



Review Article

COSMECEUTICALS IN CLASSICAL AYURVEDA: A REVIEW OF *LEPA KALPANA* AS
COSMECEUTICALS FROM SHARANGDHARA SAMHITA

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ABSTRACT

Ayurvedic cosmeceuticals combine cosmetic and therapeutic benefits for maintaining skin and hair health. Among the various Ayurvedic topical formulations, *Lepa Kalpana* is an important *Bahya Kalpana* (external therapeutic preparation) widely described in classical texts. Sharangadhara Samhita contains a systematic description of numerous *Lepa* formulations used for complexion enhancement, acne, pigmentation, hair fall, dandruff, premature greying, and skin rejuvenation. **Objective:** To review the concept of *Lepa Kalpana* in classical Ayurveda and evaluate the cosmeceutical significance of *Lepa* formulations described in Sharangadhara Samhita in relation to modern skincare and haircare science. **Materials and Methods:** This narrative review was conducted in two phases: review of classical Ayurvedic literature related to *Lepa Kalpana* and review of cosmetic and hair-related *Lepa* formulations described in Sharangadhara Samhita. Classical references were collected from Charaka Samhita, Sushruta Samhita, Ashtanga Sangraha, Bhavaprakasha, and Sharangadhara Samhita. Modern scientific literature related to herbal cosmetics, dermatology, antioxidants, and topical drug delivery was also reviewed. **Results and Discussion:** The review identified several *Varnya* and *Keshya Lepas* containing herbs such as *Haridra*, *Manjistha*, *Lodhra*, *Yashtimadhu*, *Bhringaraja*, and *Triphala* possessing antioxidant, anti-inflammatory, antimicrobial, wound-healing, and rejuvenating properties. Classical concepts such as *Romakupa*, *Swedavahi Srotasa*, and *Bhrajakagni* correlate with modern concepts of transdermal absorption and cutaneous metabolism. Use of lipid-based media like *Ghrita* and *Taila* may enhance skin permeation and moisturization. Ayurvedic *Lepas* also demonstrate principles of personalized skincare through *Dosha*-based application. **Conclusion:** *Lepa Kalpana* possesses significant therapeutic and cosmeceutical potential for skin and hair care. Integration of Ayurvedic pharmaceuticals with modern cosmetic science may support development of safe, effective, and evidence-based herbal cosmeceuticals.

INTRODUCTION

Cosmeceuticals are products that combine cosmetic and therapeutic benefits, intended not only to enhance beauty but also to improve skin texture, complexion, wrinkles, skin and hair health^[1]. Ayurveda, the ancient Indian system of medicine, offers a rich source of natural herbs, minerals, and formulations that possess *Twachya* (skin-enhancing),

Varnya (complexion-promoting), *Kandughna* (anti-pruritic), and *Rasayana* (rejuvenating) properties and links skin beauty to effects like *Vayasthapana* (age-defying), *Varnya* (complexion), *Sandhaniya/Vranaropana* (healing), *Tvachya* (nurturing), and *Tvachagnivardhani* (skin metabolism)^[2], making them highly relevant in modern cosmeceutical science. Ayurvedic formulations such as *Lepa*, *Taila*, *Mukhalepa*, and herbal preparations containing ingredients like *Haridra*, *Chandana*, neem, aloe vera, and *Manjistha* have been traditionally used for skincare, anti-aging, complexion enhancement, acne, pimples, scars, pigments, loss of glow; nourishes skin, improves elasticity, delays wrinkles and treatment of

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various dermatological conditions^[3]. Due to increasing demand for natural and safer alternatives to synthetic cosmetics, Ayurvedic cosmeceuticals have gained significant global importance in the fields of skincare, haircare, and wellness.

Ayurvedic Cosmeceuticals and Mukha Lepa/Face Packs: Current Concepts

Ayurvedic cosmeceuticals combine beauty care with therapeutic action, using herbs that affect skin

biology and Hair as well as appearance. Much recent work focuses on translating classical *Lepa* (pastes) and *Mukha lepa* (face packs) into standardized, modern formulations for safe, routine use.^[4] Many modern reviews highlight strong consumer shift toward herbal/Ayurvedic products, seen as safer and longer-lasting than synthetic cosmetics, though high-quality clinical trials are still limited.^[5]

Table 1: Key Ayurvedic Skin-Benefit Actions and Herbs^[4]

