



NOVEL HERBS USED IN COSMETICS FOR SKIN AND HAIR CARE : A REVIEW

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Abstract

The beginning of the 21st century has witnessed significant advancement in the herbal industry. Herbal ingredients are more preferred than the chemical ones because of their easy availability and lesser side effects. The Concept for the utilization of novel herbal plant ingredients in various formulations such as hair tonic, hair gels, face packs, face creams have proved to be beneficial than the formulations containing solely chemical components. These novel ingredients have helped in the enhancement of beauty as well as the health of an individual. Hair cosmetics containing ingredients of natural origin impart smoothness, lustre to the hair and help in the treatment of various hair problems such as dandruff, alopecia, baldness and many more. The ingredients employed for the skin care benefits are not only used for the beautification of the skin but also help in improving the skin texture through the maintenance of keratin structures, generation of free radicals to boost up the growth of collagen. These herbal ingredients help in the enrichment of body with various essential minerals and nutrients. There has been a rapid advancement in herbal industry since the pre-historic times. This review depicts the various novel approaches which are utilized in the treatment of skin and hair.

Keywords: Novel Herbs, Cosmetics, Herbal Formulations, Hair benefits, Skin care.

Introduction

In addition, humans used these cosmetic colors for skin coloring as a means of protection from the animals or enemies for their survival. Thus, cosmetics emerged as fighting, superstition, hunting and religion utilization along with vitalization of medicines (Bijaialiya *et al.*, 2017). The commencement of the herbal medicines in the developmental years has helped in sustaining the prevention of diseases and health. The folk pieces of literature are the uphold witness of proving the practice of cosmetics in various parts of the nation.

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There has been comprehensive diversity in which herbal cosmetics are employed utilized for day to day purposes. These include herbal soaps, Polyherbal soaps, herbal conditioner, face wash, shampoos, lip balms, eye care and many more. One of the most vital and important characters in the formulation of herbal cosmetics is that they constitute all the ingredients in the natural form. These ingredients do not impart any harmful skin reactions on the body. Instead, they help in enhancing body functions along

with the consumption of minerals and supplements. Examples of herbal ingredients such as Ashwagandha, Kesar (Saffron), Chandan (Sandalwood) and many more. These bolster fields have been claimed to broaden with the advent of time. According to the statistical reports it has been estimated that the approximate cost of the entire herbal industry around the globe. The rate at which the expansion is occurring is a rate of 3-4% per annum. The major reasons behind this expansion are the rising sale and trade of natural products, fragrances, food, etc. The well-known countries which are considered to be major herbal producing industry are Europe along with Asian countries (Gediya *et al.*, 2011). Cosmeceuticals, a term which was defined in the year 1990, refers to the skin care formulation which is available over the counter thus providing therapeutic effect along with cosmetic effects. Plant-derived products which are used in the cosmeceutical include coenzyme Q, retinoic acid and alpha hydroxy acid (Draelos, 2003). Various benefits are imparted by these beneficiaries includes anti-wrinkle property, UV light protection to the skin, Collagen degradation analysis and anti-oxidant and free radical properties (Rousseaus *et al.*, 2003). Antioxidant effect imparted by the plant products is considered one of the vital factors in the cosmetic preparation. Mainly these vital constituents of the plant are divided into three classes as follows: Flavonoids, Carotenoids & polyphenols. This division is on the basis of the nature of the phytoconstituents. Flavanoids account for the properties such as chelation and protection against ultraviolet light whereas the carotenoids are known to constitute retinoic acid and often called as Vitamin A is an essential component for the eyes. In addition, the polyphenolics consist of drugs like Rosemary, Olive, Hypericin or St. John's wort (Glase *et al.*, 2004; Draelos, 2003). Novel Herbal medicine as a whole consists of ingredients, preparations, herbs and finished herbal formulation. Herbs refer to any part of the plant, for instance, flowers, seeds, roots, flowering tops, bark, rhizomes, fruits, etc. An herbal ingredient refers to the form or state of the herbs in which the plant material is used. For instance extracts, oils- fixed and essential, powders, juices, etc.

