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An Exploratory Review of *Kushthaghna Mahakashaya* in Skin Disorders w.s.r. to *Visha*

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ABSTRACT:

Background: The *Ayurveda* treatises are collection of vast knowledge regarding medical and environmental aspects. It has a separate branch called *Agada Tantra* which deals with the toxicological aspects. We aim to evaluate this knowledge regarding dermatological manifestation due to *Visha* (toxins) vis-à-vis contemporary knowledge.
Objective: The objective of this study is to analyze the rationality and applicability of *Kushthaghna Mahakashaya* in the prevention and management of skin disorders caused by various type of poisons.
Data Source: The references available in classical texts, various *Nighantu* and research articles regarding the various forms of poisons and their dermatological manifestations were analyzed and compared to the knowledge available in contemporary medical literatures.
Review methods: A sincere study of classical *Ayurveda* text-books and their available commentaries along with modern texts, websites and articles has been done to explore the importance of *Kushthaghna Mahakashaya* in various skin diseases.
Result and conclusion: The herbs mentioned in the *Kushthaghna Mahakashaya* were scientifically evaluated in various preclinical and clinical studies and showed antiviral, immune-modulatory, anti-inflammatory, anti-oxidant, anti-cancerous, cardio-protective, neuroprotective, anti- fungal, and anti- bacterial activity, according to the results of the literature quest. The proper application of *Kushthaghna Mahakashaya* plants will aid in the prevention and treatment of skin diseases.

Key words: *Visha*, *Kushthaghna Mahakashaya*, skin disease.

INTRODUCTION

In Ayurveda, allergic manifestation is mentioned under the concept of *Satmya-Asatmya*. It manifests due to exposure to *Asatmya Ahara-Vihara* and contact with different poisonous materials (allergens).[1] Symptoms of allergic skin reaction is mentioned as *Kotha* in *Brihatatrayi* later on it is developed as separate disease under the title

Sheetapitta-Udarda-Kotha by *Madhavakara*.[2] Allergy is one of four forms of hypersensitivity and is formally called as type I (or Immediate) hypersensitivity. Allergic reactions are distinctive because of excessive activation of certain white blood cells called mast cells and basophils by a type of antibody called Immunoglobulin E (IgE). This reaction results in an inflammatory response which can range from mild discomfort to grave consequences. Skin allergies frequently cause rashes, or swelling and inflammation within the skin, which is known as a "wheal and flare" reaction characteristic of hives [Urticaria] and angioedema. "Urticaria is a recurrent, transient, cutaneous swelling with erythema which resolves within 24 hours without leaving any residual cutaneous signs."[3] Charakacharya described *Kushthaghna Mahakashaya* which includes ten *Kushthaghna* drugs. It includes *Khadira* (Acacia catechu Willd.), *Haritaki* (Terminalia chebula Retz.), *Aamlaki* (Emblica officinalis Gaertn.), *Haridra* (Curcuma aromatic Salisb.), *Bhallatak* (Semecarpus anacardium Linn.), *Saptaparna* (Alstonia scholaris R.Br.), *Aaragwadh* (Cassia fistula Linn.), *Karweer* (Nerium indicum Mill.), *Vidanga* (Embelia ribes Burm), *Jaati* (Jasmin officinale Linn.). *Laghu, Ruksha, Aashu, Vishad, Vyavayi, Tikshna, Vikaashi, Sookshma, Ushna, Anirdeshyarasa* are the ten qualities of poisonous drugs. Drugs which act against these qualities of toxic substances are called as *Vishghna.* Drugs in *Kushthaghna Mahakashaya*, work due to their *Raspanchak* antagonist to *Visha (Poison)* and helps in treating diseases. Immunomodulator, Anti-stress, Adaptogenic, Nootropic, Antioxidant properties of drugs help them to treat allergic skin diseases produced due to various *Astamya Aahar-Vihaar, Dushi Visha* and also due to contact or by their external application or produced by bites of various organisms like snake, spider etc.[4]

Review of Literature

The review reveals that the herbs of contemporary *Kushthaghna Mahakashaya* have potential pharmacological activities which may be beneficial for skin disease prevention and management. The detailed analysis of each herb for their useful pharmacological activities are as follows:

1. Khadir

- **Latin Name -** *Acacia catechu Willd.*
- **Family**- *Leguminosae*
- **Chemical Constituent-** Catechin, Catechu, tannic acid.
- ***Karma* –** *Kushthaghna, Raktastambhan, Kandughna, Raktaprasadan, Raktavardhak, Swarbhed. Khadir* is best among all *Kushthaghna* medicine.[5] *Mahakhadir Ghrita-* All type of *Kushtha*[6] *Sanjivani Agad-* all type of poisoning.[7]

Various researches showing *Kushthaghna* action of plant:

Anti- fungal and anti- microbial property: *Acacia catechu Willd* leaves extract was found to have broad-spectrum antimicrobial activity in a study. It has antimicrobial activity against common human pathogenic organisms such as Staphylococcus aureus (Gram positive), Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae, and Salmonella typhi (Gram negative), as well as fungi such as Candida albicans and Aspergillus niger, supporting its use in traditional medicine. Antimycotic activity is also found in Acacia catechu Willd leaves, bark, and root extract. The bark extract inhibited the growth of fungi like Piricularia oryzae and Colletotrichum falcatum.[8]

Anti- oxidant activity: A study of a 70% methanol extract of *Acacia catechu* heartwood extract revealed significant antioxidant activity, iron chelating activity, and DNA protective activity, which is due in part to the phenolic and flavonoid compounds found in it. The *Acacia catechu* extract is a highly effective antioxidant, according to standard methods such as the dot-blot assay, TLC study, and DPPH assay. rutin, Catechin and isorhamnetin have been reported as free radical scavengers, and these compounds contribute significantly to Acacia catechu's biopotency.[9],[10]

2. Haritaki

Latin Name – *Terminelia chebula Retz.*

Family - *Combretaceae*

Chemical Constituent- Tannin, Chebulagic acid, Chebulinic acid, Corilagin,tanic acid, terchebulin, tetrachebulin, Vit.C., arachidic, linoleic, oleic,palmitic and stearic acids, (Bulletin of Med.Ethno bot-Ris vol,10, 1989) Tannin containing plants are having carcinogenic and also meagenic effect. (Advances in Plant Sci. V-1991)

Karma-*Deepan, Medhya, Chakshushya, Ayushya, Brimhana, Anuloman,Shwas, Kas, Prameha, Udar, Krimi, Kushtha,Vrana, Visarpa, Grahni Rog, Vibandh, Visham jwar, Kamla, Pleeha, Ashmari, Mutrarog.*[11] *Vrana, Shotha, Kushtha, Sara Guna, Chakshushya, Agnideepan.*[12] If the fruit rind is chewed it improves *Agni*; if the same is grinded and administered orally it causes purgation; boiled fruit will act as *Grahi* and fried fruit will correct the ill effects of the processed fruit.[13]

Various researches showing *Kushthaghna* action of plant:

1. **Wound healing:** Ethanolic extract for wound healing Excision and Incision models in albino rats were evaluated in the form of an ointment with two concentrations. In wound types, both concentrations of the ethanolic extract showed a significant response. [14]
2. **Antifungal:** Ethyl acetate, chloroform, n-butanol, and aqueous fractions have antibacterial and antifungal properties. T. Chebula was investigated for the presence of antimicrobial and antifungal properties.
3. **Antioxidant property:** Methanol extract, water extract, and 95% ethanol extracts were used to test for antioxidant activity. For the first time, antioxidant activities of unfermented extracts and fermented products are compared. The anti-oxidative pattern plots revealed useful information and demonstrated a strong correlation between the DPPH radical assay and the hrp-luminol-H_2O_2 assay. [15]

3. *Aamalaki*:

- **Latin name**- *Emblica officinalis Gaertn.*
- **Family**- *Euphorbiaceae.*
- **Chemical Constituent**- Ascorbic acid and gallotannins.
- **Karma-** *Chakshushya, Rasayana, Vrishya, Tridoshhar.*

Various researches showing *Kushthaghna* action of plant:

1. **Antimicrobial activity:** Emblica fruit found to have very potent anti-bacterial activity (Vinayaga morthy, 1982).
2. **Anti- inflammatory activity:** The water fraction of the methanol extract of the leaves was effective in rat paw inflammation (Summanen et. al 1993)
3. **Anti- peptic ulcer activity:** Dried seed powder (10 gm in two devided doses for 4 weeks) significantly reduced the symptoms of *Amlapitta* (Sharma, 1990, Tripathi et al, 1992, Mathew et al 1995).
4. **Activity against fungi:** *Emb. officinalis* has been shown to have antifungal properties against Aspergillus (Satish et al., 2007). Fruit ethanol and acetone extracts demonstrated moderate antifungal activity against Fusarium equiseti and Candida albicans when Grisofulvin was used as the standard antibiotic (Hossain et al., 2012). *Emb. officinalis* plant methanolic extract lacked antifungal activity against the phytopathogenic fungus Aspergillus niger F2723 (Bobbarala et al., 2009).