Ayurvedic action	Main effects on skin	Example herbs
<i>Varnya</i>	Glow, complexion	<i>Chandana, Manjistha, Lodhra, Rakta chandana, Masura</i>
<i>Vayasthapana/Tvagrasyana</i>	Anti-aging, elasticity	<i>Amla, Gotukola, Rasayana plants</i>
<i>Tvachya</i>	Moisturizing, nourishment	Costus, rose petal, orange peel
<i>Sandhaniya/Vranaropana</i>	Healing, scar reduction	<i>Gotukola, others</i>

MATERIAL AND METHODOLOGY

Review on Lepa Kalpana

Lepa are herbo/herbo-mineral ayurvedic pharmaceutical preparation meant for local application classified as *Varnya lepa* (complexion improving applicants), *Doshghn lepa* (*Shothhar lepa*) {anti-inflammatory applicants} and *Vishaghna lepa* (anti-allergic applicants).

Ayurveda classifies treatment broadly into two types: *Antahparimarjana Chikitsa* (internal purification and medication) and *Bahirparimarjana Chikitsa* (external therapeutic measures). *Bahirparimarjana* includes medicinal preparations intended for external application over the body. Various external therapeutic forms such as *Lepa*, *Malahara*, *Upanaha*, and others are described in Ayurvedic classics for the management of different diseases and cosmetic conditions. These can be correlated with modern pharmaceutical form such as ointments, creams, lotions, and face packs.

Acharya Charaka has described 32 formulations of *Lepas* in '*Aaragvadhiya Adhyaya*', many *Pradehas* in *Kushtha* and *Lepas* for *Arsha* and *Visarpa* but neither he himself nor commentator Chakrapani touched the various pharmaceutical aspects of *Lepa*

Kalpna. Acharya Sushruta has described *Lepa* in S.Su 18, Su.Chi. 1, *Ashtanga Sangraha* in Ut 30 and Su 31, *Gada nigrha* in *Kshudra rog chikitsa*, *Sharangdhara* in *Uttara Khanda*, Ch. 1194 *Lepa* formulations are described; ~80 herbal and 14 herbomineral^[6], Bhavaprakash in *Purva Khanda*, ch 5 and *Madhya Khanda*.

Definition & Synonyms

This means, wet medicinal drugs are made into paste form, if the drugs are in dry state they are converted into paste form by adding little quantity of water and grinding. This paste is used in external application and called *Lepa Kalpana*. (D.G.Uttaradha Yadav Ji) *Aalepana* is also known as *Lipta*, *Lepa*, *Lepana*.^[7]

Importance of Lepa Kalpana

Acharya Sushtra has mentioned the importance of *Lepa Kalpana* very well by giving a nice example. By pouring water over burning house, the fire is extinguished immediately; in the same manner the *Lepa* pacifies the provoked local *Doshas* by local application. Moreover, it has also actions like *Shodhana*, *Utsadana*, *Ropana* & *Pralhadana*.^[8]

Table 2: Types of Lepa Kalpana Classical Types (including Sushruta & Sharangadhara)

Classification basis	Main types (meaning/use)	Citations
By application form	<i>Pralepa</i> – Thin, cooling; <i>Pradeha</i> – Thicker, can be warm; <i>Alepa</i> – Moderate	Acharya Sushruta (S.Su. 18/6) Ashtang sangraha uttara tantra 30/7
By therapeutic effect	<i>Doshaghna</i> (pacifies <i>Doshas</i>), <i>Vishaghna</i> (anti-poison/detox), <i>Varnya</i> (improves complexion)	Acharya Sharangadhara (Sha. Sam. Ut. 11/1)

According to Acharya Sushruta there are 3 types of *Lepa*.^[9]

1) *Pralepa*

This type of *Lepa* has soothing property (*Sheet guna*), It should be applied very thin.

2) *Pradeha*

The type of *Lepa* could be applied, with the material lukewarm or cold, thick or thin and it does not act on the local *Dosha* & *Kleda*.

3) *Alepa*

Lepa with characters in between the above two is *Alepa*.

Ashtang Sangraha Uttara Tantra 30/7 tells what Sushruta's *Pralepa* as his *Pradeha* and Sushruta's *Pradeha* as his *Pralepa*.