These herbal ingredients or material are often subjected to roasting, stirring, steaming, etc with alcoholic or other solvents. The finished herbal formulations consist of extracts, tinctures, powders, juices, oils of the plant material having potential benefits. They are often subjected to various chemical processes in order to purify or extract out the desired material or constituents which includes any biological, physical processes, extraction Method, Purification Methods, Concentration Or Fractionalization. Finished Herbal Formulation contains more than one or equivalent herbs which evaluate the herbal preparations. For more than one herb being used in the formulation is often termed as Herbal Mixture Product. These products in addition to the therapeutic ingredient contain various additives (WHO, 2000; Cosmeticherbhistory).

Herbal cosmetics as a favourable choice

In the modern era, herbal cosmetics have been in trend because of the rise in the beauty and fashion industry. Mostly women, the demand for natural ingredients have elevated than chemical formulations for the enrichment of beauty. Moreover, these formulations improve health and reduce the side-effects arising from the chemical ingredients (Bijauliya et al., 2017) Natural/Herbal cosmetics are preferred over the synthetic ones because of many reasons as stated below. Natural cosmetics as the name indicates are derived from the plant origin, free from any toxic effects. Example Coconut Oil, Aloe Vera Gel. Aloe Vera gel is obtained from Aloe species belonging to the Liliaceae family (Akinyele et al., 2007; Escamilla et al., 2012).

1. Compatibility with skin types: Herbal Cosmetics are best suited for almost all types of skin. They provide appropriate skin benefits despite skin color and skin tone. They are also best suited for the dry, sensitive and oily skin. Natural cosmetics also prevent the degradation of the skin (Kadam et al., 2013).

2. Efficacy and greater safety: Comparable to synthetic cosmetics, natural ones are safer to use. Clinically tested by the dermatologists, they can be used anytime. For instance the synthetic chemical such as Butylated Hydroxy Anisole (BHA) a common antioxidant which is reported to a carcinogenic and allergic reaction to the body (Suzuki, 2010; International Agency, 1978).
3. Greater diversity for selection: Herbal cosmetics or this field consists of large diversification of herbs and plant materials. Variety of herbal ingredients and herbal formulations are available. For instance, various formulations of eye shadows, mascara, creams, foundation is available. Various examples include Salai Guggal-Boswellia serrata, Shatawari- Asparagus racemosus (Winter, 2009).
4. No Need for animal testing: As compared to synthetic cosmetics, the need for animal testing on herbal products or formulation is least. These cosmetics are tested in the lab conditions using various types of equipment. This means no animals are harmed during the testing of safety and efficacy (US-FDA).
5. Budget-friendly: Herbal cosmetics are much more cost friendly than synthetic cosmetics. Because of their greater diversity around and easy availability, the relative cost is comparatively low. These natural cosmetics, because of the friendliness in the cost, is preferred by 80% of the population around the globe (Basmatekar et al., 2011). Marketed formulations of herbal cosmetics (Davinder et al., 2016)

Different marketed formulation of herbal ingredients in hair and skin are depicted in Table 1 and Table 2 respectively:

Table 1 : Marketed herbal formulation for Hair care

S. No	Marketed Formulation	Name of the Product	Utilisation	Manufacturer
1	Hair oil	Kesh Veda	Maintains the scalp healthy	Dr. Alexander Lab Pvt Ltd
2	Hair shampoo	Khadi Herbal Shikakai Shampoo	Utilised for nourishment and growth of hair	Khadi Natural
3	Hair gel	Arata Hair Gel	Provide lustre to hair	Arata Company
4	Hair conditioner	Hair conditioner - hibiscus & henna with nourishing shikakai	Restoration of Moisture and hydration of the hair follicle	Soul Tree Company
5	Hair colour	Dr. Batra's Herbal Cream Hair Color	Help in moisturization and repairing of the hair which are damaged.	Dr.Batra's Skin clinic

Table 2: Marketed herbal formulation for Hair care.

S. No	Marketed Formulation	Name of the Product	Utilisation	Manufacturer
1.	Face wash	Anti-Pimple Natural Ayurvedic Turmeric Face Wash	Help in treatment of skin rashes and infection	Lever Ayush
2	Face powder	Omorose Herbal Face Wash Powder	Help in skin lightening and maintains glowing skin	Khadi India
3	Face cream	Swarnamukhi Face Cream	Help in detoxification of the skin and skin tightening	Kerala Ayurveda
4	Face pack	Suvarna haldi chandan face pack	Help in clarification as well smoothenes and tighten the pores of the skin	Kama Ayurveda
5	Face scrub	Bakson's Face Scrub	Helpful in shredding of the dead cells of the skin	Bakson's Homeopathy

