ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

International Journal of Ayurveda and Pharma Research

Review Article

THERAPEUTIC APPLICATION OF A SIDDHA FORMULATION PATAIC CANKÃRAN – A REVIEW

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ABSTRACT

Padarthamarai is the fungal skin infections and are categorised under *Kutta Rogam* (*Padarthamarai -Pundareega Kutam*). Many siddha drugs are prescribed for these diseases among them, *Pataic Cankãran* is exclusively mentioned for these disease as an internal and external medicine in Siddha literature - *Siddha Vaidya Thirattu*. Two different preparations are mentioned under *Pataic Cankãran* and differences observed in the ingredients as in *Pataic Cankãran* I *Ankol* (*Alangium salvifolium* (L.f.) Wang.), *Marukkarai* (*Catunaregam spinosa* (Thunb.) Tirvengadumia) and *Elumitchai* (*Citrus aurantifolia* (Christm.) Swingle), where as in *Pataic Cankãran* II, *Thagarai* (*Senna tora* (L.) Roxb.), *Erruku* (*Calotropis procera* (Ait.) R.Br.) are used. Even though *Pataic Cankãran* is mentioned in literature exclusively for dermatophytosis which is no longer in uses; Clinical study and standardisation of this drug have not been done so far, but *In-vitro* anti-dermatophytotic activities of the individual ingredient of these formulations have already been proved. The present review article aimed to document the biological, pharmacological and therapeutic applications such as anti-microbial, anti-bacterial and anti-inflammatory activities of individual ingredients used in *Pataic Cankãran I* with reference to skin diseases. This study will help to understand the need of research study on this ancient Siddha formulation.

KEYWORDS: *Pataic Cankãran*, Siddha formulation, Skin diseases, Dermatophytes.

INTRODUCTION

Siddha, a traditional system of medicine is being followed by the South Indians especially Tamilians and has drawn a great attention world wild. A number of ancient texts of Siddha perceived treasure to cure various ailments. In Siddha, skin diseases are collectively known as *"Thol Noikal". Padai* and *Padarthamarai* (dermatophytoses) are common skin diseases grouped under "*Kutta Rogam"* and probably Dermatophytosis.[1,2] *Padai* - differentiated into *Erichalpada, Thothupadai, Pithapadai, Megapadai, Themalpadai* etc[2,3]. *Padarthamarai* (*Pundareega Kutam*) is another type skin disease caused by Ring worm, *Tinea corporis* and other species of *Tinea.* Symptoms of these diseases are patches, black, white, and red colored skin with watery or dried that spread on the body [2,3],. Siddha drugs prescribed for dermatophytosis/other skin infections are; *Parangipattai Chooranam, Chinathamani Kuligai, Ilaikalli Pattru, Arugantailam, Nantimeluku, Cirrattaittailam, Pataic Cankãran* and *Vekarappodi* [1,2]. Among them, *Pataic Cankãran* is an important drug used for fungal skin infection both *Padai* and *Padarthamarai.* In Siddha literature two types of preparations named under *Pataic Cankãran*, and prescribed exclusively for *Padai* and *Padarthamarai* (dematophytosis). Ingredients of *Pataic Cankãran* I (Table 1). In the review article presented siddha perspective and pharmacological important of *Pataic Cankãran* I and its ingredients in brief with reference to the skin diseases.

MATERIALS AND METHODS

Literature survey was done using search engines such as pubmed, pubchem, Science direct, and siddha literature. [1,4,5]

RESULTS AND DISCUSSION

Preparation of *Pataic Cankãran* I mentioned in Siddha Vaidya Thirattu as follows: Finely powdered *Ankol Verpattai, Marukkarai Verpattai* and *Marukkarai Vidhai* were ground with Elumitchai fruit juice till a waxy consistency obtains. Recommended dosage: as external application also can use internal administration with the dose of 0.5-1g oral.[4] Ingredients of *Pataic Cankãran* I are given in Table 1 with botanical name and Tamil name.

Table 1: Details of ingredients used in *Pataic Cankãran* I[1, 4]

Drugs used in *Pataic Cankãran*	Botanical name of the drug
Ankol verpattai (Rt.Bk.) Marukkarai verpattai (Rt. Bk.) *Marukkarai vidhai (Sd.)* *Elumitchai (Fr. Juice)*	*Alangium salvifolium* (L.f.) Wang. **Catunaregam spinosa* (Thunb.) Tirvengadumia *Citrus aurantifolia* (Christm.) Swingle

**Randia dumentorum*; Rt. Bk. – Root Bark; Sd – Seed; Fr.-Fruit

Botanical description of the plants used in *Pataic Cankãran I:*

***Alangium salvifolium* (L.f.) Wang. (Family: Alangiaceae):** *Alangium salvifolium* (L.f) Wang. subsp. *salvifolium* and *A. salifolium* (L.f) Wang. subsp. *hexapetalum* (Lam.) Wang. belongs to the family Alangiaceae, it is commonly known as *Alingi, Alingil* or *Ankolam* in Tamil and it is distributed in all districts of Tamil Nadu.