Ashtang Sangraha sutra sthana 31/14 gives three types of *Mukhalepa* as *Doshaghana*, *Vishaghana* and *Varnya*. In Uttara tantra, ch 30 description and application remarks of *Pralepa* and *Pradeha* is given. In this chapter 10 type of *Lepa* are given:

- | | |
|-------------------------|----------------------|
| i) <i>Snaihika</i> | vi) <i>Stambhana</i> |
| ii) <i>Nirvapana</i> | vii) <i>Vilayana</i> |
| iii) <i>Prasadana</i> | viii) <i>Pachana</i> |
| iv) <i>Ropana</i> | ix) <i>Pidana</i> |
| v) <i>Savarnikarana</i> | x) <i>Shodhana</i> |

All the above can be considered as *Gunas* of *Lepa* rather than types.

Acharya Sharangadhara has mentioned 3 types of *Lepa* according to their action:

1. *Doshaghna Lepa*

This variety of *Lepa* includes such drugs which exerts their alleviatory action directly on the *Doshas* rather than other factors when applied over the surface of the skin.

2. *Vishaghna Lepa*

This kind of *Lepa* includes the drugs which nullifies the poisons directly at local level after application. The drugs used in this *Lepa* are potent than those in *Doshaghna Lepa*.

3. *Varnya Lepa*

This is cosmetic application over the face to improve colour and complexion. *Chandan*, *Manjistha*, *Ushir*, *Sariva* are some of the drugs which are attributed with this *Varnya* property. Most of the *Varnya* drugs are *Madhura Rasatmaka* and *Shita*, *Guru*, *Snighdha*, *Mrudu gunatmaka* and *Shita viryatmaka* and alleviates *Pitta* and *Vata*. Milk, butter, *Ghrita*, oil and likewise unctuous stuffs are used as bases to prepare *Varnya Lepa*.

Thickness of *Lepa*^[10]

Charak Samhita

Pralepa should be applied 1/3 part of *Angushta* (thumb).

Acharya Charaka says that when a rubefacient action of a drug is expected, it should be applied uniformly thick over the skin. But when softening and soothing action is to be elicited, the drug should be applied uniformly thin over the skin. In fact, this statement interprets the mode of application of a drug as per the requirement and not the properties of the mentioned drugs. Modern pharmaceuticals have not laid down any such norms. It recommends only a uniform application over the affected skin surface.

Sushrut Samhita^[11]

Acharya Sushruta opines that the thickness of *Lepa* application on the skin should be equal to the thickness of a buffalo's skin. The thickness of buffalo's skin is 4-5mm approximately. Hence a *Lepa* having thickness less than 4-5mm should be considered as 'Thin *Lepa*' and greater should be considered as 'Thick *Lepa*'.

Sharangadhara Samhita^[12]

One fourth, one third and half *Angulis* is the thickness of the *Lepa* (paste) respectively for *Doshaghna*, *Vishaghna* and *Varnya Lepa*.

Adding *Sneha* to *Lepa*

Acharya Sushruta has advised incorporating of *Sneha dravyas* in *Lepa* formulation according to *Dosha*^[13] *Vataja*-1/4th part, *Pittaja*-1/6th part, *Kaphaja*-1/8th part.

Methodology of *Lepa* application^[14]

The Ayurvedic maneuver suggests that *Lepa* i.e., the topical formulations should be gently rubbed in an upward or reverse direction of the hairs over the skin to make the action of application quicker and more effective. Because of this, application enters in to *Romkupa* and further gets absorbed through *Swedavahi srotas* and *Siramukh* leading to desired effects. This method of rubbing increases the skin temperature which might be hastening the pilosebaceous uptake and skin permeation of the drug in topical formulation.

Time of *Lepa* Application

Pralepa should not be applied at nights nor it should be allowed to stay on after it dries up, whereas *Pradeha* can be allowed to stay on even after drying, in order to cause constriction or pressure over the part of the body^[15].

The heat of the body comes out through the skin pores at nights normally, if medicinal applications are done at night, the skin pores get blocked and obstruct the transfer of body heat. That's why topical application should not be done at nights. Furthermore, Acharya Charaka has stated that at night, all the *Srotas* in the body are closed, that is to say, their working capacity wanes as compared to daytimes. Hence the *Lepa* application at night will not yield the desired results. This might be the other reason as to why the

topical application should not be made at night. But in cases of *Apakva*, *Gambhira*, and *Rakta sleshmaj Shotha*, applications can be made even at nights^[16]. (S.Su. 18/13)

Contraindications for *Lepa* application

Stale *Lepa* material should not be used for application. One *Lepa* should not be followed by another *Lepa* over it because as the density and compactness of material increases it causes rise in local temperature, burning sensation and pain^[17].