Classification of herbals in cosmetic preparations (Basmatekar et al., 2011; Brown et al., 2002)

Novel Herbal extracts and its products have a wide utilization in the formulation of cosmetics. The cosmetics herbal preparations can be classified as follows:

- 1. Herbal Cosmetics for hair care:** These include herbal ingredients which are beneficial to hair growth and impart shine to the hair. For instance, *Lawsonia inermis* (Henna), *Cyamopsis tetragonolobus* (Guar Gum), *Acacia concinna* (Shikakais), *Bacopa monnieri* (Brahmi)
- 2. Herbal Cosmetics for Skincare:** These include herbal care creams, body powders, silk soaps body soaps, etc.
- 3. Herbal cosmetics for eye care:** Herbal cosmetics include eye gloss, eye shadows, eye gloss, and liquid liners.
- 4. Herbal Cosmetics as oils:** These herbal oils are utilized in various hair problems such as hair thinning, hair baldness, hair fall, itching in the scalp.
- 5. Herbal Cosmetics for lip care:** Lip care formulation includes lipsticks, plumper, balms, and glosses of herbal origin.
- 6. Fragrances and perfumes of herbal origin:** These include scents of flowers, chypre, and fruits containing citrus characteristics such as those of lemon, mandarin, orange, etc.

Novel herbs used in the cosmetics for hair care

Hair is a vital and important characteristic of the appearance of one's well being. Hair color, texture, and length range differently in each individual. Herbal cosmetics used are usually applied topically. They are used to impart shine, and smoothness to the hair (Patwardhan, 2000; Grabley et al., 1999). Following properties should be impacted by the herbal cosmetic formulation of the hair:

- (i) Local topical application
- (ii) Application is done topically
- (iii) Least allergic reactions
- (iv) Minimum harmful effect on scalp and membrane (Gupta et al., 2010).

Following are the various herbs utilized for hair care:

1. *Nardostachys jatamansi dc*

Vernacular Name: Jatamansi

Spikenard or Jatamansi whose biological source is *Nardostachys jatamansi* belongs to the family of Valerianaceae. This is a small shrub which mainly grown in East of India. Mainly rhizomes are used in the various systems of medicine. Chemically, Jatamansi consists of Jonon, 1,8 cineol, bornyl acetate. It has been proven clinically that this herb has a property for hair growth (Ali et al., 2002). It has been reported that in induced alopecia during chemotherapy, Jatamansi in an ethanolic extract has potential hair growth effect (Yadav et al., 2011). Approbatory effects have been reported by the jatamansi rhizomes in the extract of hexane. This appreciative effect of the hair growth is mainly due to two chemical constituents is Jatamansic acid and Nardin (Gottumukkala et al., 2011). There has been proved greater follicular cells as well as prolonged phase of anagen as when they are combined with Hibiscus rosa sinensis and Eclipta alba Hassk (Thorat et al., 2009). Oil of Jatamansi is said to have fungicidal and static properties. Moreover, this oil combined with the antibacterial property has proven agent for the skincare too. Various fungal diseases,

poisoning, itching, dermatitis, psoriasis, itching is treated by this herb (Thorat et al., 2009).

The utilization of Jatamansi SIDDHA AND AYURVEDA

The various herbal formulations used in Ayurvedic and Siddha system is as follows:

- (i) Hair growth promotion- Roma sanjanana
- (ii) Improves digestive problems – Pachana
- (iii) Induce Sleepi- Nidhrajnana
- (iv) Prevents sensation of burning- Dahaprashta
- (v) Tonic- Brain – Medhya (Sarbhoj et al., 1978).

2. *Terminalia bellerica*

Vernacular Name: Bibhitaki

Bibhitaki belongs to the family of Combretace, which is mainly a deciduous tree. It often used in combination along with *Emblica officinalis* and *T. chebula*. This trio combination is referred to as a health harmonizer. This tree is mainly grown in Asian countries and majorly in Sri Lanka. This tree is employed for the treatment of various disease and ailments which includes Migraine, Conjunctivitis, Alopecia, lower vision, etc. Chemically, it is a hub for various constituents such as Tannins, amino acids, Glycosides, Saponins, Flavonoids, etc. which impart potential therapeutic effects such as Antidiarrhoeal, Anti-diabetic, Anti-biofilm, Anti-microbial, Antipyretic effects (Pandey, 1991). This herbal ingredient has proven therapeutic effects on the human which includes Anti-helminthic, Astringent and laxative action. The fruits of this tree are the potential source in curing hepatitis, dyspepsia, asthma, cough, headache, eyesight and more importantly act as a hair tonic (Kumari et al., 2017; Singh et al., 2006). The seed oil is used in the treatment of graying of hair at a premature phase as well as hair growth promotion (Rastogi et al., 2004).