Small deciduous trees; bark greyish brown; branchlets tomentose; stems with leaf scars outside. Leaves simple, alternate, oblong-lanceolate, base oblique, apex acute, margin entire, glabrous above, puberulous beneath, 3-5 nerved at base, lateral nerves 4-7 pairs, 5-14×2-2.5cm. flowers 1.5cm across, white, fragrant, in axillary cymes; bracts ovate, 4 mm. Calyx 3mm, cupular, tomentose; lobes 10, triangular-ovate. Corolla white, lobes 10, 2.5×5cm, linear-oblong, tomentose. Stamens ca. 20; filaments 1 cm long, base villous, subconnate, anthers linear. Ovary turbinate, 1-celled, 1-ovuled, pendulous; style 2 mm long, glabrous; stigma capitate. Berry globose, ca. 2-3×1-1.5cm, red when ripen, crowned with calyx lobes. Seed 1, ovoid.

The medicinal properties of Alingil relieve *Vatha* and *Kapha* diseases, leprosy with pus and all types of poison bites.[5] *Azhingi* or *Ankolam* is an important drug and all parts of these plants are used in Siddha and Ayurveda in the treatment of various ailments[5] especially for skin diseases. The bitter tasted root bark of *Alangium* is an astringent, purgative, emetic, febrifuge in nature which has been used in the treatment of rheumatism, leprosy, piles, deworming, hypertension, diarrhoea, fever, back pain etc. Recently, anti-cancer activities of the Alangium root bark have also been proved.[6-10] Other Siddha formulation in which alangium root is used are *Naalpattapunnukupugai, Ayapirunka Raja Karpam* and *Puraiyodum Viranathailam* which are prescribed medicines for skin diseases. [1]

The active chemical constituents reported from the different parts of *Alangium* are: alangimarckine, deoxutubulosine, alangiside, β-sistosterols from leaves; iso-alangiside, demethylneoalangiside etc from fruit. Alkaloids reported from seeds are alangimarine, emetine, cephaeline and other phytoconstituents includes betulinic acid, lupeol, alangol, tannins. Alagine A, Alangine B, ankoline, myricyl, Benzoquinolizidine, isalamarine, stigmasterol and alangicine, d-methlpsychotrine, marckine are reported from the stem and root bark. [6-11]

Alangium is being used as an ethno medicine for various diseases such as anti-diabetic, rheumatoid arthritis; skin diseases like leprosy, scabies; fever, anti-tuberculosis etc. Number of review studies have been attempted on Pharmacological and phytochemicals to emphasis the anti-bacterial, anti-fungal and anti-microbial activities of this plant [11-14]

The anti-bacterial, anti-fungal and anti-microbial activities are reported against the micro-floras such as *Aspergillus niger, A. flavus, Escherichia coli, Staphylococus aureas, Pseudomonas aeruginosa, Klebsella pneumania, Solmonella typhyirrium, Candida albicans, Shiegella spp.,* etc. Beyond the anti-microbial activity the root and root barks shows significant anti-oxidant, anti-inflammatory and anti-helminthic activities. [15-17]

Catunaregam spinosa* (Thunb.) Tirveng. (Rubiaceae) - *Marukkarai

Syn.: *Randia dumetorum* (Retz.) Lam.

The therapeutic character (*Gunam*) of the root is mentioned in *Pathartha Guna Cintamani* as follows; Root cures pain during dysentery, *Rakhtha Pitam*, eczema, diseases and *Maantha Ganam*. Fruits are emetic, diaphoretic and antispasmodic. [5]

Large shrub to small armed trees; spines to 3.5cm, paired; branchlets pubescent. Leaves opposite, obovate, 4×2.5cm, puberulous above, hirsute on nerves below; petiole 0.8 cm long; stipule ovate, cuspidate. Flowers solitary, 2-5, terminal on lateral branches. Calyx tube 5mm long; lobes 5, obovate, 5 × 3.5mm. Corolla white turning yellow, 2 cm across; tube 5 mm, densely villous at the base inside; lobes 5, obovate, twisted, 9 × 7 mm, apex acute. Stamens 5, anthers sessile at mouth of corolla. Ovary 2-6 celled; ovules many; style stout, 12 mm long; stigma fusiform, ribbed. Berry ovoid, 4 × 3 mm, glabrous, with a crown of enlarged calyx lobes. Seeds many, embedded in pulp.

