An Ayurvedic view of *Lepa* in *Tvak Vikaras* (skin diseases)

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Abstract

Ayurveda is the science of life. It is the most ancient medical knowledge on the world. In Ayurveda, various formulations and procedures like *Lepa*, *Pralepa*, *Pradeha*, *Malahara*, *Upanaha*, *Taila*, *Avachurnana*, *Abhyanga*, *Avagahana*, *Parishechana* etc. have been and are being used as externally (*Bahaya kalpana*). External application of herbal drugs is known as *Lepa*. *Lepa* preparation is the topical medicaments meant for external application to the skin or mucosal membrane. It is a concept of using herbs for preventive and curative aspect of any skin problem. In Ayurvedic classics various *lepas* described which have cleaning, healing, astringent, antiseptic properties. The aim of this present article is to provide the details about the *Lepa kalpana* from the classics of Ayurveda, the concept of *Mukhalepa*, the drugs mentioned in classics which are useful for improving complexion and for the common skin ailments and transdermal drug delivery system described in contemporary science.

Key words: Ayurveda, *Lepa*, *Bahya kalpana*, skin, *mukhalepa* etc.

Introduction

In the present time, the world is looking hopefully towards Ayurveda for treatment of various diseases and live healthy. Many governments are encouraging research and development in the field of Ayurveda and other systems of alternative medicine. Due to this changing scenario, evaluation of medicines mentioned in the classical texts for treatment of various diseases has become a need of time. In Ayurveda, there are three kinds of treatment of diseases have mentioned viz., *Antahparimarjana* (internal use of medicine), *Bahihparimarjana* (external application of medicine) and Shastrapranidhana (surgical treatmet). Out of these three the second one i.e. *Bahihparimarjana* is meant for *bahya kalpana*. All the external applications described in Ayurvedic classics are included in *bahya kalpana*. There are various formulations and procedures like *Lepa, Pralepa, Pradeha, Malahara, Upanaha, Taila, Avachurnana, Abhyanga,*

Avagahana, Parishechana etc. have been and are being used as externally with great affectivity

pertaining to the requirement of the skin. Skin (*twacha*) is the largest organ of the body and has a great cosmetic value. It is one of the five *gyanendriya* (sense organ) i.e. *sparsh* gyan (touch sensation) gets from it.[1] In Ayurveda has vast description of topical applications in the name of *Lepa* described both as the *Chikitsa* (treatmrnt) of various disease conditions and for beauty of skin. *Lepa* preparations are the topical medicaments meant for external application to the skin or mucosal membrane. *Lepa* is a concept of using herbs for preventive and curative aspects of any skin problem.

Concept of Lepa:

Definition of lepa

The medicines that can be prepared with *ardra dravyas* (wet ingredients) and also by *suska dravyas* (dried ingredients) by utilizing the liquid media and used for external (topical) application are known as *lepa*.[2]

Synonyms of *Lepa*

Alepana (topical application) also known as *Lipta*, *Lepa* or *Lepana*.[3] All these are the synonymous words used in different contexts of classical texts.

Types of Lepa

Table 1

Sushruta, 3 types[4]	**Sharangadhara, 3 types[3]**	**Vagbhat, 10 types[5]**
1) *Pralepa* 2) *Pradeha* 3) *Alepa*	1) *Doshaghna* 2) *Vishaghna* 3) *Varnya*	1) *Snaihika* 2) *Nirvapana* 3) *Prasadana* 4) *Stambhana* 5) *Vilayana* 6) *Pachana* 7) *Pidana* 8) *Shodhana* 9) *Shoshana* 10) *Savarnikarana*

1) *Pralepa*

It possesses '*Shita guna'* (prepared with Shita virya dravya/drugs which have cold potency). It is *Tanu* which means very thin *Lepa* as that of *Chandana* applied to the skin. *Pralepa* is of two varieties[4]:

1) *Avishoshi* 2) *Vishoshi*

Avishoshi

Avishoshi varieties of *Lepa* are those external applications that are removed from the place of application before they dry up. These types of *Lepa* are required in conditions where *Vrnashopha pidana* (squeezing action over the wounds) is not required. After removal of the earlier *Lepa*, the fresh wet *Lepa* put in the place to avail the desired therapeutic action.[4]

Vishoshi

Vishoshi varieties of Lepa are those external applications that are left in the place of application after they dry up. These types of *Lepa* are required in conditions where *Vrnashopha pidana* (squeezing action over the wounds) is required. The squeezing action exerted by the dry *Lepa* over *Vrnashopha* is helpful in ripening of the same.[4]

