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DASHANG LEPA: A POTENT POLYHERBAL FORMULATION

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ABSTRACT

India has long tradition for use of drugs derived from plants. *Ayurvedic* classical formulations and single herb have been tested for thousands of years on people and have proved safe. *Dashang lepa* is the one of the prestigious compound formulation of ten indigenous drugs which is having predominantly anti-inflammatory properties. Although, *Dashang lepa* is clinically used in inflammatory swellings like as cellulitis, erysipelas, boil furunculosis as external application. *Dashang lepa* has been mentioned in numerous *Ayurvedic* literatures such as *Chakradutta*, *Sharangdhar*, *Bhavprakash*, *Yogarajnakar* and *Bhaishjyarnavali* in context of *Visarpa* (Erysipelas or Cellulitis) and other inflammatory swelling. It is used by making a paste with cow's pure butter (*Ghrta*) in various diseases as external application. Many secondary metabolites like flavonoids, alkaloids, terpenoids, phenols, tannins are present in *Dashang lepa*. Loss on drying, ash value and pH value of *Dashang lepa* were attained 9%, 8%, and 5.5 respectively.

Keywords: *Dashang lepa*, Inflammation, *Visarpa*, *Erysipelas*, *Cellulitis*.

INTRODUCTION

Medicinal plants are of great importance to the health of individuals and communities. *Acharya Charaka* has mentioned three type of medicine (drug formulation) that are *Antah parimarjana* (used internally by oral or parenteral route), *Bahih parimarjana* (used as external application) and *Shashtra pranidhana* (surgical and parasurgical method) for the treatment of different stages of disease [1]. *Alepa* is the external application of medicated paste comes under *Bahih parimarjana* type of treatment [2]. This form of medication is also included in *Shashti upakrama* (sixty procedure of treatment for *Vrana*) by *Acharya Sushruta* [3]. *Dashang lepa* is the compound formulation of ten indigenous medicinal plants, so that it is called "*Dashang*" (*Das*- ten). *Dashang lepa* is mentioned in several *Ayurvedic* literatures and clinically used as anti-inflammatory in various diseases [4-8]. It is used by making a paste with lukewarm cow's pure butter (*Ghrta*) as external application. *Dashang lepa* contains *Shirisha* [*Albizia lebeck*], *Madhuyashti* [*Glycyrrhiza glabra*], *Tagara* [*Valeriana wallichii*], *Raktachandnam* [*Pterocarpus santalinus*], *Ela* [*Elettaria cardamomum*], *Jatamansi* [*Nardostachys jatamansi*], *Haridra* [*Curcuma longa*], *Daruharidra* [*Berberis aristata*], *Kushta* [*Saussurea lappa*], *Hriversa* [*Pavonia odorata*]. There are so many research work have been done on many of individual plant of the *Dashang lepa* but no any scientific study has been carried out on this prestigious compound formulation.

MATERIAL AND METHODS

The ten plants of *Dashang lepa* were similarly mentioned by different *Acharyas* but the indication of it was in different diseases shown in table 1 and 2.

All *Acharyas* mentioned the use of *Dashang lepa* in condition of *Visarpa* (Erysipelas or Cellulitis) and in *Shotha* (Inflammatory edema) but somehow the all indications are related to inflammation.

Dashang lepa is used with cow's pure butter (*ghrita*) as external application on diseased region. *Acharya Sharangdhar* advised to take a fifth part of *ghrita* to make the paste [5] but *Sushruta* mentioned quantity of fat (*ghrita*) to be mixed according to *doshas* like a sixth part for the *Paittika*, a fourth part for the *Vatika* and an eight part for the *Kaphaja* predominant disorders [9]. The thickness of the paste has been advocated to be equal to that of the wet (flayed skin) of a buffalo [10].

Ayurveda described method and physiology of application of *Dashang lepa* (Paste):

According to *Acharya Sushruta* the paste should be applied against the direction of hair. When applied opposite to the direction of hair, the paste is retained uniformly, penetrates the pores of the hair, and enters the ducts of the sweat glands and the mouths of blood vessels i.e. capillaries, whereupon it is absorbed well and its potency is accentuated [11].

Alepa should not be applied in the night because its application in cold state might prevent the heat from coming out leading to many disorders. The paste should be applied during the day especially in those disorders which have been caused by *Pitta*, *Rakta*, trauma and poison [12]. A stale paste should never be used, as also additional layers of the paste should never be applied over the past, due to increase thickness it would raise the warmth locally and induce pain and a burning sensation. A paste used once should not be applied again because when it has dried up, it loses its potency and become ineffective if used at all. It should properly be prepared every time just before use [13].

Brief description of ten drugs of *Dashang lepa*:

Shirisha (*Albizia lebeck*):

Prime classical compendia of Indian medical system appreciate *Shirisha* as a best drug against poisoning as the *Acharya Charaka* told *Vishaghna*. [14] *Acharya Bhavprakash* described in *Vatadi Varga*. [15] Research studies had shown that it possesses anti-histaminic & mast cell stabilizing property [16] by virtue of which it is supposed to work as anti-asthmatic drug. [17] It also has anti-inflammatory, [18] antioxidant properties, [19] antiallergic activity [20] and analgesic activity [21].

