

The Doctrine of Cosmeceutics in Ayurveda: Principles and Applications

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Abstract

Concept of Aesthetics can be traced since days of yore. Beauty is an external appearance representing one's inner self. Ayurveda assesses beauty by Prakruti (Constitution), Saara Structural predominance), Samhanana (Compactness), Twak (Skin), Pramana (Measurement), Dirghayu lakshana (Signs of longevity). One of the criteria to determine Dirghayu Lakshana is soft, black coloured. Firm, oily hair which is attached to a single hair root. In Ayurveda, Keshha (Hair) has been described in different prospects. They provide implication of Prakruti (Copper/Brown coloured hair-Pitta Prakruti) and Saara (Beautiful, lustrous hair Medo saara) of an individual, appraises the Swastha (Healthy) and Atura (Ill-health) condition of a person (Increased hair fall indicates decreased quality of Asthi). They are also a tool for treatment purpose (Fumigation of hair for the treatment of Arsha-Hemorrhoids). Aforesaid is the emphasis laid on hair. Treatment and maintenance of black, lustrous and a healthy scalp hair as well as removal of unwanted bodily hair have also been elucidated.

According to Acharya Charaka, a Twak saara purusha comprises of Snigdha (Lustrous), Shlakshna (Silky in touch), Komala (Soft), Prasanna (Attractive), Sookshma (Thin) and Prabha yukta (Shiny) skin. Various treatises have portrayed cosmetology through inner mitigation of derangement. Comprehensively it includes Ama pachana (Digestion of unwanted toxins), Mala shudhikarana (Cleansing the intestine), Rakta prasadana (Improving circulation), Rakta shodhana (Purification of blood) etc. Both Hydrophilic (Water) and lipophilic Medias (Milk, ghee etc.) are mentioned to be used as media for external application depending on the properties of the drugs and pathology of disease. Preventive measures to circumvent diseases, prolong ageing and stay young and beautiful are possible to be achieved by Rasayana chikitsa (Rejuvenation therapy). Hence Ayurveda gives a holistic approach to cosmeceutics.

Keywords: Prakruti; Saara; Samhanana; Twak; Pramana; Dirghayu lakshana; Twak saara purusha; Ama pachana; Mala shudhikarana; Rakta prasadana; Rasayana chikitsa

Introduction

Healthy skin and hair is an epitome of inner wellness. Wellness is not just the absence of illness; it is a dynamic process of change and growth [1-4]. In Sanskrit, the word 'body' is termed as "Shareera" which means that which is subjected to deterioration [5]. In order to protect this body from disease and ageing and enhance the beauty of the body, various measures were incorporated by human beings since time immemorial. An attempt has been made in this article to give a comprehensive approach to augment the beauty in terms of skin and hair.

We find references of usage of cosmetics since Vedic period. Rigveda has mentioned different types of Lepas (external application) of various herbs. Garuda purana has cited various beautifying yogas. Mahabharata, in Anushasana Parva has quoted that one must perform Chandrayana Vrata in Mrigashira Masa (November-December) to acquire beauty and popularity. Narration of the bride "Draupadi" during the time of Swayamvara and her role as Sairandhri (Aesthetician) is an example of cosmetic secure which existed in that period [6].

In treatises of Ayurveda, insight of cosmetology begins from the fundamentals of anatomy and physiological functions of hair and skin. Acharya Sushruta has mentioned seven layers of skin, their dimensions

and the manifestations of different skin disorders from different layers along with their treatment. Ue natural Varna (complexion) of skin mainly depends on the combination of Pancha mahabhoota (Five elements) at the time of conception. Tejo mahabhoota (Fire element) is the fundamental entity of the colour of skin. When it combines with Aap mahabhoota (Water element), it gives rise to Goura varna (Fair complexion). When Tejas and Prithvi mahabhoota (Earth element) merge, it results in Krishna varna (Dark complexion). Prithvi in association with Aakasha Mahabhoota (Space element) forms Krishna shyama varna (Blue-black complexion). Aap and Aakasha mahabhoota merge to form Goura shyama Varna (whitish-blue complexion) [7]. Other than Mahabhoota, internal factors like Rakta dhatu (Blood) and Bhrajaka pitta (Type of Pitta) seated in the skin are responsible for glow of one's natural complexion.