2) *Pradeha*

Pradeha possesses either *Ushna guna* (drugs which have hot potency) or *Shita guna*. *Ushna pradeha* is meant for *Vatakaphaja* disease conditions and *Shita pradeha* for *Pittaraktaja* diseases.[4]

3) *Alepa*

Alepa variety of *Lepa* is that, which exhibits the mixed characteristics of both *Pralepa* and *Pradeha*. It is neither applied too thin as *Pralepa* nor applied too thick as *Pradeha*. The application will be of medium thickness.[4]

Thickness of *Lepa*

Acarya Sushruta state that the thickness of the *lepa* should be as *Mahishardracharmotsedha* like (newly-flayed skin of a buffalo).[4] He says that Pralepa is thinner and Pradeha is thicker to buffalo's skin. Acarya Sarangadhara has specified the thickness of the *lepa* as per the type of *lepa.*[3] The thickness of buffalo's skin may be obtained as 2.8 to 3.2 mm.[1]

Table 2

S.No.	Type of *lepa*	Tickness
1	Doshaghna lepa	One fourth *anguli* (0.48cm)
2	Vishaghna lepa	One third *anguli* (0.65cm)
3	Varnya lepa	Half *anguli* (0.97cm)

Note : 1 Angula = 1.95 cm.

Lepa and the Ratio of *Sneha*

Sushruta explains about the ratio of Sneha dravya such as *Ghrita* (ghee) and *Taila* (oil) to be added while preparing *Lepa*. This is done according to *Dosha* (humor) predominance or the disease condition as shown in the table below:[4]

Disease **Ratio of *Sneha***

Vataja vyadhi - 1/4 th part

Pittaja vyadhi - 1/6 th part

Kaphaja vyadhi - 1/8 th part

General norms of Lepa application[4,6]

- All *Lepa* preparations are for instant use and for single use only.
- Wet drugs are triturated to very fine paste form with no fibrous part left out, to use it as *Lepa*.
- Dry drugs are thoroughly pounded and the powder obtained is sieved. The fine powder obtained as filtrate is further triturated with specified liquid to prepare *Lepa*.
- *Lepa* are applied against the hair follicular direction to facilitate quicker and better absorption.
- *Lepa* are removed soon after they dry over the place of application.
- Therapeutically *Lepa* are effective in wet state and they turn non potent and skin irritating when dry. Sushruta and Sharangadhara both have same opinion over this point.[3]
- Previous *Lepa* should never be covered with fresh one. If done so, it hampers the local temperature and leads to pain and numbness in the area.
- Application of *Lepa* during night hours is prohibited. Because as night time is naturally cool it helps in transfer of body temperature from hair follicles. When *Lepa* is applied on the skin, transfer of this temperature will be hampered leading to vitiation of *Dosha* resulting in worsening of the existing skin ailments.

Benefits of *Lepa*

Acarya Sushruta while describing the potency of *lepas* in the context of *vrana cikitsa* (treatment of wound) has stated that pouring water over a burning house the fire get extinguished very soon, in the same manner pain of *vrana* (wound) gets subsided by application of *lepa*. He also says that, besmearing (*Alepa*) the face (with scented pastes, etc.) imparts steadiness to the eyes, brings on abroad and graceful contour of the cheeks and mouth, produces their healthful glow like that of a lotus flower and prevents its disfigurement by *pidaka* (eruptions) and *vyanga* (hyperpigmentation).[4]

Concept of *Mukhalepa*

The herbal paste which is applied on face to treat acne, pimple, scars, marks and pigments are known as '*Mukhalepa* (face pack)'in Ayurveda.[3]

Types of *Mukhalepa*

Mukhalepas (face pack) are also of three types based on their therapeutic use:[3]

- *Doshahara*
- *Vishaghna*
- *Varnakrita*

Properties of a good quality *Mukhalepa*[7]

- It should be a smooth paste without gritty particles.
- The drugs should be uniformly mixed.
- Sufficient liquid media should be added in preparation of face pack.
- It should have pleasant odor.
- It should produce a significant cleansing of skin.
- When applied to the face, it should dry out rapidly to form an adherent coating on face.
- The coating should be such which can be removed either by piling or by gentle washing and should not cause any discomfort to face.