3. *Cuscuta reflexa Roxb.*

Vernacular Name: Amar Bel, Giant Dodder

This herbal ingredient is a parasitic, perennial herb which is generally leafless and about yellowish golden in color. This is commonly used in herbal medicines as they impart therapeutic action. Chemically, this plant consists of the following phytoconstituents: Coumarin, Amarbelin, Sitosterol, Dulcitol, Quercitin, Kaempferol, etc. It has been reported that

This herb has useful properties in alopecia which are induced by androgen, mainly in an extract of petroleum ether. The mechanism behind this positive action is 5-reductase enzyme inhibitory mechanism. In addition, they have growth enhancement property (Roy et al., 1987).

4. *Sophora flavescens Aiton*

Vernacular Name: Shrubby sophora

This plant species belong to the family Leguminosae. This is basically a Chinese therapeutic medicine used in prehistoric times. Mainly these plants consist of flavonoids as a chemical component. It has been reported that this plant posses hair promotion action when used as an extract upon the inducement with various growth hormones – KGF as well as IGF- I. It has been found that these help in the growth of hair along with the dermal cells. Moreover, this plant works on the inhibitory mechanism of 5-reductase (type-II) (Roy et al., 2007).

5. *Allium cepa* L.

Vernacular Name: Onion

This onion bulb consists of the genium genus and species cepa and belongs to the family of Amaryllidaceae. Mainly this bulb is rich in protein – Albumin. Other chemical constituents present are Allin, Allyl propyl disulfide, allicin and allyl sulfides. In addition, various mineral elements are also present such as Zinc (Zn), magnesium (Mg), potassium (K) and calcium (Ca). It has been found that this species of allium is useful in the treatment of baldness. The extract or the juice is applied topically on the scalp until it turns to red, along with the application honey. The various mineral elements such as iron help in oxygenation of the RBC's (red blood cells). Zinc aids in the oil secretion as a preventive measure for the drug. Thus, various elements help in maintenance of hair and enhance the growth of hair (Roh et al., 2002).

6. *Eclipta alba* Hassak

Vernacular Name: False Daisy

Bhringraja, another name of *Eclipta alba* is an annual and small herb having white flowers on the top belonging to the family Asteraceae. This plant is mainly grown and tropical as well as the subtropical area of the globe. IN prehistoric times it has been proved for stimulating the growth of hair and prevents the loss of hair. The extract of this plant can be topically as well internally applies to the scalp of the hair. Thus promoting the blackening of the hair (Sharquie et al., 2002). The active constituents present in the plants are mainly the coumarin derived components. These include luteol, hentriacontanol, wedololactone (about 1.6%), amyrin etc. (Kirtikar et al., 1989; Roy et al., 2007; Thorat et al., 2009; Sharma et al., 2010) A potential promoter for the growth of hair is the methanolic extract of *Eclipta alba* (Jain et al., 2011). Also, it has been reported that the follicular cells enlarge as well there has been elongation in the anagenic phase in the petroleum extract of the plant (Datta et al., 2009).

7. *Polyporus umbellatus*

It is basically a mushroom which is widely grown in maple trees. Chemically these consists of steroidal and poly saccharides components. An active component – dihydroxybenzaldehyde has been isolated from the extract of ethanol in mice (Roy et al., 2008). Another study shows the presence of re growth components such as polyporusterone a &B and Acetosyringone(Inaoka et al.,1994).In vitro analysis shows the marked rise in the hair growth at nearly lower doses -1.28 &6.4 g/ml and prolong the growth of hair whereas the larger doses decreased the growth of hair (Ishida et al., 1999).

8. *Boehmeria nipponica* Kogenmushi

Vernacular Name: Ramie

Ramie is a herb which is perennial in origin. Therapeutically this plant is used to treat infections as well as fevers. Chemically, this perennial plant consists of chlorogenic acid (10%), Caffeic acid, 10-30% fatty acid, linoleic acid, and protocatechuic acid. Clinical studies have shown inhibitory 5-reductase action in the acetone extract of the drug. The fatty acids involved are – palmitic acid, alpha linoleic acid, elaidic acid, stearic acid and linolenic acid. It has efficient and similar action as that of the drug

Finasteride. Therefore, this herb is found to show inhibitory action the receptor 5- reductase, being having lower efficiency than the above drug (Sun et al., 2005).

