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PHARMACOLOGICAL EVALUATION AND ACTION OF KARANJA PATRA KALKA SIDDHA TAILA IN STRIAE GRAVIDARUM

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ABSTRACT

Karanja Patra Kalka Siddha Taila is a classical formulation suggested by Acharya Vriddha Vagbhat for the management of Kikkisa (Striae gravidarum). In present era there is need to understand the pharmacological aspect of Ayurvedic formulations and their ingredients with classical and modern indication. This article is intended to relate how the aggravated tridosha causes pathogenesis and can be reverted back to normalcy by the virtue of rasa-panchaka (pharmacological properties) with correlation to that of phytochemical constituents extracted out from the same and studied in different context.

KEYWORDS: Karanja, Pongamia pinnata, Kikkisa, Striae gravidarum, Rasa- panchaka.

INTRODUCTION

In Ayurveda the term '*Dravya'* is used for the drug. *Dravya* have extensive interpretation and takes second position in quadruped of treatment *i.e., 'Chikitsa Chatuspad'* next to the physician.[1] The term *drug* has been derived from French word Drogue which means a dry herb. WHO has defined that "a substance or product that is used or intended to be used to modify or explore the physiological systems or pathological states for the benefits of the recipient".[2]

The *Karanja (Pongamia pinnata)* leaves prepared in *Til Taila* (oil extracted from seeds of *Sesamum indicum*) is a type of medicated oil (*Sneh Kalpana*) which is administered as local applicant. It has been indicated in the management of *Kikkisa* (Striae gravidarum).[3] In the

traditional system of medicines, the root, bark, leaves, flower and seeds of *Karanja* having medicinal properties, is used as crude drug for the treatment of skin diseases, wounds, tumours, and ulcers, as anti-inflammatory, analgesic, anti-protozoal, anti-diarrhoeal, anti-fungal, anti-ulcerogenic, anti-hyperglycemic, anti-lipidperoxidative, anti-hyperammonic and as antioxidant.[4] In addition to *Karanja* leaves, *Til Taila* is used which is pharmacologically active drug which has been used for the preparation.

This is an attempt to compile and document information on medicinal aspect of *Pongamia pinnata* (*Karanja*) and *Sesamum Indicum* (*Til Taila*). Based on available evidences, its therapeutic potential has to be re-evaluated as *Karanja Patra Kalka Siddha Taila* in the management of *Kikkisa* (Striae gravidarum).

Detail description of Karanja Patra *(Pongamia pinnata):*

Pongamia pinnata is a medium size (of height 12 to 15 meter), glabrous, perennial tree which grows in the littoral regions of South Eastern Asia and Australia having irregular branches and is commonly found throughout the country at about 915 meter altitude.[5]

Taxonomic Rank[6]

Kingdom: Plantae
Division: Magnoliophyta
Subkingdom: Tracheobionta
Superdivision: Spermatophyta
Class: Magnoliopsida
Subclass: Rosidae
Order: Fabales
Family: Leguminoseae
Genus: *Pongamia*
Species: *pinnata*

Vernacular Names of *Karanja* are *Dithauri*, *Karuani* (Hindi), *Karanj*, *Karanja* (Hindi, Marathi & Urdu), Indian beech (English), *Kanaji*, *Kanajo* (Gujarati), *Karanja*, *Dahara karanja*, *Natakaranja* (Bengali), *Koranjo* (Oriya), *Pungu*, *Gaanuga* (Telugu), *Ponga*, *Pongam* (Tamil), *Pungu*, *Punnu* (Malayalam), *Honge*, *Hulagilu* (Kannad), *Sukhehein*, *Karanj*, *Paphri* (Punjabi).[7]

Sanskrit Synonyms

Naktamala, Udkirya, Ghritapur, Guchchhapushpaka, Snigdhapatra, Naktahva.[8]

Botanical description of Leaves[9]

a) Macroscopic

Leaves are alternate, imparipinnate, odd, compound, hairless. and evergreen They occur in 2-3 pairs, are ovate or elliptic in shape with smooth margins, 6.2-11.5 cm in length and 3.9-8.3 cm in width, dark green in colour, petiolules are short approximately 0.5-0.8 cm in length.

b) Microscopic

Lamina has single layered epidermis and covered by thick cuticle. Palisade are two layered, parenchyma is spongy and 3-5 layered, occasionally containing prismatic crystals similar to midrib. Palisade ratio is 3.5-50; vein islet number is 18-25 per mm square. Stomata are anisocytic, present in lower surface with stomatal index 12.5-20.

Petiolules are circular in outline, covered with cuticle. Epidermis is single layered, consisting of tabular cells. Cortex consists of angular, isodiametric, parenchymatous cells, without intercellular spaces, a few cells contain prismatic crystals of calcium oxalate. Vascular bundle is single, arc shaped, consisting of xylem and phloem. Xylem vessels are arranged radially, traversed by xylem rays, a few schizogenous cavities are found scattered in the cortex.