Time for application of *Mukhalepa*

As stated earlier *Mukhalepa* should not be applied at nights nor should it be allowed to stay on after it dries up.[3]

Direction of *Mukhalepa* application As stated earlier *Mukhalepa* should be applied against the direction of hair follicles (*Pratilom*) on the skin to make the action of application more quick and effective.[4]

Procedure after application of *Mukhalepa*[6]

- *Lepa* should be allowed to remain till it becomes dry; if left dry, it vitiates the complexion of skin.
- It should be removed after moistening and when removed, the face should be anointed with oil.
- The person should avoid day sleep, excessive talk, exposure to fire and sunlight, sorrow and anger.

Contraindications of *Mukhalepa*

It should not be applied to persons suffering from *Pinasa* (rhinorrhea), *Ajirna* (indigestion), immediately after *Nasya karma* (nasal drops), *Arochaka* (anorexia), *Hanugraha* (lock jaw), and after keeping awake the previous night (*Jagarana*).[6]

Classical Drugs for Improving Face Complexion and to Cure Common Skin Ailments

Ayurvedic classics have mentioned the groups of drugs and single drugs having *Varnya* action, which can be used for improving the complexion of the skin. The drugs can be used both as externally and internally. Externally it can be used for face wash or face pack (*mukhalepa*) to improve the glow of skin and to treat the ailments.

Acharya Sharangadhara has mentioned the following drugs for *Mukhalepa*[3]

- *Raktachandan* (*Pterocarpus santalinus*)
- *Manjishtha* (*Rubia cordifolia*)
- *Lodhra* (*Symplocus racemosus*)
- *Kushtha* (*Saussurea lappa*)
- *Priyangu* (*Callicarpa macrophylla*)
- *Vatankura* (*Ficus bengalensis*)
- *Masura* (Lentils)
- *Matulunga jata* (root of *Citrus medica*)

***Varnya Mahakashaya* (ten complexion promoter drugs)[8]**

- *Chandana* (*Santalum album* L.)
- *Tunga* (*Calophyllum inophyllum* L.)
- *Padmaka* (*Prunus cerasoides*)
- *Ushira* (*Chrysopogon zizanioides* L.)
- *Madhuka* (*Glycyrrhiza glabra* L.)
- *Manjistha* (*Rubia cordifolia* L.)
- *Sariva* (*Hemidesmus indicus* L.)
- *Paysya* (*Jacquemontia paniculata*)
- *Sita* (white variety of *Cynodon dactylon* L.)
- *Lata* (black variety of *Cynodon dactylon* L.)

***Kushthaghna Mahakashaya* (ten drugs for curing skin ailments)[8]**

- *Khadira* (*Acacia catechu*)
- *Abhaya* (*Terminalia chebula*)
- *Amalaka* (*Phyllanthus emblica*)
- *Haridra* (*Curcuma longa*)

- *Arushkara* (*Semicarpus anacardium*)
- *Saptaparna* (*Alstonia scholaris*)
- *Aragwadha* (*Cassia fistula*)
- *Karvira* (*Nerium oleander*)
- *Vidanga* (*Embelia ribes*)
- *Jatipravala* (Tenders shoots of *Jasminum officinle*)

***Kandughna Mahakashaya* (drugs used in skin ailments)**[8]

- *Raktachandan* (*Pterocarpus santalinus*)
- *Nalad* (*Arundo donax*)
- *Amalatas* (*Cassia fistula*)
- *Latakaranja* (*Caesalpina crista*)
- *Neem* (*Azadirachta indica*)
- *Kutaj* (*Holerrhena antidysentrica*)
- *Sarshap* (*Bassica alba*)
- *Yashtimadhu* (*Glycyrrhiza glabra*)
- *Daruharidra* (*Berberis aristata*)
- *Mustak* (*Cyprus rotundus*)

Groups of drugs having *Varnya* action[7]

- *Eladi gana*
- *Panchavalkala*
- *Rodhradi gana*
- *Trijataka* and *Chaturjataka*

Drugs useful for *Mukhalepa* in different seasons

Table 3

Season	Drugs
Hemanta (early Winter)	Cotyledon of *Kola* (*Ziziphus mauritiana*), root of *Vrisha* (*Adathoda vasica*), bark of *Sabara* (*Symplocos racemosa*), and *Gaura Sarshapa* (*Brassica alba*).[6]
Shishira (extreme Winter)	Root of *simhi* (*Solanum anguivi*), *tila* (*Sesamum indicum*), *Krishna* (*Piper longum*), bark of *Darvi* (*Coscinium fenestratum*) and dehusked *barley* (*Hordeum vulgare*).[6]
Vasanta (Spring)	Root of *Darbha* (*Desmostachya bipinnata*), *Hima* (*Santalum album*), *Ushira* (*Vetiveria zizanioides*), *Sirisha* (*Albizia lebbeck*), *Mishi* (*Foeniculum vulgare* Mill) and *Tandula* (*Oryza sativa*).[6]
Grishma (Summer)	*Kumuda* (*Nymphaea nouchali*), *Utpala* (*Nymphaea stellata*) *kalhara* (*Nymhoea alba*) *Durva* (*Cynodon dactylon*), *Madhuka* (*Glycyrrhiza*