9. *Polygonum multiflorum* Thunb

Vernacular Name: Knowgrass & Knotweed

This Chinese drug is mainly used as a hair tonic and posses anti-wrinkle and anti-aging property. Mainly root tubers are used. This herbal ingredient is basically used to prevent the loss of hair as well as graying of hair at a premature age. Common in Chinese medicine it is called He Shou Wu. Extract of this plant has been reported to have positive action in improving the growth of hair as well as improve the characteristics of the hair, especially in Premenopausal and postmenopausal women (Shimizu et al., 2000). The chemical constituents mainly contain phenols which are generally exhibits inhibitory action of the enzyme 5- reductase. This enzyme helps in the conversion of testosterone into dihydrotestosterone which is the principal reason for the loss of hair in men (Randal et al., 1991; Coglio et al., 2002).

10. *Tridax procumbens* Linn.

Vernacular Name: Tridax daisy/ Coatbuttons

Tridax procumbens commonly known as Ghamra in India is utilized for its flowering tops. This herbal ingredient has been popularly used in the traditional system of Ayurveda for the disease ailments. Chemically it consists of various components such as fumaric acid, tannins, flavonoids, glucoluteolin, procumbenitin and querectin. Leaves of this plant possess treatment of various diseases such as dysentery, bronchial problems and diarrhea and also prevent the loss of hair (Liao et al., 1995; Parak et al., 2011; Sarag et al., 1991; Sabarwal et al.,2009).

Standard holding times at 7.569 and 13.669, respectively, which are 9 and have a concentration of about 0.196 and 0.194.

Novel Herbs used in cosmetics for skin care

Skin is the most exposed part of the human body is often referred to as the defensive line from foreign matters. Skin aids in guarding the bones, muscles as well as the vital organs in the body. The skin ranges from oil, sensitive, dry skin. Various herbal ingredients are employed in skin care including Vitamin C, E, Vitamin B complex and beta carotene are utilized various bacterial, skin infections. Also, they impart day to day skin care effects (Marks et al., 2006). Following are the various herbs utilized for skin care:

1. *Crocus Sativus*

Vernacular name: Saffron

This herbal plant belongs to the family Iridaceae is a perennial herb. The flowering and the stigma are a major source for the therapeutic action is effectively grown in various European and Asian countries including India. 'Red Gold' Is the name which is designated to this herb by Iran. Chemically, this expensive plant consists of diverse chemical components such as Crocin, safranal, and picrocrocin. This trio combination imparts color, taste, and odor to the plant respectively. In addition, it also consists of a large variety of volatile as well as non-volatile constituents such as lycopene, carotenes for the latter. The former include terpene and their

alcohols. Following are the skin care benefits by this perennial plant:

- **Tan removal properties:** Saffron is said to possess skin lightening or tan lightening properties. Along with the combination in milk or cream it is reported to impart glow and lighten the skin color.
- **Acts as Protection to Ultraviolet Rays:** *Crocus sativus* has been reported to act as a protective defense line to protect the skin from the exposure of ultraviolet rays, which eventually causes damage to the skin. This plant has been reported to act as Ultra-violet absorbing agent and as a 'natural sunscreen'
- **Anti-oxidant properties to the skin:** This herbaceous plant posses high superoxide dismutase or antioxidant effect to the skin. In other terms, it acts as a free radical scavenger. Mainly the plant parts such as stamens, petals as well as the flowering tops have known the anti-oxidant effect. In addition, the methanolic extract of the herb imparts anti-oxidant action. It mainly causes the inhibitory mechanism against the aggregation of beta-amyloid in the brain.
- **Useful in Various Skin Ailments:** This perennial plant has been successfully employed for the treatment of skin disease called erythema. This disease is mainly indicated by the occurrence of rashes as well as inflammation. The plant is rich in anti-oxidant and the ability of inhibition of TNF-tumor necrosis Factor – an inflammation marker help in the treatment of the skin diseases (Negbi *et al.*, 1999; Arathi *et al.*, 2017; Golmohammadzadeh *et al.*, 2010)

