)

Sesame, an upright, pubescent annual that can grow up to 90 cm tall and branches from the base. It has broad, thin leaves that are normally linear and intermediately ovate and serrated. Flowers are white, pink, or purplish with yellow markings and appear in racemes in the leaf axils. Fruits are compressed capsules that are deeply 4-grooved and have a quadrangular shape, numerous black, brown, or white seeds [29]. *Sesamum indicum* has *Madhura* (sweet) *Rasa*, *Snigdha* (unctuous) *Guna*, *Ushna Veerya* (hot potency), *Madhura Vipāka* and balance *Vāta Pitta* [30].

In vivo anti-inflammatory, anti-atherosclerotic and lipid-lowering effects of sesame oil (SO) have been previously described by mentioned article. The most recent research has demonstrated that an aqueous sesame oil extract (SOAE) likewise possesses anti-inflammatory and anti-atherosclerotic capabilities but does not lower cholesterol levels [31] [32]. These herbs' aqueous extracts were examined for their effects on monocyte-derived macrophages (MDMs) and their ability to reduce inflammation [33] [34]. Anti-inflammation is one of sesame lignans' prominent qualities. A body's natural defense against outside invaders is inflammation and persistent inflammation can lead to a variety of disorders. Sesame lignans prevent the spread of inflammatory cytokines and mediators, which further contributes to the reduction of inflammatory disorders [35] [36]. In-vitro and in-vivo study models are used in this paper to evaluate the anti-inflammatory efficacy of medicinal plants, plant extracts and pure compounds. It is an updated overview of various medicinal plants and their marker compounds [37] [38]. In a previous article, we discussed the anti-inflammatory activities of sesame oil aqueous extract (SOAE), both in vitro and in vivo [39] [40].

4. Results and Discussion

The states of *Sidhma Kushta* or psoriasis were described in various ways by *Ācharyas*. *Charaka Samhitā* and *Susruta Samhitā* included predominance of *Dōshas* (body humors) and feature of entire body while *Ashtānga Hrdaya* explained

features of *Sidhma Kushta*. Various features were given in *Mādava Nidāna*, *Sārangadhara Samhitā* and *Bhāvaprakāsha*. Several types of psoriasis are mentioned in modern books. According to Ayurveda and Modern research articles selected paste is effective in the management of *Sidhma Kushta*. Most of the research articles have shown that selected paste is anti-inflammatory while some other articles have included some other properties which in turn help to reduce inflammation in psoriasis.

When consider about *Azadirachta indica* due to *Tikta Kashāya Rasa* it pacifies *Pitta Dōsha* which in turn reduce inflammation in psoriasis. According to *Ācharya Charaka Sidhma Kushta* has the predominance of *Vāta* and *Kapha*. Due to *Laghu Rūksha Guna* and *Katu Vipāka* of *Nimbha*, *Kapha Dōsha* is pacified. Due to its *Sheeta Veerya* *Nimba* is *Kushtaghna* (reduce skin diseases) and *Kandughna* (reduce itching). When consider about *Sesamum indicum* due to *Madhura Rasa*, *Snigdha Guna* and *Ushna Veerya* it pacifies *Vāta Dōsha* and hence reduce psoriasis. As well as *Laghu Rūksha Guna*, *Ushna Veerya* reduce itching because the toxins which localized go out through the *Swēda* (sweat) thus clearing out the micro channels of skin by removing the obstruction in the *Swēdavaha Srōtas* (sweat channels). The literature review indicates that selected paste is anti-inflammatory in effect. Also paste shows immunomodulatory action and it helps to treat psoriasis because it is an autoimmune skin condition. However, in order to determine whether this selected paste may be used to treat and prevent *Sidhma Kushta* in humans, more thorough and conclusive human research must be conducted. According to the review, this selected paste show anti-inflammatory and immunomodulatory actions. Hence, selected paste is efficient in the treatment of *Sidhma Kushta*

5. Conclusion

Sidhma Kushta as an important public health problem has been discussed in recent few decades worldwide. *Azadirachta indica* leaves were grinded with sesame oil is useful in the control of *Sidhma Kushta*. According to the review, previous studies of pharmacological actions have emphasized that the above paste has strong anti-inflammatory actions hence, there is an urgent need to discover the suitable medicine which helps to reduce the prevalence of *Sidhma Kushta* worldwide.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