	glabra) and *Chandana* (*Pterocarpus Santalinus*).[6]
Varsha (*Pravrita*) (Rainy)	*Kaliyaka* (*Aquilaria agallocha*), *Tila* (*Sesamum indicum*), *Ushira* (*Vetiveria zizaniodes*), *Mamsi* (*Nardostachys jatamansi*), *Tagara* (*Valeriana wallichi*) and *Padmaka* (*Prunus cerasoides*).[6]
Sharada (Autumn)	*Talisa* (*Abies webbiana*), *Gundra* (*Saccharum arundinaceum*), *Pundravha* (*Saccharum officinarum*), *Yasthi* (*Glycyrrhiza glabra*), *Kasa* (*Saccharum spontaneum*), *Nata* (*Valeriana wallichi*), and *Agaru* (*Aquilaria agallocha*).[6]

Mechanism of *Lepa* absorption: Ayurvedic view

- *Lepa* are generally applied against the hair follicular direction (*Pratiloma gati*) this facilitates the quicker absorption of the drug through *Romakupa* (hair roots), *Swedavahini* (sweat glands) and *Siramukha* (blood capillaries).[4] Even the books of contemporary medical science put forward the same theory of drug absorption in case of external applications.

- As per *Tridosha* theory that the whole human body has the prevalence of *Bhrajaka Pitta*[4] and *Vyana Vayu*[8] whereas no separate type of *Kapha* has been said to be dwelling in the *Tvak* (skin) but it has also been said that the function of *Shlesma* is to bind all the *Dhatus* with each other and thus, may be said that the *Shlesaka Kapha*,[6] which is said to be present in every joints, is present at the joints of various layers of *Tvak* too.[9]
- The function of *Bhrajaka Pitta* is said to metabolize the substance of drugs applied to the skin whereas one of its main functions is to manifest the color and complexion of the *Tvak*.[4] In function of metabolism the activities of *Samana Vayu*[8] supported by *Vyana Vayu* is of great importance. Ayurved also propagates the theory of '*Srotomaya Purusa*'[8] When the medication is applied in form of *Lepa* or *Pradeha*, the minute particles of the substance penetrate into the *Tvak* owing to the gravitational pull and the weight of the drug. The *Upashoshana* (absorption) property of *Vayu* (*Vyana* and *Samana* especially) would play a major role in the penetration, and absorption of the medicaments applied over the *Tvak* because *Samana vayu* is situated in *svedavahi srotas* and the *mula* of *svedavaha srotas* is *lomakupa* (hair follicles)[8] which are situated in skin (*tvak*) of all over the body. After being absorbed in the *Tvak*, the drugs would act upon the body, pertaining to its *Virya* (active Principles) and in some cases according to its *Prabhava*.[9]

MODERN CONCEPT ABOUT EXTERNAL APPLICATION

In Modern science Local application of a dusting powder, paste, lotion, drops, ointment or plaster is used for its action at the site of application.[10] The drugs applied to the skin for local effect include antiseptics, antifungal and anti-inflammatory agents as well as skin emollients for protective effects.[11] Effective and safe use of topical agents requires appreciation of the physical and physiological variables that influence the interactions of drugs and the skin, impacting absorption and transport. The skin is a multifunctional and multicompartment organ affected in numerous ways by diseases and their treatments. The bulk of percutaneous absorption for most

agents is through the stratum corneum, which covers almost the entire skin surface. Many skin diseases can be treated with active pharmacological agents topically; understanding the principles for percutaneous drug absorption and metabolism are essential for their effective and safe use.[10]

Mechanism of percutaneous absorption:[10]

Passage through the outermost layer is the rate- limiting step for percutaneous absorption. The major steps involved in percutaneous absorption include the establishment of a concentration gradient, which provides the driving force for drug movement across the skin, partitioning and movement of the drug from a thin layer outside the stratum corneum into the stratum corneum (partition coefficient), and intrinsic molecular characteristics that allow drug diffusion across the layers of the skin (diffusion coefficient). The ideal relationship of these factors to each other is summarized in the following equation:

$$J \alpha C_{veh} \cdot K_m \cdot D/x$$

Where J is the rate of absorption, C_{veh} is the concentration of drug in the vehicle, K_m is the partition coefficient, D is the diffusion coefficient, and x is the thickness of stratum corneum. This equation represents the idealized situation and can only approximate what occurs in normal or diseased epidermis.