Cosmeceutics with reference to skin and hair in Ayurveda can be divided into three entities.

They are as follows:

Treatment of skin and hair disorders.

Beautification of skin and hair.

Prevention of signs of ageing and maintenance of a healthy skin and hair.

1. Treatment of skin and hair disorders

Skin and hair disorders are the manifestation of impairment of body system. Both internal and external measures are adopted for their treatment.

Medicines: Medicines which eliminate Aama (undigested food or toxins) from the body or that which acts on Rakta (Blood) and Pitta; categorised under Kushtahara (Pacifies skin disorders), Twachaagnivardhaka (Stimulates enzymes related to skin), Sandhaneeya (Improves collagen formation), Vrana ropana (Wound healing); Savarnakarana (restoring normal colour) normalises the derangement and thus pacifies the skin disorders. Similarly Keshya (Conducive to hair) and Kesha Krishneekarana (Blackening of hair) drugs have been mentioned in Ayurvedic treatises.

Ue non-invasive techniques: Ue non-invasive technique of Panchakarma therapies like Virechana, Basti, Nasya and Jaloukavacharana are highly beneficial in their treatment. Virechana eliminates the vitiated Pitta and other toxins from the body. As per Acharya Charaka, it also benefits the body by enhancing complexion [8].

During the procedure of Basti, the medicated enema is believed to show its effects on the entire body. According to Kashyapa, Yapana Basti has Rasayana property and it nourishes the body up to hair and nails [9].

Nose is the doorway to Shiras (Head). Uis therapy is highly beneficial for both skin and hair. Rich vascular plexus in the nasal tissue makes it a site for rapid absorption. Ue lateral nasal veins are connected to the angular veins which are the uppermost segment of the facial vein which helps to show local effect. Nasya karma also shows systemic effect especially of neurological, endocrinal and circulatory functions [10]. Hence skin and hair disorders originated from the above system subside.

Jaloukavacharana or Hirudotherapy is believed to eliminate the vitiated blood from the body and thus used in all skin disorders. Leech saliva contains several bio-active substances like prostaglandins, vasodilators, anesthetics and proteins like calin, apyrasehyaluronidase, egline, destabliase, piyavit and kollaginase [11]. Uese enzymes released into the body might provide anti-inflammatory, wound healing and other dermatological benefits. Nowadays leech therapy is adopted to treat swelling aler plastic surgery and gral operations and is considered to be anti-phlogistic. Uey are also used in post-operative care of re-implanted finger, skin graling and breast reconstruction.

External therapies: External therapies for hair include Shiro Abhyanga (Head massage), Shiro lepa (application of paste to head) and Shiro pichchu (Placing of medicated drugs over the head). External therapies for skin include Mukha abhyanga (Facial massage), Swedana (Fomentation), Udwartana (Scrub), and Mukha lepa (Face packs).

Abhyanga: Abhyanga is the widely practiced measure to treat various disorders related to skin and hair. Massage in specific direction improves blood circulation, facilitates removal of toxins from the tissues and recuperates the body tissues [12]. According to Acharya Charaka, it prevents wear and tear viz. it prevents degenerative changes of the body [8]. Few formulations used in the treatment of skin disorders are Brihat Marichyadi taila, Kumkumadi taila, Manjishtadi taila, Eladi taila, Kanaka taila.

Abhyanga to scalp not only increases blood flow but also directly stimulates the dermal papilla cells by mechanical force. Ue stretchy forces can change the gene expression related to hair cycle. Mechanical stress also influence signalling pathway and accelerate the anagen phase of hair cycle [13]. Few formulations which promote hair growth are Nilibhringadi taila, Bhringamalakadi taila, Malatyadi taila, Kayyanyadi taila, Chandanadi taila, Yashtimadhu taila.