2. Burdock root

Vernacular Name: Beggar's Buttons

This biennial plant is obtained from the family Asteraceae and its botanical source is *Arctium lappa* L. This grass is generally grown in the temperate regions of the world – Europe and Asia. The plant parts which possess therapeutic benefits are – roots, fruits, and leaves. Majorly the therapeutic importance lies in the roots which are collected as soon as before the flowering period. Chemically, it mainly consists of *Polyacetylenes*, *fukinones*, *Beta eudesmol*. Also, there is the presence of bitter characteristics such as costusic acid. The roots are rich in lignans as well as essential oils such as daucosterol, lappaol F, neoarctin B, neoarctin B, etc. This Chinese plant is evidence of its use in the pre-historic times in dermatitis, acne, and seborrhoeic. This plant also imparts antiseptic as well as detoxifying properties. Treating oily skin and preventing the occurrence of acne is the utmost use of this plant. In addition, it also effective against psoriasis and dandruff. This plant usage is avoided during pregnancy (Barnes *et al.*, 2007; Duh, 1998; Facino *et al.*, 1995; Wang *et al.*, 1993).

3. Grape seeds

It is biologically obtained from *Vitis vinifera* and belongs to the family Vitaceae. This is a climber plant which is characterized by deep roots, the trunk is wood and has bark which is striped. This vine is usually grown in Europe and Asia including all the temperate parts of the world. This plant parts which are mainly used are Sees, fruits, and leaves. This plant has industrial importance in the production of wine and liquors along with juices and jams. Chemically the grape

seeds consist of resveratrol which is a stilbene derived constituent. It also includes stilbene dimmers- viniferins and piceid which is a glycoside. In addition, the seeds are rich in polyphenols such as gallic acid, flavonoids, and their derived components. It includes catechines, gallic acid, epicatechin and many more. Also, the oil obtained from the grape seeds are rich in antioxidants such as Vitamine c and e. It also consists of beta carotene and various fatty acids. The presence of resveratrol imparts skin tightening effects on the skin. The antioxidant properties imparted by the polyphenols and flavonoids help in reducing the process of aging of the skin as they tend to increase the synthesis of collagen in the fibroblasts. It is also a treatment factor for the hyperpigmentation due to inhibition of the enzyme tyrosinase required for melanin synthesis. Grape seeds are an essential element imparting properties such as emollient, astringent and acne treatment (Thar *et al.*, 2005; Eng *et al.*, 2001; Fructuc, 2004; Newton *et al.*, 2007; Olas *et al.*, 2005; Wegrowski *et al.*, 1984; Monroe *et al.*, 1972).

4. Macadamia nut

Vernacular name: Queensland nut

This herbal plant contains the binomial name as *Macadamia integrifolia* and belongs to Proteaceae family. Generally, the seeds impart therapeutic as well as cosmetic benefits. Australia and other countries ranging from warm to rain (tropical) are the areas of cultivation of this tree. It generally grows to about 20 meters with fleshy drupe fruits. The oil obtained from the seeds is generally amber in color and have a characteristic odor-nutty. These seeds or nuts contain about 70% of fats. In addition, it comprises of 15 % carbohydrates and 8% proteins, Mineral salts such as Potassium, iron, calcium, etc and vitamins such as niacin, thiamine, tocopherol constituent the chemical composition of the nuts. Various fatty acids which are present are palmitoleic acid (20%), oleic acid (60%), Linoleic acid (3%), etc. These Queensland nuts contain a high amount of oils and fatty acids which help them to act as a preservative in various cosmetic formulations. In addition, it acts as an anti-bacterial agent against many skin infections. More, over properties such as emollient (mainly for the dry skin) and suitable ingredient for sunscreen and massages characterize the positive actions of this herbal ingredient (Rosengarten, 1984; Rumsey, 1927, Saleeb *et al.*, 1973; Wall *et al.*, 2007; Wille *et al.*, 2003).