Lepa Kalpana in Ayurveda and Sharangadhara's *Lepa*^[18]

Lepa Kalpana is a key Ayurvedic external (*Bahya*) therapy where herbal or herbomineral pastes are applied to the skin for treatment and cosmetology. Sharangadhara Samhita gives one of the most systematic classical accounts of these topical formulations.

Bases Used in *Lepa Kalpana*

Selection of a suitable base is essential in *Lepa Kalpana* as it facilitates deeper penetration of active principles through the skin.

Commonly used bases include:

- *Ghrita* (ghee)
- *Taila* (oil)
- *Gomutra*
- *Siktha Taila*
- Milk
- Buttermilk
- Butter
- Lemon juice

Oleaginous bases are especially useful in *Lepas* possessing:

- *Snehana*
- *Nirvapana*
- *Prasadana*
- *Ropana*
- *Savarnikarana* properties

These bases act as emollients and improve skin hydration and drug permeation.

Table 2: Various *Lepa* mentioned in Shadhangdhar Samhita as *Varnya* (Skin) and *Keshya* (Hair)^[19]

S.No.	<i>Lepa</i> Name	Ingredients	Latin Name	Quantity of Ingredients	Media Used	Indication
1	<i>Vyangahara</i>	<i>Rakta Chandana</i>	<i>Pterocarpus santalinus</i>	Equal quantity	Water	<i>Vyanga, Mukhakanti</i>
		<i>Manjishta</i>	<i>Rubia cordifolia</i>	Equal quantity		
		<i>Lodhra</i>	<i>Symplocos racemosa</i>	Equal quantity		
		<i>Kushta</i>	<i>Saussurea lappa</i>	Equal quantity		
		<i>Priyangu</i>	<i>Callicarpa macrophylla</i>	Equal quantity		
		<i>Vatangura</i>	<i>Ficus benghalensis</i>	Equal quantity		
		<i>Masura</i>	<i>Lens culinaris</i>	Equal quantity		
2	<i>Varnya</i>	<i>Matulunga</i>	<i>Citrus medica</i>	Equal quantity	<i>Goshakṛit, Ghrita</i>	<i>Pidika, Vyanga, Tilakalaka</i>
		<i>Manashila</i>	Realgar (Arsenic disulphide)	Equal quantity		
3	<i>Varnya</i>	<i>Lodhra</i>	<i>Symplocos racemosa</i>	Equal quantity	—	<i>Tarunya Pidika</i>
		<i>Dhanyaka</i>	<i>Coriandrum sativum</i>	Equal quantity		
		<i>Vacha</i>	<i>Acorus calamus</i>	Equal quantity		
4	<i>Varnya</i>	<i>Gorochana</i>	Animal origin	Equal	—	<i>Tarunya Pidika</i>

