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BENEFITS OF HERBAL EXTRACTS IN COSMETICS: A REVIEW

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ABSTRACT: Herbal extracts are primarily added to the cosmetic formulations due to several associated properties such as antioxidant, anti inflammatory, antiseptic and antimicrobial properties. Even today, people in rural and urban areas depend upon herbs for traditional cosmetics. Information on the herbal cosmetics was collected via electronic search (using pub med, scifinder, Google Scholar and web of science) and library search for articles published in peer-reviewed journals. Furthermore, information also was obtained from some local books on ethnopharmacology. The herbal extracts, as a whole or part, have been used for various ailments of the skin, hair, and dental care for overall appearance. Cosmetics alone are not sufficient to take care of skin and others body parts, it requires association of active ingredients to check the damage and ageing of the skin. Herbal cosmetics have gained much popularity among the population. Herbal cosmetics products claimed to have efficacy and intrinsic acceptability due to routine use in daily life and avoid the side effects which are commonly seen in synthetic products. Due to the awareness of the environmental damage caused by industrialization, a trend has developed to use products with natural ingredients. Various adverse effects may occur in the form of acute toxicity, percutaneous absorption, skin irritation, eye irritation, skin sensitization and photosensitization, sub chronic toxicity, mutagenicity, and photo toxicity by the usage of synthetic products that's why today's generation prefers herbal cosmetics for hair, skin and dental care. This review attempts and emphasizes the benefits of herbal extracts in cosmetics.

INTRODUCTION: Since ancient times, plants have been used as herbal medicines. Ayurveda has a 5000 years old rich heritage of role of the use of plants in the treatment of various human ailments as alternative medicines [1].

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In the last few years, there has been an exponential growth in the field of herbal medicine and these drugs are gaining popularity both in developing and developed countries because of their natural origin and less side effects. Many traditional medicines in use are derived from medicinal plants, minerals and organic matter [2].

A number of medicinal plants, traditionally used for over 1000 years named rasayana are present in herbal preparations of Indian traditional health care systems [3]. In Indian systems of medicine most practitioners formulate and dispense their own

recipes [4]. The World Health Organization (WHO) has listed 21,000 plants, which are used for medicinal purposes around the world. Among these 2500 species are in India, out of which 150 species are used commercially on a fairly large scale. India is the largest producer of medicinal herbs and is called as botanical garden of the world [4].

India has a very long, safe and continuous usage of many herbal drugs in the officially recognized alternative systems of health *viz.* Ayurveda, Yoga, Unani, Siddha, Homeopathy and Naturopathy. These systems have rightfully existed side-by-side with Allopathy and are not in 'the domain of obscurity', as stated by Venkat Subramanian [5].

Millions of Indians use herbal drugs regularly, as spices, home-remedies, health foods as well as over-the-counter (OTC) as self-medication or also as drugs prescribed in the non-allopathic systems [6]. Millions of Indians use herbal drugs regularly, as spices, home-remedies, health foods as well as over-the-counter (OTC) as self-medication or also as drugs prescribed in the non-allopathic systems [7].

India is sitting on a gold mine of well-recorded and well-practiced knowledge of traditional herbal medicine. But, unlike China, India has not been able to capitalize on this herbal wealth by promoting its use in the developed world despite their renewed interest in herbal medicines [8].Now-a-days, in the whole world there is turn to return towards the use of herbal products and to adopt more natural way of life.

People prefer natural food, herbal medicines and natural curing practices for healthy life. The usage of herbal cosmetics has been increased in many folds in personal care system and there is a great demand for herbal cosmetics. All this happen due to excessive use of synthetic based products, synthetic chemicals, chemical dyes and their derived product in the last one and half century; their production and usage cause human health hazard with several side effects leading to numerous diseases. It also caused considerable environmental pollution and disturbed our eco-system [9]. The more than 500,000 non-allopathic practitioners are trained in the medical colleges (>400) of their respective systems of health and are registered with the official councils which monitor professionalism.

Hence, these systems are not folklore or traditional herbal practices. There are basic axioms of these systems leading to a logical and systematic structure of pathogenesis and diagnosis, which serves also as a determinant for therapy [10].

Cosmetics: Natural herbs help in preserving and enhancing the beauty and personality of human beings. Natural cosmetic is general term applied to all preparation and external conditioning and beautifying the body [11].