Lepa kalpana on hair: Ue drugs to treat Palitya (Canities) are generally mixed with suitable media and applied as a dye on hair and washed aler speculated time or are used in the preparation of oils for Abhyanga. Ue commonly used drugs are Triphala, Neeli, Madayantaka, Akshota etc. Hareetaki (*Terminalia chebula*), Vibhitaki (*Terminalia bellirica*) present in Triphala contains Gallic acid and Tannic acid. Gallic acid forms a complex with iron ions in hair to achieve a good chromaticity and fastness of the dyed hair. Tannic acid is a type of polyphenol useful as yellow dye for hair. Emblicans and Ellagic acid in Amalaki (*Phyllanthus emblica*) herb are a type of polyphenol which are traditionally used as dyes. Bhringaraja (*Eclipta alba*) contains yellow crystalline flavones. Apigenin and Luteolin present in it give dyeing property. Luteolin is present in Neeli (*Indigofera tinctoria*) herb. Indigo dye with a distinctive blue colour can be extracted from the leaves of Neeli. Lawsone, also known as Hennotannic acid, is a red orange dye present in the leaves of Madayantha (*Lawsonia inermis*) herb used for hair dyeing. Akshota (*Juglans regia*) herb contains Regianin, an organic compound having the tendency to create dark brown stains to hair. Haematoxylin is a black colouring compound present in the heart wood of Patanga (*Caesalpinia sappan*) herb used in dyeing hair [14].

Lepa kalpana on skin: As per Acharya Sharangadhara, there are three kinds of Lepa depending on their functions-Doshagna lepa (which mitigates Vata, Pitta, Kapha), Vishagna lepa (which eliminates the bio-toxins) and Varnya lepa (which enhances complexion) [15]. Acharya Sushruta has classified lepaas Pralepa, Pradeha and Alepa. He has instructed the thickness of application of Lepa to be equivalent to moist buffalo's skin which is approximately 4-5 mm [7]. Hence to apply a thin Lepa, it must be less than 4 mm and for a thick Lepa, it must be more than 5 mm. Whereas Acharya Charaka clarifies that when a rubeficient action of a drug is expected, it should be applied uniformly thick over skin. However when soothing and solening action is to be elicited, the drug should be applied uniformly thin over the skin. Uis statement interprets the mode of application of a drug as per the requirement and not the properties of the drugs [16].

Ue physico-chemical properties of a drug mainly affect the drug's trans-dermal delivery and topical bio-availability. Ue molecules of the formulation aler penetrating through the stratum corneum and into viable epidermis and dermis produce its characteristic pharmacological response through receptors. Besides this route, the drug molecules may also penetrate through the hair follicles and sebaceous glands or through sweat ducts also [17]. Few formulations of Mukha Lepa quoted for different skin conditions are depicted below in Table 1 [18].

Formulation	Media	Condition
Lodhra twak (Bark of <i>Symplocos racemosa</i>), Dhanyaka beeja (Seeds of <i>Coriandrum sativum</i>), Vacha (<i>Acorus calamus</i>)	Water	Youvana (Acne) pidaka

Arjuna twak (Bark of <i>Terminalia arjuna</i>), Manjishta (<i>Rubia cordifolia</i>)	Honey	Vyanga (Melasma)
Rakta chandana (<i>Pterocarpus santalinus</i>), Manjishta (<i>Rubia cordifolia</i>), Kushta (<i>Saussurea lappa</i>), Lodhra (<i>Symplocos racemosa</i>), Priyangu flower (<i>Callicarpa macrophylla</i>), Vatankura (<i>Ficus benghalensis</i>) and Masoora (<i>Lens culinaris</i>)	Goat's or Cow's milk	Vyanga (Melasma)
Matulunga (<i>Citrus medica</i>), Manahshila (<i>Arsenic-di-sulphide</i>)	Ghee and juice of cowdung	Tilakalaka (Blackheads)
Fried Masoora (<i>Lens culinaris</i>)	Milk	Varnyakaraka (Skin whitening)
Yava (<i>Hordeum vulgare</i>), Yashtimadhu (<i>Glycyrrhiza glabra</i>), Lodhra (<i>Symplocos racemosa</i>)	Water	Varnyakaraka (Skin whitening)

Table 1: Few formulations of Mukha Lepa

2. Beautification

Ayurveda mentions various drugs to enhance beauty under the category of Varnya, Kantivardhaka, etc. for skin and Keshya, Lomashtana, etc. for hair.

Skin beautifiers: Research works on few of the Varnya drugs have shown the presence of Tyrosine inhibition activity. Tyrosine enzyme present in Melanocytes form melanin by oxidation through free radical coupling pathway. Melanin is responsible for dark colouration of skin. Anti-oxidant property exhibited by few herbs also has a role to play on pigmentation. Uey quench the free radicals and help in reducing the synthesis of melanin thereby contributing to skin de-pigmentation. Ue Table 2 below depicts few herbs along with their dermatological action [19].