			preparation	quantity		
		<i>Maricha</i>	<i>Piper nigrum</i>	Equal quantity		
5	<i>Varnya</i>	<i>Siddharthaka</i>	<i>Brassica campestris</i>	Equal quantity	—	<i>Tarunya Pidika</i>
		<i>Vacha</i>	<i>Acorus calamus</i>	Equal quantity		
		<i>Lodhra</i>	<i>Symplocos racemosa</i>	Equal quantity		
		<i>Saindhava</i>	Rock salt	Equal quantity		
6	<i>Varnya</i>	<i>Arjuna</i>	<i>Terminalia arjuna</i>	Equal quantity	<i>Makshika</i>	<i>Vyanga</i>
7	<i>Varnya</i>	<i>Manjishta</i>	<i>Rubia cordifolia</i>	Equal quantity	<i>Makshika</i>	<i>Vyanga</i>
8	<i>Varnya</i>	<i>Shweta Ashvakhura Mashi</i>	Ash of white horse hoof	Equal quantity	<i>Navaneeta</i>	<i>Vyanga</i>
9	<i>Varnya</i>	<i>Haridra</i>	<i>Curcuma longa</i>	Equal quantity	<i>Arka Ksheera</i>	<i>Mukhakarshnya</i>
10	<i>Varnya</i>	<i>Vata (Pandu Patra)</i>	<i>Ficus benghalensis</i>	Equal quantity	Water	<i>Mukhadushika</i>
		<i>Malati</i>	<i>Jasminum grandiflorum</i>	Equal quantity	<i>Kanji</i>	<i>Vyanga, Neelika</i>
		<i>Rakta Chandana</i>	<i>Pterocarpus santalinus</i>	Equal quantity		
		<i>Kushta</i>	<i>Saussurea lappa</i>	Equal quantity		
		<i>Daruharidra</i>	<i>Berberis aristata</i>	Equal quantity		
		<i>Lodhra</i>	<i>Symplocos racemosa</i>	Equal quantity		
11	<i>Darunakahara</i>	<i>Priyala Beeja</i>	<i>Buchanania lanzan</i>	Equal quantity	<i>Makshika</i>	<i>Darunaka</i>
		<i>Yashtimadhu</i>	<i>Glycyrrhiza glabra</i>	Equal quantity		
		<i>Kushta</i>	<i>Saussurea lappa</i>	Equal quantity		
		<i>Masha</i>	<i>Vigna mungo</i>	Equal quantity		
		<i>Saindhava</i>	Rock salt	Equal quantity		
12	<i>Darunakahara</i>	<i>Khakha Beeja</i>	<i>Butea monosperma</i>	Equal quantity	<i>Ksheera</i>	<i>Darunaka</i>
13	<i>Darunakahara</i>	<i>Amra Beeja</i>	<i>Mangifera indica</i>	Equal quantity	<i>Ksheera</i>	<i>Darunaka</i>
		<i>Haritaki</i>	<i>Terminalia chebula</i>	Equal quantity		

14	Indraluptahara	Patola Patra Swarasa	Trichosanthes dioica	—	—	Indralupta
15	Indraluptahara	Brihati	Solanum indicum	Equal quantity	Makshika	Indralupta
16	Indraluptahara	Gunja Mula	Abrus precatorius	Equal quantity	—	Indralupta
17	Indraluptahara	Bhallataka	Semecarpus anacardium	Equal quantity	—	Indralupta
18	Indraluptahara	Gokshura	Tribulus terrestris	Equal quantity	Ghrita	Keshavarshanam
		Tila Pushpa	Sesamum indicum	Equal quantity	Makshika	
19	Keshavardhana	Hastidanta Mashi	Ash of elephant tusk	Equal quantity	Aja Ksheera	Keshavardhana
		Anjana	Antimony sulphide	Equal quantity		
20	Keshavardhana	Yashtimadhu	Glycyrrhiza glabra	Equal quantity	Ghrita	Indralupta, Drudha Kesha
		Indeevara	Nymphaea stellata	Equal quantity	Ksheera	
		Mridwika	Vitis vinifera	Equal quantity		
21	Palityahara	Ayoraja	Iron rust	Equal quantity	Ikshu Rasa	Palitya
		Bhringaraja	Eclipta alba	Equal quantity		
		Triphala	Combination formulation	Equal quantity		
		Krishna Mridwika	Vitis vinifera	Equal quantity		
22	Palityahara	Dhatri Phala	Embllica officinalis	3 no.	Water	Palitya
		Haritaki	Terminalia chebula	2 no.		
		Vibhitaki	Terminalia bellirica	1 no.		
		Amra Majja	Mangifera indica	5 no.		
		Loha	Iron	3 Karsha		
23	Palityahara	Triphala	Combination formulation	Equal quantity	Ajamutra	Palitya
		Neeli	Indigofera tinctoria	Equal quantity		
		Loha	Iron	Equal quantity		
		Bhringaraja	Eclipta alba	Equal quantity		
24	Palityahara	Triphala	Combination formulation	5 Pala	Aja Ksheera	Palitya

		<i>Loha</i>	Iron	5 Pala		
		<i>Dadima Twak</i>	<i>Punica granatum</i>	5 Pala		
		<i>Bisa</i>	<i>Nelumbo nucifera</i>	5 Pala		
		<i>Bhringaraja Swarasa</i>	<i>Eclipta alba</i>	1 Prastha		

DISCUSSION

The present review highlights the significant role of *Lepa Kalpana* as an important topical therapeutic and cosmetic modality described in classical Ayurveda, particularly in *Sharangadhara Samhita*. The reviewed formulations demonstrate that Ayurvedic dermatological and cosmetological practices were based on a systematic understanding of skin physiology, dosha balance, local drug delivery, and enhancement of skin and hair health. The concept of Ayurvedic cosmeceuticals, though contemporary in terminology, is deeply rooted in classical principles such as *Varnya*, *Tvachya*, *Vayasthapana*, *Ropana*, and *Keshya* actions.