Beauty, the quality that gives pleasure to the senses, is perhaps the desire of every human being on earth. Some are born beautiful and some are in fact made beautiful. Aesthetic appearance has always been a matter of prime importance. The word 'Beauty' is not only related to women, as is often thought, but men also used cosmetic products. By the European Directive 93/35/EEC (European Commission), the 'cosmetics products' are define as "any substance or preparation intended to be placed in contact with the various external parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, changing their appearance and/or correcting body odours and/or protecting them or keeping them in good conditions" [12].

Cosmetics typically claim to improve skin tone, texture, and radiance, while reducing wrinkling. Cosmeceuticals are the fastest-growing segment of the natural personal care industry [13].

A cosmeceutical's "intended use" - gleaned from the labelling, advertising, promotional materials – determines the regulatory fate of cosmeceutical as a cosmetic or drug [14].

In general, vitamins, herbs, various oils, and botanical extracts may be used in cosmetics, but the manufacturer may not claim that these products penetrate beyond the skin's surface layers or that they have druglike or therapeutic effects [15].

Herbal cosmetics are the preparations, which represent cosmetic associated with active bioactive ingredients or pharmaceuticals. The uses of phytochemicals from a variety of botanicals have dual function;

(i) They serve as cosmetics for a care of body and its parts and;

(ii) The botanical ingredients present influence biological functions of skin and provide nutrients necessary for the healthy skin or hair.

Herbal cosmetics are not considered under the preview of drugs and regulations of food and drug administrations. Like cosmetics, these are subjected for their safety according to their existing rules of the different countries. Generally it is not mandatory for a manufacturer to claim that how bioactive ingredients penetrate the skin or that these ingredients cause drug-like or therapeutic effect [9].

Cosmetic Preparations:

The physical states of cosmetics preparation are broadly divided into following three categories:

1. **Solids:** Face powders, Talcum powders, Face packs, Masks, Compact powders, Cake make-up, etc.
2. **Semi solids:** Creams, Ointments, Liniments, Wax base creams, pastes, etc.
3. **Liquids:** Lotions, Moisturizers, Hair oil, Conditioners, Shampoos, Cleansing milk, Mouth washes, Deodorants, Liniments, Sprays, etc.

The preparation of any herbal cosmetics basically follows the same procedure as in the case of cosmetics. In preparation, suitable bioactive ingredients of their extracts are used along with requisite ingredients basically used for cosmetics. It requires selection of suitable emulsifying agent, and modified methodology to obtain desirable product of specified parameters.

The herbal cosmetics formulation is a sophistical and sensitive technological profile because it retains the bioactivity of the botanicals during excessive processing and ascertains their availability after application on skin. It is desirable that manufacturers should ensure the quality of products through systematic testing at their level. Other parameters like organoleptic characteristics, pH, viscosity, stability towards light and refrigeration should also be evaluated [9].

TABLE 1: BOTANICALS USED FOR SKIN CARE

S. No.	Botanical name / Family	Common name	Chemical constituent	Uses
1.	*Adhatoda vasica* *Acanthaceae*	Vasaca	Vasicine, vasicine acetate, 2-acetyl benzyl amine, vasicinone, quinazoline [16].	Fresh leaves juice / extract is used for skin affection and control of scabies [16].
2.	*Ailanthus excels* *Simaroubaceae*	Maharukh	Apigenin, luteolin, kaempferol, quercetin [17].	Leaves extract checks skin eruption and useful in skin creams and lotions [17].
3.	*Allium sativum* *Alliaceae*	Garlic	Llicin, phytoncidea, alliin, ajoene, isoalliin, methiin, alliin [18].	Garlic oil is useful to control sores, pimples and acne. It may be used in skin lotions and creams [18].
4.	*Aloe vera* *Liliaceae*	Ghikanwar	Hydroxyanthroquinone – barbaloin, y – hydroxyaloin isomers, aloe emodin, chrysophanol, loins, Barbaloin, Isobarbaloin, Aloin [19].	Leaves juice, its pulp or extracted material is applied on skin for smoothness, healing controlling skin burn, sun burn and injury Used in moisturizers, lotions, creams, hair tonic, shaving creams, etc [19].
5.	*Andropogon muricatus* *Poaceae*	Khas	Vetiselinenol, khusimol, sesquiterpenoids-vetidiol [20].	Powdered root paste with red sandal wood is used to cure irritated skin and allergies [20].
6.	*Azadirachta indica* *Meliaceae*	Neem	Di-n-propyl disulfide, 1-cinnamoylmelianolone, Isonimolicinolide, nimolicinoic acid [21].	Bark, seed, fruits and leaves contain diterpenes and highly oxidized tetraner warmer parts triterpenoids including azadirachtin; antiseptic agent; useful in curing wounds, skin deseases, leprosy, ulcers etc [21].
7.	*Butea frondosa* *Fabaceae*	Dhak	6, 8 di-C-rhamnosyl apigenin, luteolin, Chrysoeriol 7-O-β-D-4C1-glucuronic acid [22].	Leaves extract is useful in pimples and seed extract for fungal infection and bruises [23].