Drug	Phytochemicals	Action
Shwetha Chandana (<i>Santalum album</i>)	Sandalwood oil is rich in sesquiterpenoid alcohols (80%-90%) Sandalwood oil mainly contains alpha-santalol	Tyrosine inhibitor
Yashtimadhu (<i>Glycyrrhiza glabra</i>)	Glycyrrhizetic acid	>7% Tyrosine inhibition Controls melanin secretion
Manjishta (<i>Rubia cordifolia</i>)	Glucosides known as Manjisthin and Purpurine. Also resins, lime salts and coloring agents	14.80% Tyrosine inhibition
Nagakesara (<i>Mesua ferrea</i>)	Phenyl coumarins, xanthones, triterpenoids, flavonoids	Tyrosine inhibitor Protection from UV rays
Padmaka (<i>Prunus cerasoides</i>)	Flavanone, Glycoside, puddyvil-B	Tyrosine inhibitor Anti-melanogin activity

Ushira (<i>Vetiveria zizanioides</i>)	Tannins, Flavanoids, Triterpenoids	Tyrosine inactivation Suppresses oxidative stress in B16 melanoma cells
Lodhra (<i>Symplocos racemosa</i>)	Salireposides	Acts against acne producing bacteria 6.60% tyrosine inhibition
Kushta (<i>Saussurea lappa</i>)	Odorous principle composed of two liquid resins, salt of Valeric acid, Saussurine	33.4% tyrosine inhibition
Twak (<i>Cinnamomum zeylanicum</i>)	Essential oil	Tyrosine inhibitor
Kesar (<i>Crocus sativus</i>)	>150 carotenoid compounds Riboflavin Cyanides	Tyrosine inhibitor Anti-oxidant Anti-pruritic Complexion promotion
Haridra (<i>Curcuma longa</i>)	Curcumin	88.56% tyrosine inhibition
Daruharidra (<i>Berberis aristata</i>)	Flavanoids, Saponins, Terpenes	Ethanol extract-50% anti-oxidant potential Methanolic extract-20.80% Tyrosine inhibition activity
Nimba (<i>Azadirachta indica</i>)	Alakloids, glycosides, saponins	Bark-43.59% tyrosine inhibition Leaf-10.10% tyrosine inhibition Heartwood-anti-oxidant
Amalaki (<i>Phyllanthus emblica</i>)	Tannins, Glycosides, Sterols, Saponins, Resins	Anti-oxidant Stimulates UVB inhibited cellular proliferation Protects pro-collagen against UVB-induced depletion Hyaluronidase inhibition
Haritaki (<i>Terminalia chebula</i>)	Glycosides, flavanoids, Tannins	Inhibitory activity against melanogenesis in B16 melanoma cells Isoterchebulin reduced protein levels of MITF, Tyrosine and its related proteins
Shunti (<i>Zingiber officinale</i>)	6-gingerol	Tyrosine inhibition Decreased intracellular reactive oxygen species (ROS) level

Table 2: Herbs along with their dermatological action

Depilators: Beautifying was not only confined to skin and hair care. We can find references of formulations of depilation of unwanted hair from the body as well. Few of the examples are given below [18].

Lepa of Sudha (Calcium carbonate) and Haratala (Orpiment) along with hot water.

Lepa of Palasha kshara (Alkali of *Butea monosperma*), Kadali kanda kshara (Alkali of bark of *Musa paradisiaca*) and Haratala bhasma along with Kadali kanda swarasa.

Lepa of Haratala, Shankha bhasma (Calyx of conch shell) and Palasha kshara along with Kadali kanda swarasa.

Abhyanga with Kusumbha taila in the opposite direction.

Uese depilatories are designed by the combination of drugs possessing Rooksha (drying) and Kshara (Alkaline) property along with alkaline media. When such formulations are applied on the skin, they decrease the cellular energy level and thereby leading to decreased mitotic activity and cessation of hair follicle formation [20].