4. *Haridra*

- **Latin name**- *Curcuma longa Linn.*
- **Family**- *Zingiberaceae*
- **Chemical Constituent**- Essential oil and a colouring matter (curcumin).
- ***Karma-*** *Krimighna, Kushthaghna, Varnya, Vishaghna, Kaphapittahar, Pramehashamak.*

Various researches showing *Kushthaghna* action of plant:

1. **Antioxidant:** *Curcuma longa* rhizome extracts were discovered to be effective antioxidant agents. The methanol extract of the leaves essential oil demonstrated remarkable superoxide radical-scavenging activity. [16]
2. **Antifungal:** The oil's in vitro studies revealed that it is a potent anti-dermatophytic agent. It is effective against three common dermatophytic fungi that cause ringworm infection in humans: Epi. floccosum, Micro. gypseum, and T. rubrum. It also validated rapid killing activity, a broad fungicidal spectrum, a long shelf life, and a competitive advantage over some synthetic antifungal compounds. [17]

5. *Bhallatak*

- **Latin name**-*Semicarpus anacardium Linn.*
- **Family**- *Anacardiaceae*
- **Chemical Constituent**- A Tarry oil containing Anacardic Acid, Non-Volatile Alcohol (Cardol).
- ***Karma-*** *Deepana, Kaphahara, Pachana, Vatahara, Chhedi, Bhedi, Medhya.*

Various researches showing *Kushthaghna* action of plant:

1. **Antioxidants:** Because of their ability to scavenge free radicals, antioxidants provide protection against free radical-mediated diseases such as cancer and cerebro-cardiovascular disorders. Semicarpus is a powerful antioxidant with high reactive oxygen species (ROS) scavenging activity. Several tests using almost all parts of the plant, including nut, fruit, seed, bark, and so on, have proven its antioxidant efficacy. [18]
2. **Antimicrobial:** *Bhallataka* is an antibacterial plant that is effective against Salmonella typhi. Secondary metabolites such as triterpenoids, steroids, anthraquinones and phenol, contribute to its antibacterial activity. [19]

6. *Saptaparna*

- **Latin name**- *Alstonia scholaris R.Br.*
- **Family**- *Apocynaceae*

- **Chemical Constituent**- Alkaloids (echitamine, ditamine and echitamidine).
- ***Karma***- *Kushtha, Shoola, Gulma, Jvara, Krimiroga, Sandrameha.*

Various researches showing *Kushthaghna* action of plant:

1. Picrinine showed CNS depressant activity (Plant Med. 1976, 30, 86).
2. The Alcoholic extract of stem bark showed significant anti-cancer activity in HS, human sarcoma in the embryonated egg. (Dhar et al., 1968).
3. Antibacterial activity: A. scholaris bark methanolic extract was found to be active against Gram positive bacteria such as Bacillus coagulans and Gram negative bacteria such as Escherichia coli. [20]

7. *Aaragwadh*

- **Latin name**- *Cassia fistula Linn.*
- **Family**- *Loganiaceae*
- **Chemical Constituent**- Sugar, mucilage, pectin and anthraquinone. Glycoside present in leaf and flower.
- ***Karma***- *Shoola, Gulma, Vibandha, Hridroga, Udavarta, Udararoga, Prameha.*

Various researches showing *Kushthaghna* action of plant:

1. The leaves, stem bark and fruit pulp were found to have antibacterial activity, the fruit pulp being the most potent in this respect (Lillykutty and Shantha kumara, 1969).
2. CFRI (one of the glycoside) alone exhibited marked antifungal activity (Venkitraman and Radhakrishnan, 1972).
3. The anthraquinones present in aqueous extract of fruit had purgative action. [21]
4. Antiulcer activity. [22]
5. Wound healing activity. [23]

8. *Karveer*

- **Latin name**- *Nerium indicum Mill.*
- **Family**- *Apocynaceae*
- **Chemical Constituent**- Cardiac glucoside (oleandrin), *Neriodorin, Neriodorein, Karabin, Scopolin, Scopoletin.*
- ***Karma***- *Kushthaghna, Shwasahara, Chakshushya, Krimighna, Kandughna, Vranaropak, Jwaraghna.*

Various researches showing *Kushthaghna* action of plant:

1. A glycoside from the roots increase adaptability of rats and mice against stressful conditions as evidenced by better swimming performance and inhibition of aspirin- induced gastric ulcers, milk- induced leukocytosis and pento-barbitone induced hypnosis (Singh et. Al 1976).
2. The cardiotonic activity of tincture N. indicum is reported (Chopra 1955; Sanyal and Das, 1956).
3. Plumieride, from roots showed significant antipyretic effect and anti- inflammatory activity in albino mice. (Singh et. Al. 1978a).