8.	*Carica papaya* *Caricaceae*	Papaya	Papain, chymopapain, carpain, carpasemine, benzyl isothiocyanate [24].	Milky juice of unripe fruit is a good ingredient for facial and face cream; fruit pulps make skin soft and remove blemishes [25].
9.	*Cassia tora* *Caesalpiniaceae*	Panwar	Anthraquinone, naphthopyrone glucoside [26].	Leaves and seed extract are useful for skin infection, ringworm, eruption, etc [27].
10.	*Citrus limon* *Rutaceae*	Nimbu	Limonene, *β*-myrcene and decanal [28].	Potential source of vitamin C; oil is used in various preparation to reduce skin itching and skin nourishment, pulp left after extraction of juice is useful as a facial ingredients [29].
11.	*Cocos nucifera* *Arecaceae*	Nariyal	Sugars, vitamins, minerals, amino acids and phytohormones [30].	Coconut oil is useful for skin itching and rashes [30].
12.	*Cucumis sativus* *Cucurbitaceae*	Khira	24-ethylcholesta-7, 25-trienol, 25-dienol, avenasterol, spinasterol, karounidiol and isokarounidiol [31].	Water extract of fruits and seeds protect skin from sunburn [32].
13.	*Curcuma longa* *Zingiberaceae*	Haldi	Curcumin, turmerone and zingiberene; cineole and p-tolylmehyl carbinol α-phellantrene, terpinolene, 1,8-cinceole, undecanol and p-cymene [33].	Rhizome powder possesses anti-inflammatory and anti-oxidant properties; used in facial, face creams and ointments [33].
14.	*Cuscuta reflexa* *Convolvulaceae*	Akash bel	7'-(4'-hydroxy,3'-methoxyphenyl)-N-[(4-butylphenyl)ethyl]propenamide, 6,7-dimethoxy-2H-1-benzopyran-2-one, 3-(3,4-dihydroxyphenyl)-2-propen-1-ethanoate, 2-(3-hydroxy-4-methoxyphenyl)-3 [34].	Plant extract is useful to control dermatitis, itching and ringworm [35].
15.	*Cydonia oblonga* *Rosaceae*	Bile	3-O-caffeoylquinic, vicenin-2, stellarin-2, schaftoside, chrysoeriol, citric, ascorbic, malic, quinic, shikimic and fumaric acids [36].	Seed extract is used for beautification and protection of skin [37].
16.	*Eclipta alba* *Asteraceae*	Bhringraj	Stigmasterol, Hentriacontanol, P-amyrin, Luteolin-7-O-glucoside, Wedelolactone, Triterpene, Eclalbatin, Ursolic acid, Oleanolic acid [38].	Paste of herb is useful to control skin diseases and eczema [39].
17.	*Euphorbia thymifolia* *Euphorbiaceae*	Choti dhudhi	Afzelin, quercitrin, myricitrin, rutin, quercitin, euphorbin-A, euphorbin-B, euphorbin-C, euphorbin-D [40].	Plant extract is useful to control ringworm and skin infections [41].
18.	*Jasminum grandiflorum* *Oleaceae*	Chameli	Secoiridoid glucosides, 2''-epifraxamoside, demethyl-2''-epifraxamoside, secoiridoid, jasminanhydride [42].	Essential oil extracted from flowers is used in skin creams and lotions to control skin diseases. Essential oil extracted from plant is used in creams for the protection from sunburn [43].
19.	*Juniperus communis* *Cupressaceae*	Aaraar	Monoterpene hydrocarbons, sabinene, α-pinene and limonene [44].	Whole plant extract is useful in skin creams to control skin rejuvenation [45].
20.	*Lavandula vera* *Lamiaceae*	Lavender	Resinous matter, tannic acid [46].	Essential oil is used in skin anti-acne [47].
21.	*Leucas aspera* *Lamiaceae*	Hul Khusa	Triterpenoids, oleanolic acid, ursolic acid, b-sitosterol, nicotine, sterols, glucoside, diterpenes [48].	Juice of leaves is applied to control scabies, skin psoriasis, chronic skin, skin eruption and eczema [49].
22.	*Mallotus philippensis* *Euphorbiaceae*	Kamala	5, 7-dihydroxy-8-methyl-6-prenylflavanone, 3'-prenylrubranine, red compound, isorottlerin, rottlerin [50].	Flower powder is useful to control scabies ringworm, leprous eruption, etc [51].
23.	*Mangifera indica* *Anacardiaceae*	Aam	Mangiferin, isomangiferin, tannins, gallic acid protocatechic acid, catechin, mangiferin, alanine, glycine, γ-aminobutyric acid, kinic acid, shikimic acid [52].	Plant extract possesses anti-oxidant properties [53].
24.	*Matricaria chamomilla*	Babuna	Herniarin, umbelliferone, chlorogenic acid, caffeic acid, apigeni, luteolin,	Leaves extract is applied in anti-acne cream [56].