- [1] Kanwar A, Sharma A, Hom MD, Sulemani AA. A RANDOMISED SINGLE BLIND PLACEBO CONTROLLED TRIAL TO ASSESS THE EFFECTIVENESS OF AZADIRACHTA INDICA 1X IN CASES OF PSORIASIS. 2022.
- [2] Gudjonsson JE, Johnston A, Sigmundsdottir H, Valdimarsson H. Immunopathogenic mechanisms in psoriasis. *Clinical & Experimental Immunology*. 2004 Jan;135(1):1-8.
- [3] Naldi L. Epidemiology of psoriasis. *Current Drug Targets-Inflammation & Allergy*. 2004 Jun 1;3(2):121-8
- [4] Hugh JM, Weinberg JM. Update on the pathophysiology of psoriasis. *Cutis*. 2018 Nov 1;102(5S):6-12.
- [5] Weigle N, McBane S. Psoriasis. *American family physician*. 2013 May 1;87(9):626.
- [6] Rendon A, Schäkel K. Psoriasis pathogenesis and treatment. *International journal of molecular sciences*. 2019 Mar 23;20(6):1475.
- [7] Kumar P, Clark M. *Clinical medicine*. 7th ed., 2009, p. 1331-1334.
- [8] Davidson S. *Davidson principles & Practice of Medicine*. 21st ed., 2010, p. 1260-1263.
- [9] Tonni SS, Begum S. Diet in psoriasis-An Ayurvedic perspective. *Journal of Indian System of Medicine*. 2014 Oct 1;2(4):210.
- [10] Mehta R. Efficacy of Arohana Krama Snehapana and Sadyo-snehana for Virechana Karma in Eka Kushta with special reference to Psoriasis—a comparative study. *Journal of Indian System of Medicine*. 2017 Oct 1;5(4):257.
- [11] Sharma RK. *Charaka Samhita*, Volume I, Chaukhamba Orientalis, Sanskrit series office: 2005, p. 128.
- [12] Sharma PV. *Susruta Samhita*, Volume I, Chaukhamba Orientalis, Varanasi: 2010, p. 497.