Madhuyashti (*Glycyrrhiza glabra*):

Acharya Bhavprakash described it in *Haritakyadi varga* [22]. *Glycyrrhiza glabra* is one of the important medicinal plants, commonly called as 'liquorice'. *Glycyrrhiza glabra* has significant anti-inflammatory and anti-bacterial activity with potential constituents targeting different components of inflammatory and anti-bacterial processes. [23] It also has hepatoprotective, [24] wound and ulcer healing properties [25].

Tagara (*Valeriana wallichii*):

It is also included in *Karpuradi varga* by *Bhavprakash* as it is an important analgesic or anodyne (*Vedanasthapana*) herbal agent. It is useful in insomnia, insanity and other different psychic problems (including particular psychosomatic disorders) in Ayurvedic system of medicine [26].

Raktachandan (*Pterocarpus santalinus*):

The wood is astringent, tonic and cooling used as external application for inflammation and headache [14]. It is included in *Karpuradi varga* by *Bhavprakash* [27] Studies demonstrated that the lignan compounds, savinin and calocedrin, isolated from *P. santalinus* strongly suppressed TNF- α production and T cell proliferation shown as anti-inflammatory effect. [28]

Ela (*Elettaria cardamomum*):

Acharya Charaka mentioned *Ela* in *Katukaskandha*, *Shvashara*, *Angamardaprashmana*, *Shirovirechana Mahakashaya* and *Bhavprakash* included it in *Karpuradi varga* [29]. It has anti-inflammatory, analgesic and antioxidant properties [30].

Jatamansi (*Nardostachys jatamansi*):

Nardostachys jatamansi is a natural antianxiety drug which produces a restful state of mind without interfering with normal mental or physical function. *Jatamansi* also has been shown anti-depression, anti-parkinsonism activity and anxiolytic activity. Ethanol extract of the roots of *N. jatamansi* was studied for its anticonvulsant activity and neurotoxicity in rats [31]. *Bhavprakash* included it in *Karpuradi varga* [32].

Haridra (*Curcuma longa*):

The rhizome is pungent, bitter and it is externally applied in pains and bruises, leech bites etc. The volatile oils and curcumin of *Curcuma longa* exhibit potent anti-inflammatory effects [33]. *Curcuma longa*'s anti-inflammatory properties may be attributed to its ability to inhibit both biosynthesis of inflammatory prostaglandins from arachidonic acid, and neutrophil function during inflammatory states. It also consist anticarcinogenic, [34] antimicrobial properties [35,36]. *Bhavprakash* included it in *Haritakyadi varga* [37].

Daruharidra (*Berberis aristata*):

The roots are useful for healing ulcers, urethral discharges in leucorrhoea, jaundice, fever. *Daruharidra satva*, known as *Rasanjana* or *Rasaunt* (wood extract) is dark brown, consistency like opium having a bitter, astringent taste, readily, soluble in water. *Acharya Charka* mentioned its use in wound healing [38] and in skin diseases [39]. *Bhavprakash* included it in *Haritakyadi varga* [40].

Kushta (*Saussurea lappa*):

Its external application is considered useful to destroy itching, discharge, burning sensation and pain. *Saussurea lappa* root possesses significant antiulcer property which could be due to cytoprotective action of the drug [41] *Bhavprakash* included it in *Haritakyadi varga* [42].

Hriversa (*Pavonia odorata*):

It is useful in excessive thirst, spider poison, certain skin diseases, as decoction form. Some *Acharya* consider it as *Tagara* species. *Bhavprakash* included it in *Karpuradi varga* [43]

Preparation of extract

All the plants were identified with the help of Department of Dravyaguna, Faculty of Ayurveda, IMS, and BHU. All ten plants were taken in equal amount and fine powder was made. A hundred gram of powder was subjected to methanolic extraction by hot percolation method through Soxhlet apparatus. Then extract was concentrated using rotary evaporator with hot water bath at 40 ° C and dried extract was put to the process of standardization. The percentage yield of the extract was determined and found to be 18% [44]. This extract of *Dashang lepa* was used for phytochemical study and measurement of loss on drying value, ash value and pH value. Identification of various phytochemical constituents

was done as per standard procedures [45]. Other measurements were done according to standard guideline of Ayurvedic Pharmacopoeia of India [46].

RESULT AND DISCUSSION

Qualitative and quantitative study of the drug Dashang lepa was done by the author and published [47]. In this preliminary phytochemical analysis, Thin layer chromatography, loss on drying (moisture content), Ash value and pH value were analysed.