	Asteraceae		luteolin-7-O-glucoside, quercetin, rutin, naringenin [54, 55].	
25.	*Mimosa pudica* *Mimosaceae*	Lajwanti	Flavones, isorientin, orientin, isovitexin, vitexin [57].	Herb extract applied in skin creams and lotions to control itching [58].
26.	*Momordica charantia* *Cucurbitaceae*	Karela	Momordicin I, momordicin II, cucurbitacin B, momordin, charantin, charantosides, momordicinin, momordicilin, momordenol, momordol momorcharin, momordin [59].	Plant extract possesses antioxidant properties [60].
27.	*Ocimum sanctum* *Lamiaceae*	Tulsi	Eugenol, *epi*-α-cadinol, α-bergamotene, γ-cadinene [61].	Leaves extract is useful to control skin infection and rejuvenation [62].
28.	*Phyllanthus emblica* *Euphorbiaceae*	Amla	Ellagitannins, emblicanin A, emblicanin B, punigluconin, pedunculagin, punicafolin phyllanemblinin A, phyllanemblin, ellagic acid, gallic acid [63].	Fruit extract possesses anti-oxidant properties [64].
29.	*Pistia stratiotes* *Araceae*	Water lettuce	Stigmasterol, stigmasteryl stearate, palmitic acids, anthocyanin-cynidin-3-glucoside, luteolin-7-glycosid, vitexin, orientin [65].	Leaves extract is applied to control chronic skin disorders [66].
30.	*Prunus amygdalus* *Rosaceae*	Badam	3'-*O*-methylquercetin 3-*O*-*β*-d-glucopyranoside, naringenin 7-*O*-*β*-d-glucopyranoside, catechin, protocatechuic acid, vanillic acid, *p*-hydroxybenzoic acid [67].	Kernel extract is used in sun creams and other formulations to make the skin fair and beautification creams [68].
31.	*Psoralea corylifolia* *Fabaceae*	Babchi	Corylinin, isopsoralen, psoralen, sophoracoumestan A, neobavaisoflavone, daidzin, uracil [69].	Seeds extract possesses potential to control skin diseases [70].
32.	*Rosa damascena* *Rosaceae*	Lal gulab	Citronellol, Citronellyl acetate, Citronellyl formate, eugenol, Farnesol, Geraniol, Nerol, Geranyl acetate, Geranyl formate, Linalool, Methyl isoeugenol, Rose oxide, Alpha-Terpineol, 4-Terpinenol, Methyl heptenone, Humulene, Hexanol, Guaiene, Eudesmol, Guaiene, Humulene [71].	Essential oil extracted from flowers is used in skin creams, lotions and ointment for beautification, smoothness and protection from sunburns [46].
33.	*Santalum album* *Santalaceae*	Chandan	Alpha- and beta-santalol, cedrol, esters, aldehydes, phytosterols, squalene [72].	Paste of hardwood is used in face pack; essential oil used in preparation of creams, ointments and lotions for skin beautification and protection from sunburn; possesses anti-oxidant properties [73, 74, 75.]
34.	*Saussurea lappa* *Asteraceae*	Kuth	P-hydroxybenzaldehyde, ethyl 2-pyrrolidinone-5(s)-carboxylate, 5-hydroxymethyl-furaldehyde, palmitic acid, succinic acid, daucosterol, beta-sitosterol [76, 77].	Roots extract is used in ointments for chronic skin diseases [78].
35.	*Sesamum indicum* *Pedaliaceae*	Til	Latifonin, momor-cerebroside, soya-cerebroside II, beta-sitosterol, daucosterol, D-galacititol [79].	Seed extract is useful for skin protection and rejuvenation [80].
36.	*Swertia chirayita* *Gentianaceae*	Cheretta	Triterpene swertanone, seco-hopene lactones, swertiamarin swertia lactone – C, swertain – D [81]	Bark powder extract controls skin affections; possesses antioxidant properties [82].
37.	*Withania somnifera* *Solanaceae*	Aswagandha	Withanolides, (-)-sominolide, mindabeolide-1, withanolide-R, flabelline, corydaldine, Oxyhydrastine, fumaritine, protopine, fumariline, juziphine, tetrahydropalmatine, N-	Whole plant extract is used in skin cleansing formulations and possesses antioxidant properties [84].