Preferable characteristics of topical drugs include low molecular mass (600 Da), adequate solubility in both oil and water, and a high partition coefficient so the drug will selectively partition from the vehicle to the stratum corneum. Except for very small particles, water-soluble ions and polar molecules do not penetrate significantly through intact stratum corneum. Commercial topical pharmaceuticals are compounded for optimum diffusion and partition, and the extemporaneous addition of other ingredients may interfere with the activity or change the absorption of the primary drug.

Advantages of transdermal drug delivery:[12]

Transdermal drug delivery enables the avoidance of gastrointestinal absorption with its associated pitfalls of enzymatic and pH associated deactivation.

- Avoidance of first pass metabolism.
- The lack of peaks in plasma concentration can reduce the risk of side effects, thus drugs that require relatively consistent plasma levels are very good candidate for transdermal drug delivery.
- As a substitute for oral route.
- The patch also permit constant dosing rather than the peaks and valley in medication level associated with orally administered medication.

- Rapid notifications of medication in the event of emergency as well as the capacity to terminate drug effects rapidly via patch removal.
- Avoidance of gastro intestinal incompatibility.
- Convenience especially notable in patches that require only once weekly application, such a simple dosing regimen can aid in patient adherence to drug therapy.
- Minimizing undesirable side effects.
- Provide utilization of drug with short biological half lives, narrow therapeutic window.
- Avoiding in drug fluctuation drug levels.
- Inter and intra patient variation.
- Provide suitability for self administration.
- Termination of therapy is easy at any point of time.
- They are non invasive, avoiding the inconvenience of parentral therapy.
- The activity of drugs having a short half life is extended through the reservoir of drug in the therapeutic delivery system and its controlled release.
- It is of great advantages in patients who are nauseated or unconscious.
- Transdermal patches are better way to deliver substances that are broken down by the stomach aids, not well absorbed from the gut, or extensively degraded by the liver.
- Transdermal patches are cost effective.

Disadvantages of transdermal drug delivery:[12]

- Transdermal drug delivery system cannot deliver ionic drugs.
- It cannot achieve high drug levels in blood.
- It cannot develop for drugs of large molecular size.
- It cannot deliver drugs in a pulsatile manner.
- It cannot develop if drug or formulation causes irritation to skin.
- Possibility of local irritation at site of application.
- May cause allergic reaction.
- Sufficient aqueous and lipid solubility, a log P (octanol/ water) between 1 and 3 is required for permeate to transverse stratum corneum and underlying aqueous layer.
- Only potent drugs are suitable candidates for transdermal patch because of the natural limits of drug entry imposed by the skin's impermeability.
- Long time adherence is difficult.

DISCUSSION

The skin is the largest organ in the human body by weight, contributing about 10% of total weight and covering area of 1.7 m^2. It regulates water and heat loss, and prevents the invasion of noxious chemicals and microorganisms. Because skin is an easily accessible organ, its potential as an alternative route for administering drugs for both systemic and local effect has attracted considerable interest.[13] *Lepa* is a type of topical medicament for external application described in

Ayurveda. Herbal drugs are taken as said by classical text and triturated with some media and applied over the skin, it is the basic concept of *lepa* (medicinal plaster). Various references of *lepa* have explained in Ayurvedic classical texts as per their disease condition and their *dosha* predominance. For better result in disease condition thickness, quantity of *sneha* and certain condition for *lepa* preparation and application is to be followed strictly. There are many formulations, their probable mechanism, absorption and actions described in Ayurveda as well as in Contemporary science for healthy skin & diseased skin. In contemporary science, transdermal drug delivery has made an important contribution to medical practice. Nowadays, people want to use the natural & herbal substances and products for improving complexion and to cure common skin ailments rather than synthetic, chemical based cosmetic products. In Ayurveda classical texts, various kinds of *lepas* described based on climatic changes, which have nourishing, healing, cleansing, astringent and antiseptic properties.

CONCLUSION

In present era people talk about internal beauty rather than external beauty but somehow skin problems cause distress and low confidence of an individual. *Lepa* preparation is the key medicine for external application on skin and mucosal membrane. It is a concept of using herbs for preventive and curative aspect. *Lepa* preparations are used in wound cleaning, wound healing, natural complexion of skin, inflammation, acne and many more disease condition.

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