- [13] Srikantha Murthy KR. Ashtangahrdayam, Chowkhambhakrinadas Academy, Varanasi, India: 2009, p. 139.
- [14] Srikantha Murthy KR. Sarangadhara Samhita, 6th ed., Chaukhamba Orientalis, Varanasi:1984, p. 39.
- [15] Srikantha Murthy KR. Bhavaprakasha, 1st ed., Volume 2, Chowkhambhakrinadas Academy, Varanasi, India: 2009, p. 502.
- [16] Murthy KR. Madhava Nidana. 7th ed., Chaukhamba Orientalis: 2005, p. 161.
- [17] Biswas K, Chattopadhyay I, Banerjee RK, Bandyopadhyay U. Biological activities and medicinal properties of neem (*Azadirachta indica*). *Current science*. 2002 Jun 10:1336-45
- [18] Ayurveda pharmacopeia, Volume I, Part I, Department of Ayurveda, Colombo, Srilanka: 1976, p. 68-69.
- [19] Bhowmik D, Chiranjib YJ, Tripathi KK, Kumar KS. Herbal remedies of *Azadirachta indica* and its medicinal application. *J Chem Pharm Res*. 2010;2(1):62-72.
- [20] Gaikwad RG, Shinde AJ, Hajare AA. Herbal treatment for management of psoriasis: An overview. *Research Journal of Pharmacy and Technology*. 2022;15(3):1385-92.
- [21] Deng S, May BH, Zhang AL, Lu C, Xue CC. Phytotherapy in the management of psoriasis: a review of the efficacy and safety of oral interventions and the pharmacological actions of the main plants. *Archives of dermatological research*. 2014 Apr;306:211-29.
- [22] Iriventi P, Gupta NV. Formulation and Evaluation of herbal cream for treating psoriasis. *Research Journal of Pharmacy and Technology*. 2021;14(1):167-70.
- [23] Roopashree TS, Dang R, Shobha Rani RH, Narendra C. Acute oral toxicity studies of antipsoriatic herbal mixture comprising of aqueous extracts of *Calendula officinalis*, *Momordica charantia*, *Cassia tora* and *Azadirachta indica* seed oil. *Thai Journal of Pharmaceutical Sciences*. 2009 Apr 1;33.
- [24] Gower NT. The effect of Maltineem® (*Azadirachta indica* leaf extract) on psoriasis. University of Johannesburg (South Africa); 2009.
- [25] Baby AR, Freire TB, Marques GD, Rijo P, Lima FV, Carvalho JC, Rojas J, Magalhães WV, Velasco MV, Morocho-Jácome AL. *Azadirachta indica* (Neem) as a Potential natural active for dermocosmetic and topical products: A narrative review. *Cosmetics*. 2022 Jun 2;9(3):58.
- [26] Zuccotti E, Oliveri M, Girometta C, Ratto D, Di Iorio C, Occhinegro A, Rossi P. Nutritional strategies for psoriasis: current scientific evidence in clinical trials. *Eur Rev Med Pharmacol Sci*. 2018 Dec 1;22(23):8537-51.
- [27] More NB, Sharma N, Pulivendala G, Bale S, Godugu C. Natural product topical therapy in mitigating imiquimod-induced psoriasis-like skin inflammation—underscoring the anti-psoriatic potential of Nimbolide. *Indian J Pharmacol*. 2021;53(4):278-285.
- [28] Kaur S, Sharma P, Bains A, et al. Antimicrobial and Anti-Inflammatory Activity of Low-Energy Assisted Nanohydrogel of *Azadirachta indica* Oil. *Gels*. 2022;8(7):434
- [29] Warriar PK. Indian medicinal plants: a compendium of 500 species. Orient Blackswan; 1993.
- [30] Ayurveda pharmacopeia, Volume I, Part I, Department of Ayurveda, Colombo, Srilanka: 1976, p. 82-83.
- [31] Deme P, Narasimhulu CA, Parthasarathy S. Identification and evaluation of anti-inflammatory properties of aqueous components extracted from sesame (*Sesamum indicum*) oil. *Journal of chromatography B*. 2018 Jun 15;1087:61-9.
- [32] Shrivastava S, Gurumurthy S, Doni B, Agrawal R, Patil SR, Ismail HS, Alam MK. Efficacy of Oil Pulling in the Management of Oral Submucous Fibrosis: A Preliminary Study. *Pesquisa Brasileira em Odontopediatria e Clínica Integrada*. 2021 Oct 29;21.
- [33] Deme P, Aluganti Narasimhulu C, Parthasarathy S. Evaluation of anti-inflammatory properties of herbal aqueous extracts and their chemical characterization. *Journal of medicinal food*. 2019 Aug 1;22(8):861-73.
- [34] Kim YH, Kim EY, Rodriguez I, Nam YH, Jeong SY, Hong BN, Choung SY, Kang TH. *Sesamum indicum* L. Oil and sesamin induce auditory-protective effects through changes in hearing loss-related gene expression. *Journal of medicinal food*. 2020 May 1;23(5):491-8.
- [35] Wu MS, Aquino LB, Barbaza MY, Hsieh CL, De Castro-Cruz KA, Yang LL, Tsai PW. Anti-inflammatory and anticancer properties of bioactive compounds from *Sesamum indicum* L.—A review. *Molecules*. 2019 Dec 4;24(24):4426.

- [36] Wei P, Zhao F, Wang Z, et al. Sesame (*Sesamum indicum* L.): A Comprehensive Review of Nutritional Value, Phytochemical Composition, Health Benefits, Development of Food, and Industrial Applications. *Nutrients*. 2022;14(19):4079.
- [37] Shingala Z, Chauhan B, Baraiya J. A review on medicinal plants as a source of anti-inflammatory agents. *Journal of Pharmacognosy and Phytochemistry*. 2021;10(6):364-71.
- [38] Dalibalta S, Majdalawieh AF, Manjikian H. Health benefits of sesamin on cardiovascular disease and its associated risk factors. *Saudi Pharm J*. 2020;28(10):1276-1289.
- [39] Narasimhulu CA, Selvarajan K, Burge KY, Litvinov D, Sengupta B, Parthasarathy S. Water-soluble components of sesame oil reduce inflammation and atherosclerosis. *Journal of medicinal food*. 2016 Jul 1;19(7):629-37.
- [40] Bigdeli Shamloo MB, Nasiri M, Dabirian A, Bakhtiyari A, Mojab F, Alavi Majd H. The Effects of Topical Sesame (*Sesamum indicum*) Oil on Pain Severity and Amount of Received Non-Steroid Anti-Inflammatory Drugs in Patients With Upper or Lower Extremities Trauma. *Anesth Pain Med*. 2015;5(3):e25085.