5. Kuntze leaf

Vernacular name: Green Tea

This herbal ingredient is obtained from the leaves of the plant – *Camellia Sinensis*, Family – Theaceae. It is a plant which is widely grown in the southern part of the Asian countries like- China, Myanmar, India, and Vietnam. Generally, it is described as an evergreen plant reaching up to about 20m of height. Chemically, the leaves are rich in flavonoids and constitute catechins. Namely Epicatechin, Gallocatechin, Epicatechin3gallate and proanthocyanidins (oligomeric derived). The concentration of catechins in black tea is comparatively lower to that of green tea. In addition, it also consists of phenols and amino acids such as N-ethyl glutamine and various methylxanthines such as theobromine, caffeine, and theophylline. The presence of catechins and Gallo catechines in the leaves marks the prevention and protection of skin from the exposure of harmful rays of ultra-violet and the tumor development. Also, the inhibition of 5

alpha-reductase enzyme causes the inhibition of DHT (responsible for the stimulation of sebum). Thus preventing the growth of dandruff and used in hair growth for alopecia patients (Sumit et al., 2012; Burlando et al., 2010).

6. Boswellia

Vernacular Name: Indian frankincense

This species of the tree consists of the genus *Boswellia* and the species *Serrata*, belonging to the family-Burseraceae. Mainly the resins obtained from this bark are utilized for the cosmetic purpose. India is the major cultivator for this gum resin. Chemically, the gum obtained from the bark constitutes about 60-80% of the ethanol as well as resins including di and triterpenes. The active constituent present is Boswellic acid which is pentacyclic triterpenes. In addition, it also consists of 5-10% of the essential oils. The resins obtained from this plant are utilized for acne and seborrheic treatment. It also posses anti-inflammatory action and soothes the irritations in the skin. It is a potent anti-wrinkle and antiaging agent (Burlando et al., 2010; Moussaieff et al., 2005; Patra et al., 2006).

7. Plumbago zeylanica

Vernacular Name: Ceylon leadwort

Plumbo zeylanica is an herbal ingredient which belongs to the family – Plumbaginaceae. Mainly this plant species is natively grown in the south of Asia. The plant as a whole is useful in cosmetic preparation. Chemically, the active component present is Plumbagin with its greater concentration in the roots. Other components present are saponins, flavonoids, alkaloids, steroids, glycosides and many more. The extract or the whole plant, when applied with salt mixture, is useful in the treatment of skin infections such as ringworm. It has been reported that the active component in the plant carries out the inhibition of the squamous cells /carcinoma cells induced the UV- light. It is also used as the disease treatment of infections as sore, scabies, leprosy, acne and many more (Sumit et al., 2012; Pant et al., 2012).

8. Trichilia emetic

Vernacular Name: Natal mahogany

This evergreen plant is obtained from the family Meliaceae. It attains height upto 25 meters and is a medium and dioecious tree. Generally, the bark, seeds, and leaves are utilized in formulation of herbal cosmetics. Cultivation is confined to African regions and also in the Arabian Peninsula. The phytoconstituents present in the plant are trichilins which are generally limonoids. The components obtained after the isolation of the bark are drageana, Nymania, Trichilin a and b. Also, they have richness in tannins as well as contain bitter principles. The seed oil obtained contains various fatty acids such as Linoleic, palmitic and stearic acids. Thus this richness in the fatty acids helps in the nourishment of the skin (dry skin). It also imparts anti-oxidants, anti microbial properties because of the limonoids presence. When applied topically it helps in the treatment of wounds and leprosy (Burlando et al., 2010; Fupi et al., 1982; Chaplot et al., 2006).

9. Perilla frutescens

Vernacular Name: beefsteak plant

This plant species belongs to the family of mints that is Labitae. This is an annual bushy plant which is generally grown in the upper Himalaya as well as Sout east of the Asian countries. Presence of polyphenols such as chrysoeriol, luteolin imparts anti-oxidant properties. The leaves of the plant consist of rosmarinic acid, trihydroxyflavone, prunasin, caffeoic acids, etc. It also constitue flavonoids such as 7-o- glucuronide and luteolin 7-O- diglucuronide). This herbal ingredient of the cosmetic formulations imparts anti-aging properties and anti-oxidant effect. In addition, it is also used as a skin lightening agent in hyperpigmentation. Potential treatment of acne is provided by these plant extracts (Burlando et al., 2010; Bachheti et al., 2014).

10. Achyranthes aspera

Vernacular Name: Prickly Chaff flower, chirchira

This traditional plant is obtained from the genus-*Achyranthes* and species *aspera* belonging to the family Amaranthaceae. The cultivation of the plant is in various countries of Asia, America, and Africa. Basically, it is a roadside wide among India and was used in pre-historic time as a means of medicines. Chemically, the plant consists of oleanolic acid which is a triterpenoidal saponin. Other constituents present are Betaine, Pentatriaontane, Hexatriacontane, etc, This plant is used in various skin ailmetns such as scabies, boils, eruptions, etc. The methanolic extract of the leaves of the following plant produced anti-tumor properties of skin cancer (Sumit et al., 2012; Lakshmi et al., 2018).