			feruloy1tyramine, (+)-bicuclline, (-) corlumine [83].	
38.	*Zea mays Makka*	Makka	Luxuriantes, Zea perennis, Zea diploperennis, Zea luxurians [85].	Stigma extract is used in creams and lotions for skin rejuvenation [86].

TABLE 2: BOTANICALS USED FOR HAIR CARE

S. No.	Botanical name / Family	Common name	Chemical constituent	Uses
1.	*Acacia concinna Mimosaceae*	Shikakai	Lupeol, spinasterol, lactone, hexacosanol, spinasterone, calyctomine, racimase-A oleanolic acid, lupenone, betulin, betulinic acid, betulonic acid [87].	Pods extract is used as hair cleanser and for control of dandruff [88].
2.	*Arnica montana Asteraceae*	Arnica	Helenalin, 11α, 13-dihydrohelenalin [89].	Flowers extract is used in hair oil as a tonic material. It stimulates the hair follicles [90].
3.	*Betula pendula Betulaceae*	Birch	Carotenoid, Rubisco, uronic acids, lignin [91].	Extract of leaves is used as anti-dandruff [92].
4.	*Brassica* spp. *Brassicaceae*	Mustard	Quercetin, predominate, kaempferol, luteolin, apigenin indole-3-carbinol [93].	Seed oil is used as hair oil and useful for hair nourishment [94].
5.	*Calendula officinalis Asteraceae*	Marigold	α-cadinol, T-muurolol, a-thujene, dcadinene, a-thujene, d-cadinene, d-cadinene [95].	Flowers extract is used in hair creams for smoothening effect [96].
6.	*Carthamus tinctorius Asteracea*	Safflower	Benzyl-O-β-D-glucopyranoside, syringarenol, lirioresinol-A, β-sitosterol, stigmasterol [97].	Alcoholic extract is used in hair tonics [98].
7.	*Centella asiatica Apiaceae*	Mandukaparni	Centellin, asiaticin, centellicin, asiatic acid, asiaticoside, madecassic acid, madecassoside, brahmoside, brahmic acid, brahminoside, thankuniside, isothankuniside, centelloside, madasiatic acid, centic acid, cenellic acid, betulinic acid, indocentic acid [99, 100].	Whole plant extract is used for the growth and maintenance of hairs [101].
8.	*Cocos nucifera Arecaceae*	Nariyal	Minerals, vitamins, dietary fibres, sugars, organic acids, fatty acid and amino acid , α-Tocopherol, citric, malic acids [102].	Kernel oil is well-established hair oil, which is used as such or as a basic raw material for preparing hair oils and tonics [103].
9.	*Eclipta alba Asteraceae*	Bhangra	Ecliptasaponin C, daucosterol, stigmasterol-3-O-glucoside, wedololactone, ecliptal, β-amyrin, luteolin-7-O-glucoside, hentriacontanol, heptacosanol, stigmasterol [104].	Whole plant extract is useful for hair's nourishment and dyeing [105].
10.	*Ficus racemosa Moraceae*	Bargad	B-sitosterol, p-amyrinj, lupiol acetate [106].	Aerial root powder is mixed with coconut oil for massage to check falling hairs [107].
11.	*Juglans regia Juglandaceae*	Akroot	Oleic acid, macadamia, linoleic acid, linolenic acid, methionine, cysteine, tryptophan, threonine [108].	Leaves and hull of fruits is used for hair dyeing [109].
12.	*Lawsonia inermis Lythraceae*	Henna	Lalioside, lawsoniaside, uteolin-7-O-β-d-glucopyranoside, awsonicin, lawsonadeem, vomifoliol [110, 111].	Leaves paste is used for hair dyeing and nourishment [112].
13.	*Nardostachys jatamansi Valerianaceae*	Jatamansi	β-eudesmol, elemol, β-sitosterol, angelicin, jatamansinol, nardostachysin [113].	Extract of rhizome is used in hair tonics for their growth [114].
14.	*Phyllanthus emblica Euphorbiaceae*	Amla	Gallic acid, ellagic acid, 1-O-galloyl-beta-D-glucose, 3,6-di-O-galloyl-D-glucose, chebulinic acid, quercetin, chebulagic acid, corilagin, 3-ethylgallic acid (3-ethoxy-4,5-	Fruit extract is used in oils for promotion of hair growth [116].