Lepa Kalpana as a Classical Topical Drug Delivery System

Lepa Kalpana represents one of the earliest documented forms of topical pharmaceutical preparations in Ayurveda. The classical descriptions by Acharya Sushruta, Sharangadhara, and other scholars indicate that *Lepa* was not merely a paste application but a scientifically designed external therapy intended to achieve local as well as systemic effects through transdermal absorption. The recommendation of applying *Lepa* opposite to the direction of hair follicles suggests an empirical understanding of enhanced penetration through *Romakupa* and *Swedavahi Srotasa*. This concept correlates with modern dermatological understanding of follicular drug delivery and percutaneous absorption pathways.

The use of different bases such as *Ghrita*, *Taila*, *Ksheera*, *Takra*, and *Madhu* reflects an advanced pharmaceutical approach aimed at improving spreadability, hydration, bioavailability, and therapeutic action of herbal constituents. Oleaginous bases described for *Varnya* and *Ropana Lepas* may function similarly to modern emollient and occlusive delivery systems, enhancing skin permeation and barrier restoration.

Cosmeceutical Potential of *Varnya Lepas*

The formulations mentioned in *Sharangadhara Samhita* reveal a strong emphasis on complexion enhancement, acne management, scar reduction, and rejuvenation. Herbs such as *Manjistha* (*Rubia cordifolia*), *Lodhra* (*Symplocos racemosa*), *Haridra* (*Curcuma longa*), *Rakta Chandana* (*Pterocarpus santalinus*), and *Daruharidra* (*Berberis aristata*) possess well-documented anti-inflammatory,

antioxidant, antimicrobial, depigmenting, and wound-healing activities in modern pharmacological studies. These pharmacological actions support their traditional use in conditions such as *Vyanga*, *Mukhadushika*, *Tilakalaka*, and *Tarunya Pidika*.

Many of these herbs are rich in flavonoids, phenolic compounds, tannins, and curcuminoids, which help neutralize reactive oxygen species and reduce oxidative stress-induced skin aging. The antioxidant action of these drugs may contribute to maintenance of collagen integrity, prevention of pigmentation, and improvement of skin elasticity. Thus, classical *Varnya Lepas* can be interpreted as natural anti-aging and skin-brightening formulations within the framework of modern cosmeceutical science.

Relevance of *Keshya Lepas* in Hair Cosmetology

The reviewed *Keshya* formulations for *Darunaka*, *Indralupta*, and *Palitya* indicate a comprehensive Ayurvedic approach toward scalp and hair disorders. Ingredients such as *Bhringaraja*, *Yashtimadhu*, *Triphala*, *Neeli*, and *Gokshura* are traditionally regarded as hair-promoting and scalp-nourishing agents. Contemporary studies suggest that these herbs possess antioxidant, antimicrobial, anti-inflammatory, and follicle-stimulating properties that may help reduce dandruff, premature greying, and hair fall.

The inclusion of mineral preparations such as *Loha* and *Ayoraja* in certain formulations suggests attempts to improve pigmentation and strengthen hair roots. Similarly, the use of *Makshika*, *Ghrita*, and *Ksheera* as media indicates the importance of nourishment and moisturization in maintaining scalp health. These principles parallel modern hair-care approaches focusing on scalp barrier function, follicular nutrition, and oxidative stress reduction.

Importance of Individualization and *Dosha*-Based Approach

An important feature of Ayurvedic cosmeceuticals is personalization according to *Dosha*, *Prakriti*, season, and disease condition. The addition of varying proportions of *Sneha Dravya* according to *Vataja*, *Pittaja*, and *Kaphaja* conditions demonstrates an individualized therapeutic strategy. Modern cosmetology increasingly recognizes the need for personalized skincare based on skin type,

environmental exposure, and genetic predisposition. Therefore, Ayurvedic principles of individualized external therapy remain highly relevant in contemporary personalized skincare approaches.

Pharmaceutical and Therapeutic Significance

The detailed classical guidelines regarding thickness, timing, shelf life, temperature, and method of application indicate a sophisticated understanding of topical pharmaceuticals. The caution against using stale *Lepa* formulations and repeated layering may reflect concerns regarding microbial contamination, reduced efficacy, and skin irritation. Similarly, the recommendation to avoid certain applications during nighttime indicates awareness regarding altered skin physiology and pore activity.