Mannitol, saponins, coumarin glycosides Scolpoletin, Saponins (Randialic and Randialic acid) Urosolic acid, Randianin from roots and Oleanolic acid-3-glucose from seeds and from ripen fruit, Randioside A. Randianin, Dumetoronin A,B,C,D,E Ripe

fruit contains glycosides, randioside A. are important phyto-chemical constituents reported so far. [18-19]

In Ayurveda, this emetic nut known as *Mainphal* and it shows various biological activities such as diaphoretic, anthelmintic, expectorant, anti-spasmodic and cure cold, cough, rhinitis, rheumatism, diarrhoea and dysentery. Seeds are appetizer and shows significant results in the treatment of skin diseases, gastrointestinal tract diseases and wounds.[19-21] Number of studies were conducted on pharmacological and phytochemical characteristics of stem bark, root bark and fruits and it proves that *Marukkarai* shows anti-bacterial, anti-allergic, anti-inflammatory, analgesic and immune modulatory activities. [21-26]

The extract of *Randia* shows Anti-microbial activity against *Staphylococcus aures, Streptococcus mutans, Aspergillus niger, Candida albicans*, *Escherichia coli* and oral pathogenic organisms such as *Streptococcus sobrinus* and *Lactobacillus acidophilus.* [22-26]

Citrus aurantifolia (Christm.) Swingle (Rutaceae) - *Elumitchai*

Citrus aurantifolia (Christm.) Swingle and *Citrus limon* (L.) Osbeck and their cutivars are commonly available as *Elumitchai* in markets. Lemon is being used as a medicine for various ailments. The anti-bacterial and anti-inflammatory activities of lemon juice are well studied by various researchers. In Siddha medicines, lemon juice mostly used as an adjuvant. Lemon juice shows a significant action against the dermatophytes such as *Pseudomonas aeruginosa*, *Staphylococcus aureus* and other bacteria includes *Klebsiella spp*., *Proteus spp*. and *Escherichia coli*. Flavonoids such as naringin, hesperidin and neohesperidin are showed antifungal activities in four fungi species like *Aspergillus parasiticus*, *A. flavus*, *Fusarium semitectum* and *Penicillium expansum*. The Hesperidin glocoside lurate and pruning decanoate is the most inhibiting flavonoid for *P. expansum* and *A. flavus* respectively [27] . Anti-fungal activities are reported against the different micro-flora such as *Kluyveromyces fragilis*, *Rhodotorula rubra*, *Candida albicans*, *Hanseniaspora guilliermondii*, *Acne vulgaris*, *Rhizoctonia solanii* and *Debaryomyces hansenii* (yeast) and the results were referenced against the anti-fungal agents such as nystatin, ketaconazole and clotrimazole from Citrus peel oil. [28-31]

Anti-microbial activities from juice of *Citrus limon*, *C.reticulata* and *C.grandis* against pathogenic bacteria such as *Staphylococcus aureus*, *E.coli*, *Bacillus subtilis*, *Vibrio spp.* and *Salmonella typhi* from the phytochemical components of linalyl acetate, linolool, lomonene, pinene, β-pinene, 1,8-cineole, carvacrol and thymol.[32-35] Citrus fruit peel oil is used to suppress the growth of the Acinetobactor[36] also anti-fungal properties of *Citrus limon* is used to investigate the safety and efficacy in the treatment of oral thrush in HIV/AIDS patients.[37] Hence, it is evident that, *Citrus limon* having an anti-bacterial, anti-fungal and anti-microbial activities and play a significant role in the Siddha System of medicine.

CONCLUSION

Ingredients of *Pataic Cankãran* I & II, are different. In *Pataic Cankãran II*, Root bark of velleruku – (*Calotropis procera* (Ait.) R.Br.) and seeds of thagarai–(*Senna tora* (L.) Roxb.) are the important ingredient and recommended medicine for skin diseases. The medicinal applications/biological role of these plants are reported in number of folk/traditional medicine studies and proved their pharmacological and phytochemical activities with reference to the treatment of skin diseases [14,38-44] . Most of the Senna species are used by the tribal and inhabitants for the various dermatological diseases. The other medicinal plants used in the treatment of Padai and padarthamarai traditionally are *Kovai-Coccinia grandis* (L.) Voigt, *Sittirapaladai- Euphorbia thymifolia* L., *Vembu-Azadirachta indica* A.Juss., poovarasu-*Thespesia populnea* (L.) Soland ex.Correa; *Tumbai- Leucas aspera* (Willd.) Link, *Karisalai-Eclipta prostrata* (L.) L., *Kuppeimeni- Acalypha indica* L, *Mookiratai -Boerhavia diffusa* L., *Karuvelam-Acacia nilotica* Willd. ex Del. *subsp. indica* (Benth) Brenan, *Brahma thandu-Argemone mexicana* L., etc., and their *in-vitro* anti-dermatophytic activities have been proved with significant results.[45-47] While reviewing the case studies of skin diseases, dermatophytosis are treated with siddha drugs such as *Kandhaga Rasayanam, Parankipattai Chooranam* etc.[48,49] Even though, individual ingredient of *Pataic Cankãran I* shows therapeutic efficacy towards skin diseases, it is no longer in use and Clinical studies and standardisation of these drugs has also not been attempted. Thus, we can understand that there is a need for the evaluation and standardisation of these formulations which will be highly useful for the mankind in future.

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Cite this article as:
Navinkumar M, Nivetha G, Radha P, Ahamed Mohideen M. Therapeutic Application of A Siddha Formulation Pataic Cankāran - A Review. International Journal of Ayurveda and Pharma Research. 2019;7(2):46-50.

Source of support: Nil, Conflict of interest: None Declared

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