3. Prevention of ageing and maintenance of a healthy skin and hair

Rasayana chikitsa is one of the unique branches of Ayurveda which gives emphasis on Vayasthapana (Anti-ageing), Aayushkara (Prolongs life), Balakara (Increases strength), Medhakara (Nootropic effect), Jara vyadhi nashana (Overcomes geriatric disorders). Ue common Rasayanas given as prophylactic treatment for skin and hair are Narasimha rasayana, Agastya rasayana, Amruta bhallataka, Amrita prasha, Amalaki rasayana, Bhiringarajadi rasayana.

Ue Vayasthapaka drugs like Triphala (Uree fruits), Guduchi (*Tinospora cordifolia*), Nagabala (*Sida veronicaefolia*), Vidanga (*Embelia ribes*), Pippali (*Piper longum*) are proved to possess free radical scavenging activity. Ue potential use of these drugs as anti-oxidant has been validated to fight against age related problems by combating cellular damage induced by free-radicals like reactive oxygen and nitrogen species (ROS and RNS). Oxidative stress being one of the major causes for impairment of skin and hair [21]. Rasayanas can be adopted to prevent any damage and maintain youthfulness.

Lifestyle also has a major role in prolonging ageing and staying healthy. Ayurveda has provided guidelines to be followed every day and in every season in the form of Dinacharya and Rutucharya respectively. Habitual practice of Nasya, Taila gandoosha, Shiro Abhyanga, Pada abhyanga etc enhances the beauty of a person. According to Acharya Vagbhata, habitual application of Mukhalepa (Face pack) makes the vision keen; the face never loses lustre and always glows like a lotus flower. He has also mentioned different herbs to be used as face packs in different seasons. Uey are as follows [22].

Hemanta (Dewy season)-Kalamajja (Cotyledon of *Ziziphus mauritiana*), Vasamoola (Root of *Adathoda vasica*), Sabara (*Symplocos racemosa*), Goura sarshapa (*Brassica alba*).

Shishira (winter)-Simhimoola (Root of *Solanum anguivi*), Krishna (*Piper longum*), Tila (*Sesamum indicum*), Darvi twak (Bark of *Coscinium fenestratum*), Nistusha Yava (*Dehusked hordeum vulgare*).

Vasanta (spring)-Darbha moola (Root of *Desmostachya bipinnata*), Chandana (*Santalum album*), Usheera (*Vetiveria zizanioides*), Shireesha (*Albizia lebbek*), Misi (*Foeniculum vulgare*), Tandula (*Oryza sativa*).

Grishma (summer)-Kumuda (*Nymphaea nouchali*), Utpala (*Nymphaea stellata*), Kalhara (*Nymhoea alba*), Doorva (*Cynodon dactylon*), Madhuka (*Glycyrrhiza glabra*), Chandana (*Pterocarpus santalinus*).

Varsha (Rainy)-Kaliyaka (*Aquilaria agallocha*), Tila (*Sesamum indicum*), Usheera (*Vetiveria zizanioides*), Jatamamsi (*Nardostachys jatamansi*), Tagara (*Valeriana wallichii*), Padmaka (*Prunus cerasoides*)

Sharat (autumn)-Taleesapatra (*Abies webbiana*), Gundra (*Saccharum arundinaceum*), Pundrahva (*Saccharum officinarum*), Yashtimadhu (*Glycyrrhiza glabra*), Kasa (*Saccharum spontaneum*), Nata (*Valeriana wallichii*), Aguru (*Aquilaria agallocha*)

Conclusion

Health of skin and hair and youthfulness include proper moisture balance (Kapha in balance), effective functioning of the metabolic mechanisms that co-ordinate all the various chemical and hormonal reactions of the skin (Pitta in balance) and efficient circulation of blood and nutrients to different layers of the skin (Vata in balance). It also depends on the health of three Dhatus (Body tissues) viz. nutritional fluid (Rasa), Blood (Rakta) and muscle (Mamsa). Rasa supports all the Dhatus and keeps the skin healthy. Rakta, in association with liver function, helps detoxify the skin of toxins, while Mamsa provides firmness to the skin [23].

As the saying goes “Make your heart happy and your skin will glow”, a swastha person who possesses pleasant Atma, sensory-motor organs and mind along with equilibrium of Dosha, Dhatu and Malakriya will have a beautiful body with glowing skin and lustrous, shiny hair.

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