Dashang lepa is used in different superficial inflammatory condition as local applicant by the Department of Shalya Tantra, Faculty of Ayurveda, IMS, BHU, Varanasi, since last one decade. Clinically it is very effective to reduce the inflammatory process after local application over such diseases like as cellulitis, boil, furunculosis, erysipelas, unripe abscess, lymphadenitis, dermatitis and also in arthritis. After topical application of *Dashang lepa* percutaneous absorption (through skin) of active ingredients occurs. Further these reach into

microvascular system which include arterioles, venules, and capillaries and in ECF (extra cellular fluid). This decrease inflammatory mediators like serotonin, histamine, cytokines, leukotrienes, prostaglandins etc. by the reported action of flavonoids, tannins, terpenoids and phytosterol. Anti-inflammatory action might be due to inhibition of prostaglandins or due to reduction in nitric oxide production. This decreases endotoxins level in blood and reduce tissue/cellular response of mast cells and other substances which decrease synthesis of prostaglandins, histamine and other mediators. This is a hypothesis in respect of mode of action of *Dashang lepa*. As Ayurveda concern it is highly efficacious in allaying the burning sensation and for complete relief from pain and itching. This reduces pain due to *Rakta-Pitta Shamak* (alleviate) effect of the drug. It reduces edema due to absorbent effect of *Kashaya* and *Tikta rasa*. Reduces erythema due to *Sheet Virya* (cold potency), *Kashaya-Tikta rasa*, *Rakta-Pitta shamak* effect.

Table 1. Contents of Dashang lepa and their Properties

Plant	Rasa (Taste)	Guna (Physical properties)	Virya (Potency)	Vipaka (Outcome after digestion)	Doshkarma (Effect on doshas)	Useful part
1. <i>Shirish</i> (<i>Albizia lebeck</i>)	<i>Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Ishad-Ushna</i>	<i>Katu</i>	<i>Tridoshahara</i>	Bark
2. <i>Madhuyasthi</i> (<i>Glycyrrhiza glabra</i>)	<i>Madhura</i>	<i>Guru, Snigdha</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Vata-Pittashamak</i>	Root
3. <i>Tagara</i> (<i>Valeriana wallichii</i>)	<i>Tikta, Katu, Kashaya</i>	<i>Laghu, Snigdha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha-Vatashamak</i>	Root
4. <i>Raktachandan</i> (<i>Pterocarpus santalinus</i>)	<i>Tikta, Madhura</i>	<i>Guru, Ruksha</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Kapha-Pitta shamak</i>	Heartwood
5. <i>Ela</i> (<i>Elettaria cardamomum</i>)	<i>Katu, Madhura</i>	<i>Laghu, Ruksha</i>	<i>Sheeta</i>	<i>Madhura</i>	<i>Tridoshahara</i>	Fruit-Seed
6. <i>Jatamansi</i> (<i>Nardostachys jatamansi</i>)	<i>Tikta, Kashaya, Madhura</i>	<i>Laghu, Snigdha, Tikshna</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Kapha-Pittashamak,</i>	Rhizome
7. <i>Haridra</i> (<i>Curcuma longa</i>)	<i>Tikta, Katu</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha-Vata shamak, Pittarechak</i>	Rhizome
8. <i>Daruharidra</i> (<i>Berberis aristata</i>)	<i>Tikta, Kashaya</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha-Vata shamak,</i>	Root <i>Rasanjana,</i>
9. <i>Kushta</i> (<i>Saussurea lappa</i>)	<i>Tikta, Katu</i>	<i>Laghu, Ruksha</i>	<i>Ushna</i>	<i>Katu</i>	<i>Kapha-Vata shamak</i>	Root
10. <i>Hrivera</i> (<i>Pavonia odorata</i>)	<i>Tikta, Katu, Kashaya</i>	<i>Laghu, Snigdha</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Pitta-Kapha shamak</i>	Root

Table 2. Indication of Dashang lepa in different diseases by Ancient Acharya

Acharya	Visarpa (Erysipelas or cellulitis)	Kandu (Dermatitis)	Kustha (Skin diseases)	Jvara (Fever)	Visha-Visphota (Blisters)	Dushta Vrana (Infected wound)	Shotha (Edema, Inflammation)
1. <i>Chakradutta</i>	+	+	-	+	-	-	+
2. <i>Sharangdhar</i>	+	-	-	-	+	+	+
3. <i>Bhavprakash</i>	+	-	+	+	-	-	+
4. <i>Yogaratanakar</i>	+	-	-	-	-	+	+
5. <i>Bhaishjyaranavali</i>	+	-	+	+	-	-	+

Table 3. Preliminary phytochemical analysis of methanolic extract of *Dashang lepa*

S.N	Constituents	Tests	Extract
1.	Alkaloids	Mayer's reagent	+
2.	Saponin	Foam test	+
3.	Tannin	Extract + 5% FeCl ₃	+
4.	Terpenoids	Salkowski test	+
5.	Steroid	Liebermann-Burchard reaction	+
6.	Glycosides	Keller-Kilani test	+
7.	Phenolics Compound	Extract + 5% FeCl ₃	+
8.	Flavonoids	Residue + Lead acetate solution	+
9.	Reducing sugar	Benedict's reagent	+

Table 4. Physical properties of *Dashang lepa*

1.	Loss on drying	9%
2.	Total Ash value	8%
3.	pH value	5.5

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