9. *Vidanga*

- **Latin name**- *Embelia ribes Burm.f.*
- **Family**- *Myrsinaceae*
- **Chemical Constituent**- Benzoquinones, alkaloid (Christembine), Volatile oil, Rol, tannin and essential oil.
- ***Karma***- *Shoola, Krimiroga, Udararoga, Adhmana.*

Various researches showing *Kushthaghna* action of plant:

1. **Antifungal activity:** The anti-fungal property of Embelia was studied by EUCAST method with the help of Solvent and Petroleum ether, aqueous and methanolic extract against candida species and result was found that it does inhibition of C. tropicalis. [24]
2. **Wound healing activity:** A group of rats treated with ethanol extract and Embelin showed improvement in wound healing property. [25]
3. **Antioxidant activity:** The phenolic compound and ethanol extract of Embelin showed opposite quality to induced hepatotoxicity in Swiss albino rat**s.** [26]
4. **Antiallergic activity:** Ethanol extract of embelin showed reduction in leucocyte and eosinophils count, this may help in treating allergic asthma and allergic conditions. [27]

10. *Jatipatra*

- **Latin name**- *Jasminum officinale Linn.*
- **Family**- *Oleaceae*
- **Chemical Constituent**- Resin, Salicylic Acid, Alkaloid (Jasminine) and Essential Oil.
- ***Karma***- *Kushtha, Raktavikara, Shiroroga, Akshiroga, Visharoga, Vrana, Arsha, Mukhapaka, Putikarna, Stana Shotha.*

Various researches showing *Kushthaghna* action of plant:

The antifungal activity of the n-butanol fraction was greater against Candida albicans and equal against Aspergillus niger. In terms of antibacterial activity, n-butanol extract is more active against Bacillus pumilis and E.coli. The outcomes were promising when n-butanol and chloroform extracts were used. However, more research is

needed to determine the active principles and the mechanism underlying the antimicrobial activity.[28]

DISCUSSION

Kushthaghna Mahakashya contains 10 *Dravyas*. These drugs possess various medicinal properties and hence used in the treatment of various disorders especially skin disorders. In *Ayurveda*, allergic manifestation is mentioned under the concept of *Satmya-Asatmya*. It manifests due to exposure to *Asatmya Ahara-Vihara* and contact with different poisonous materials. In modern, allergy is type of hypersensitivity reaction based on the immune system of body. Various drugs of *Kushthaghna Mahakashaya* like *Haridra* has immunomodulation properties, anti- allergic property and also work as antiseptic. The ingredients of *Kushthaghna Mahakashya* of *Charak Samhita* having antitoxic effects along with *Raktpittashamak, Tvachaya, Krimighna, Kanduhar, Udardprashman,* properties. These are also rich in a variety of biologically active phytoconstituents. These phytoconstituents have been used as both therapeutic and starting materials for the production of pharmacologically active drugs. The purpose of this review is to bring together information on the therapeutic, pharmacological, and medicinal applications of *Kushthaghna Mahakashaya* and its constituent medications. This body of knowledge about these medications would inspire researchers and lead to more research into the treatment of skin problems. Ayurvedic products are popular due to the fact that they have less negative effects than other medical systems. Thus, all the ingredients of *Kushthaghna Mahakashaya* together helps in reducing the adverse effect of skin allergy caused due to *Visha*.

CONCLUSION

As we concluded from this discussion, that *Kushthaghna Mahakashaya* has very good role in allergic disorders and its able to break down the pathogenesis of *Anurjta* (allergy). In the present review an attempt has been made to provide a collective knowledge on therapeutic, pharmacological and medicinal applications of *Kushthaghna Mahakashaya* and its constituent drugs. This collective knowledge on these drugs would motivate to researchers and provide lead to further exploration of pharmacological activities of these ingredients as the demand for *Ayurvedic* products is growing exponentially due to its fewer side effects as compare to other systems of medicine.

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