The classification of *Lepas* into *Pralepa*, *Pradeha*, and *Alepa* based on consistency, temperature, and therapeutic action resembles modern distinctions among creams, poultices, masks, and ointments. Such observations suggest that Ayurvedic pharmaceuticals possessed an organized conceptual framework comparable to modern topical dosage form design.

Integrative Cosmeceutical Perspective

The increasing global demand for herbal and natural cosmetics has renewed scientific interest in Ayurvedic formulations. Compared to synthetic cosmetic products, Ayurvedic *Lepas* may provide multifunctional benefits including anti-inflammatory, antioxidant, rejuvenative, antimicrobial, and healing effects with relatively fewer adverse reactions. However, despite their extensive traditional use, standardization, safety evaluation, toxicity assessment, and clinical validation of many classical formulations remain limited.

Probable Mode of Action of Lepa

The probable mode of action of *Lepa Kalpana* can be understood through two major processes: pilosebaceous uptake and cutaneous biotransformation. Classical Ayurvedic concepts such as *Romakupa*, *Swedavahi Srotasa*, and *Bhrajakagni* may be correlated with modern principles of transdermal absorption and cutaneous metabolism.

1. Pilosebaceous Uptake

When *Lepa* is applied over the skin, particularly opposite to the direction of hair follicles as described by Acharya Sushruta (*Su. Su. 18/4*), the active phytoconstituents are released from the formulation base and penetrate through the *Romakupa* (hair follicles) and associated channels. This process facilitates absorption through pilosebaceous units and sweat ducts. The extent of absorption depends upon factors such as the anatomical site of application, skin condition, formulation base, lipid solubility, and duration of contact. Oleaginous bases like *Ghrta* and

Taila may enhance dermal penetration by improving hydration and permeability of the stratum corneum.

2. Cutaneous Biotransformation

Following absorption, the absorbed substances undergo local metabolic transformation under the influence of *Bhrajakagni*, as mentioned in *Ashtanga Hridaya* (*A.H.Su.12/14*). This concept may be interpreted as enzymatic and biochemical activity occurring within viable epidermal and dermal layers. During this process, active metabolites may be formed, which exert localized therapeutic effects such as anti-inflammatory, antioxidant, wound-healing, complexion-enhancing (*Varnya*), and rejuvenative actions. These effects ultimately help in pacifying aggravated *Doshas*, interrupting local pathogenic mechanisms, and restoring normal skin physiology.

Thus, the classical mechanism of *Lepa* application demonstrates similarities with modern concepts of topical drug delivery, percutaneous absorption, skin metabolism, and localized pharmacological action.

Challenges and Future Directions

Although Ayurvedic *Lepa* formulations show significant cosmeceutical potential, scientific validation and standardization remain limited. Future research should focus on phytochemical standardization, stability studies, dermatological safety, transdermal permeation, and controlled clinical trials to establish efficacy and safety. Traditional *Lepas* are now being adapted into modern dosage forms such as creams, gels, and serums to improve stability, acceptability, and ease of application. Integrating Ayurvedic pharmaceuticals with modern cosmetic science may support the development of safe, effective, and evidence-based herbal cosmeceuticals for skincare and haircare.

CONCLUSION

Ayurvedic cosmeceuticals emphasize complexion enhancement, anti-aging, healing, and skin nourishment through herbal topical preparations such as *Lepa* and *Mukhalepa*. Classical formulations are increasingly being standardized into cosmetically acceptable products; however, robust clinical validation and quality standardization are still required. *Lepa Kalpana* is an important Ayurvedic *Bahya Kalpana*, and *Sharangadhara Samhita* provides one of the most systematic descriptions of therapeutic and cosmetic *Lepas*. These formulations are classified based on form (*Pralepa*, *Pradeha*, *Alepa*) and therapeutic action (*Doshaghna*, *Vishaghna*, *Varnya*). The review highlights that *Lepa* formulations possess significant therapeutic and cosmeceutical potential for skin and hair care through herbal, mineral, and lipid-based applications. Many classical ingredients demonstrate pharmacological activities supported by modern research, indicating strong potential for

evidence-based Ayurvedic cosmeceutical and integrative dermatological applications.

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