			dihydroxy-benzoic acid, isostrictiniin, 1,6-di-O-galloyl-beta-D-glucose [115].	
15.	*Salvia officinalis* *Lamiaceae*	Sage	Alpha-thujone, camphor and viridiflorol. Carnosol, rosmanol, epirosmanol, isorosmanol, galdosol, and carnosic acid [117, 118].	Aqueous extract is used as hair conditioner [119].
16.	*Sapindus mukorossi* *Sapindaceae*	Ritha	Saponins, sugars and mucilages [120].	Extract of fruit coat works as natural shampoo: used in herbal shampoo as hair cleanser [121].
17.	*Saussurea lappa* C.B. *Asteraceae*	Kuth	P-hydroxybenzaldehyde, ethyl 2-pyrrolidinone-5(s)-carboxylate, 5-hydroxymethyl-furaldehyde, palmitic acid, succinic acid, glucose, daucosterol, beta-sitosterol [76, 77.]	Roots extract is used in hair dyeing [78].
18.	*Sesamum indicum* *Pedaliaceae*	Til	Latifonin, momor-cerebroside, soya-cerebroside II, benzyl alcohol-O-(2'-O-beta-D-xylopyranosyl, 3'-O-beta-D-glucopyranoside)-beta-D-glucopyranoside, beta-sitosterol, daucosterol, D-galacititol [79].	Seed oil is one of the major sources of hair oils, which is used as such or a base for preparing specific hair oils [80].
19.	*Terminalia bellirica* *Combretaceae*	Behera	Tryptophan, threonine, phenylalanine, tyrosine, termilignan, thannilignan, together with 7-hydroxy-3‘,4‘-(methylenedioxy) flavan, anolignan B [122.]	Seed extract and oil is good for hair dyeing preparation [123].
20.	*Terminalia chebula* *Combretaceae*	Harra	Arjunolic acid; terminolic acid; chebuloside I, II; triterpenoids; triterpenoid glycosides [124].	Seed extract is used in hair care formulations [124].
21.	*Thymus serpyllum* *Lamiaceae*	Banajwain	Thymol and carvacrol, linalool, p-cymene, γ-terpinene, borneol, terpinen-4-ol and 1, 8-cineole [125].	Whole herb extract is useful for preparing hair tonics [126].