Mid rib shows single layered epidermis, consisting of tabular cells, covered with thick cuticle, followed by 3-4 layered collenchymatous hypodermis. Cortex consists of round to oval, thin walled parenchymatous cells. Pericycle are present in the form of sclerenchymatous sheat.; Vascular bundle are collateral, conjoint and arranged in discontinuous ring. Central portion is occupied by oval to polygonal thin walled parenchymatous pith. Prismatic crystals of calcium oxalate are present in cortex, phloem and pith.

Pharmacological Properties of drug (Rasa Panchaka)

Guna of *Karanja* leaf is *Sara, Tikshana* &, *Laghu*[10], It has *Katu, tikta* & *kashaya rasa*[11], *Katu vipaka* and *ushna virya*[12], with *Pitttakaraka, Kapha Vata Shamak prabhava.*[13]

Acharya Sushruta has included it in *Aragvadhadi, Varunadi, Arkadi, Shayamadi gana*. The useful parts are seeds, leaves, bark, fruits and root

Chemical constituent and Pharmacology

The essential oil obtained from P.pinnata leaves showed marked in vitro antibacterial activity against B.anthracis and Sal. typhi. The oil was also active against B. mycoides, B.pumilus, Esch. coli, Sar. lutea, Staph. aureus, Staph. albus and Xanth. campestris. Shigella sp. proved to be resistant to the oil.[14] The essential oil from P. pinnata showed mild antifungal activity against keratinophillic fungi viz., Verticillium tenuipes, Malbranchea pulchella, Keratinophyton-tereum, and Chrysosporium tropicum.[15] The leaf extract of P.pinnata was inhibitory to (+) and (-) strains of Nanizzia gypsea and N. incurvata and (-) strain of N. fulva, but accelerated the growth of (+) N. fulva. The extract, however, did not show any significant effect on the mycelial growth of the keratinophillic moulds.[16] Ethanolic extract (70%) of *Pongamia pinnata* leaf has anti-inflammatory activity against different phases (acute, sub acute and chronic) of inflammation.[17]

It has shown anti-plasmodial activity against *Plasmodium falciparum*.[18] Crude leaf extract of *Pongamia* has anti-microbial effect on production and action of enterotoxins. It reduces the production of cholera toxin and bacterial invasion of epithelial cells. It has selective anti-diarrhoeal action and efficacy against cholera.[19] The leaf extract has shown circulatory lipid peroxidation and antioxidant activity. It has been evaluated in ammonium chloride-induced hyperammonium rats. It had enhanced lipid peroxidation in the circulation of ammonium chloride-treated rats, resulting in a significant reduction in the levels of vitamin A, C, E which further reduces catalase glutathione, glutathione peroxides and superoxide dismutase.[20]

Therapeutic uses of *Karanja* in *Brihat-Trayi*

In *Charaka Samhita*, *Karanja* is indicated in *kushtha* (skin diseases), *krimiroga* (worm infestation), *kandu* (itching), *apasmara* (epilepsy), *visa* (poisoning), *unmada* (psychosis), *jvara* (fever) and also *bhutabadha*. It is also used in *grahani* (irritable bowel syndrome), *pandu* (anemia), *madatyaya* (alcoholism), *ajirna* (indigestion) etc.

In *Susruta Samhita* it is indicated in *prameha* (diabetes mellitus), *kushtha* (skin disorder), *bhagandara* (fistula in ano), *gandamala*, *nadi vrana* (sinus), *netra roga* (eye disease), *raktapitta* (haemorrhagic disorder).

In *Astanga Hridaya* it is indicated in *prameha* (diabetes mellitus), *udara roga* (GIT disorder), *garadosha* (poisoning), *ajirna* (indigestion), *vrana* (wound), *kushtha* (skin disease), *twakdosha* (skin disorder), *shopha* (oedema) etc.

Some Therapeutic Formulations of *Karanja*

Karanjadi Churna, Karanjadya ghrita, Karanjadi Taila, Jatyadi Taila.

CONCLUSION

Vitiation of *Tridosha* is the main the causative factor for manifestation of symptoms in *Kikkisa*. *Kapha dosha* is responsible for *Kandu, Pitta dosha* for *Vaivarna* and *Vidaha,* and *Vata dosha for Rekha swaroop twak sankocha* and *Twak bheda.*

Karanja is used extensively for the treatment of skin diseases *(Kushtha)* by *Charak, Sushruta, Vagbhat dvaya,* and also by subsequent authors. Recent researches have explored its action in skin diseases with its phytochemical constituents, safety and efficacy. Similarly *Tila Taila* acts as vehicle for active constituents of *Karanja* with its own pharmacodynamic properties over skin. *Karanja (Pongamia pinnata)* has anti-inflammatory, analgesic, anti-plasmodial, anti-diarrhoeal, anti-fungal, anti-ulcerogenic, anti-nonciceptive, anti-hyperglycemic, anti-lipidperoxidative, anti-ulcer, anti-hyperammonic and antioxidant activity. Striae Gravidarum is a dermatological manifestation of changes occurring during pregnancy in abdominal skin. Researches carried till date has established safety &efficacy of above formulation in primi and multigravidae for its prevention as well as cure.

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