Regulatory status of herbal preparations

Herbal preparations, especially in the developing nations, constitute 70-80% primarily for health care needs. It has been reported by the WHO- world health organization that they because of the least harmful effects of herbal preparations and formulations, it is regarded as the conventional source of medicines and cosmetics. Herbal formulations hold an appreciable amount of business worldwide, though the safety and efficacy are still questioned because of lack of evidence as well as standardization procedures. Various regulatory bodies hold the threshold of various countries. This means the laws, as well as regulation, vary from country to country. For instance, for the country like India, the regulatory body which is associated is CDSCO- Central Drug Standard Control Organization which is similar to the regulatory bodies such as European medicines and Health Canada. The regulatory body of India CDSCO is regarded as one arm of MHA, India. The major objective of this agency is enhancing the health of the general public through the assurance of efficacy, quality and safety of the herbal medicines. To regulate the quality of the cosmetic preparations, therapeutic drugs and various medical devices involved. According to the World Health Organisation, it is mandatory for each country to regulate the various herbal ingredients. Each country is required to follow the regulations laid by the WHO. World health Organisation lays various labeling and legal constituents based on standards of the drug quality, the status of the patent as well as the sharing. In addition, The IUPAC lays certain protocols for the safety and efficacy of the drug. It also includes

standardization and various documentation procedures (Pal *et al.*, 2003; Sanjoy *et al.*, 2003).

Regulatory Status –India

The herbal drug ingredients employed for providing therapeutic and cosmetic preparation. The emerging herbal market in India is supervised by a regulating authority – AYUSH further regulated by the Ministry of Ayurveda, Naturopathy and Yoga, Siddha, Homeopathy, and Unani system. The regulations are laid in Drug and Cosmetic Act (C&D) -1940 and rules were laid in 1945. It is mandatory for the manufacturers of herbal products to obey the guidelines laid by the AYUSH. All the composition, formulation, labeling, manufacturing, labeling, packing procedures should be laid according to the guidelines. Schedule – T refers to the Good Manufacturing Practices laid out in the year 2016.

It aims to ensure the proper and sound studies representing the clinical as well as scientific properties of the herbal drugs along with the proper documentation. The guidelines aim at two basic principles:

- Authenticity of the herbal medicines through the clinical data
- Protecting Human rights as well as subjects.

Various objectives which are laid by the regulatory body – AYUSH:

1. Better GMP (Good Manufacturing Practices) implementation
2. Establishments of standards pharmacopeia
3. Drug quality control
4. Supervision of PLIM- Pharmacopoeial Laboratory of Indian Medicine.
5. Communication in regard to QCI- Quality Control of India

AYUSH introduced the information and the text involves to be digitalized for the pre-historically used medicines. Traditional Knowledge Digital Library was introduced which constitute the information about the traditional medicines. Generally, about two lakh formulations which are being supervised by MHA and Ministry of Science and Technology. AYUSH also laid out various certification procedures based on the quality, safety, and efficacy of the drug. Mainly two types of certificates are introduced: Ayush Standard and Ayush Premium Mark certificates. The former is certified to the local regulatory schemes whereas the latter is based on WHO guidelines requirement fulfillment (Rudra *et al.*, 2018; Budhwar *et al.*, 2017)

Conclusion

The prepared formulation of herbal cosmetics in the market provides cosmetic benefits along with providing therapeutic benefits to the boy. They wholly contain one or more natural ingredients of plant or animal origin for enhancing the appearance and beautification of the skin. The cosmetic preparation involves the incorporation of various oils and natural fragrances. Herbal cosmetic used in the treatment and care of the skin imparts various properties such as skin tightening, skin whitening and act as anti-wrinkle agents. Comparatively, the herbal ingredients used in the hair care impart anti-dandruff, smoothing as well as provide hair coloring properties. In addition, the novel herbal drugs

known tend to impart greater benefits than the traditional ones. Hence, it can be estimated the future trends for the growth of the herbal industry will show an elevated rise along with better standardization procedures for maintaining the safety, efficacy, and quality of the herbal drugs (Aburjai *et al.*, 2003).

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