TABLE 3: BOTANICALS USED FOR DENTAL CARE

S. No.	Botanical name / Family	Common name	Chemical constituent	Uses
1.	*Achyranthes aspera* Amaranthaceae	Puthkanda	β-pinene, sabinene, germacrene-D, estragole, linalool [127].	Root used as a toothbrush, good for dental caries [128].
2.	*Argemone mexicana* Papaveraceae	Kandayi	Dehydrocorydalmine, jatrorrhizine, columbamine, oxyberberine [129].	Pulverized seeds good for gum troubles [130].
3.	*Azadirachta indica* Meliaceae	Neem	Azadirachtol, mahamodin, limonoid, nimbin, gedunin, tolimonoid, naheedin [131].	Twigs used to clean teeth; considered good for dental caries and gum infection [132].
4.	*Berberis lycium* Berberidaceae	Kashmal	Berberine, berbamine, palmatine [133].	Peeled stem considered good for scouring teeth [133].
5.	*Boehmeria platyphylla* Urticaceae	Handa	Cypholophine, O-acetylcypholophine, lactone, loliolide [134].	Leaves used for scouring teeth [135].
6.	*Calotropis procera* Asclepiadaceae	Ak	Calotropin, calotoxin, calactin, uscharidin, voruscharin, calotropagenin [136].	Latex used for toothache due to dental caries [137].
7.	*Capsicum annum* Solanaceae	Mirch	Phenols, flavonoids, carotenoids, capsaicin, dihydrocapsaici, poliphenols, flavonoids, carotenoids, capsaicinoids [38].	Fruits boiled in ‘sarson’ oil and oil is poured in ear; good for toothache [139].
8.	*Cassia occidentalis* Fabaceae	Relu	Lenoleic acid, Galactomannan, Torosaflavon B, singueanol I, Questin, Methylgermitorosone, Helminthosporine [140].	Leaves used for scouring teeth [141].
9.	*Cinnamomum tamala* Lauraceae	Tej-patta	Trans-sabinene hydrate, (*Z*)-*β*-ocimene, myrcene, *α*-pinene, *β*-sabinene, sesquiterpenes, germacrene A, *α*-	Leaves used for scouring teeth; good for gum inflammation [143].

			gurjunene [142].	
10.	*Citrus limon* Rutaceae	Galgal	A-pinene, camphene, b-pinene, sabinene, myrcene, a-terpinene, linalool, b-bisabolene, limonene, trans-a-bergamotene, nerol, neral [144].	Leaves used for scouring teeth and good as a mouth freshener [145].
11.	*Citrus medica* Rutaceae	Nimbu	Limettin, stigmasta-5, 22-dien-3-ol, palmilic acid [146].	Leaves and rind of fruits recommended for scouring teeth along with a pinch of rock salt [147].
12.	*Curcuma angustifolia* Zingiberaceae	Haldi	Neocurdione, 1,2-hexadecanediol, curcusesterterpene A, curcusesterterpene B, curcusesterterpene C, n-nonacosan-1-ol, curcumin [148, 149.]	Powdered rhizome mixed with and mustared oil is applied on gums for pyorrhea [150].
13.	*Ficus hispida* Moraceae	Daagrein	Norisoprenoid, ficustriol phenanthroindolizidine alkaloid, O-methyltylophorinidine [151].	Latex used for toothache [152].
14.	*Ipomoea carnea* Convolvulaceae	Ghodan	Swainsonine, 2-*epi*-lentiginosine, calystegines B_1, B_2, B_3, and C_1, *N*-methyl-*trans*-4-hydroxy-l-proline [153].	Leaf juice recommended for toothache [154].
15.	*Jatropha curcas* Euphorbiaceae	Japhrota	Fatty acids, palmitic acid, stearic acid, unsaturated fatty acids, oleic acid, linoleic acid [155].	Twigs used as a toothbrush; good against dental caries [156].
16.	*Juglans regia* Juglandaceae	Khod	Palmitate, stearate, oleate, linoleate, linolenate [157].	Bark and leaves used for scouring teeth [158].
17.	*Mangifera indica* Anacardiaceae	Aam	Mangiferin, isomangiferin, tannins, gallic acid protocatechic acid, catechin, mangiferin, alanine, glycine, γ-aminobutyric acid, kinic acid, shikimic acid [52].	Leaves used for scouring teeth [53].
18.	*Murraya koenigii* Rutaceae	Gandhela	α-pinene, sabinene, β-pinene, β-caryophyllene, limonene, bornyl acetate, terpinen-4-ol, γ-terpinene, α-humulene [159].	Stem used for scouring teeth and for healthy gums [160].
19.	*Murraya paniculata* Rutaceae	Gandhela	*β*-cyclocitral, methyl salicylate, *trans*-nerolidol, *α*-cubebene, (−)-cubenol, *β*-cubebene, isogermacrene. *β*-caryophyllene, (−)-zingiberene, germacrene D, *α*-copaene, *α*-humulene [161].	Used for scouring teeth and for healthy gums [162].
20.	*Carya illinoensis* Juglandaceae	Kagji-khod	Fatty acid, sucrose, protein, fiber, aluminum, vitamin C [163].	Leaves used for scouring teeth; good for gums [164].
21.	*Pistacia integerrima* Anacardiaceae	Kakarsingi	Chrysoeriol, diandraflavone, quercetin-3-*O*-β-d-glucopyranoside, kaempferol-3-*O*-β-d-glucopyranoside, quercetin-3-*O*-(6″-*O*-syringyl)-β-d-glucopyranoside, kaempferol-3-*O*-(4″-*O*-galloyl)-α-l-arabinopyranoside, rutin, aglycons, quercetin, kaempferol, apigenin [165, 166].	Leaves chewed to check toothache [167].
22.	*Plumbago zeylanica* Plumbaginaceae	Chitra	Plumbazeylanone, plumbagic acid, β-sitosterol, lupeol, lup-20(29)-en-3,21-dione, norcanelilline, 3-O-glucopyranosyl plumbagicacid, methylester, uridine, daucosterol [168].	Stem recommend for scouring teeth and root paste to check toothache [169].
23.	*Prunus cerasoides* Rosaceae	Paza	Jaquanine, prunetin, sasccuranin, taxifolin, padmetin [170].	Twigs used for scouring teeth [171].
24.	*Psidium guajava* Myrtaceae	Guava	Guajanoic acid, beta-sitosterol, uvaol, oleanolic acid, ursolic acid [172].	Leaves and stem used for scouring teeth [173].

25.	*Robinia pseudo-acacia* Fabaceae	Rasinia	Acacetin, secundiflorol I, mucronulatol, isomucronulatol, isovestitol, Robinspirols A–C, Robinlin, Robinpiramic acid, Abrisapogenol E, abrisapogenaldacetal [174].	Powdered bark recommended for toothache [175].
26.	*Spilanthes oleracea* Asteraceae	Karkara	Trans-caryophyllene, germacrene-D, 1-dodecene, spathulenol, spilanthol [176].	Inflorescence used for gum inflammation [177].
27.	*Vitex negundo* Verbenaceae	Bana	Luteolin, luteolin-3'-O-glucuronide, isoorientin, 2'-p-hydroxybenzoylmussaenosidic acid, agnuside, phydroxyl benzoic acid, stigmasterol, β-sitosterol [178].	Twigs recommended to clean teeth; considered good for pyorrhea, gum inflammation, dental caries and other problems [179].
28.	*Zanthoxylum armatum* Rutaceae	Tirmir	Linalool, methyl cinnamate, limonene, β-phellandrene, 1, 8–cineole, sabinene, β-terpineol, terpinen-4-ol, α-terpineol, β-cymene, 2-tridecanone [180].	Twigs considered as a best source for sucoring teeth and considered good for any dental problem [181].

Adverse reaction of Cosmetics: Skin cleansing agents remain on the body for a very short period of time and rarely cause significant adverse reactions, however, perfume and others constituents may cause skin irritation and allergic reactions. Moisturizers increase the hygroscopic properties of the skin; however, high concentration of these substances may cause irritation and exfoliation.

Skin lightening/depigmenting agents, such as hydroquinone (HQ), are one of the most widely prescribed agents. Ochronosis is an uncommon adverse effect of HQ, characterized by progressive darkening of the area to which the cream containing high concentrations of HQ is applied for many years [182].

'Black henna' tattoo is a chemical stain due to p-phenylenediamine (PPD), in the form of commercial hair dye mixed into the henna paste. Addition of this artificial dye stains the skin in much shorter duration, an hour or less. Adverse reactions to PPD can include stinging sensations, with an erythematous rash, swelling, blisters, and surface oozing [183].

Adverse effects to sun-screening agents may result in irritant, allergic, phototoxic, or photoallergic reactions, and caused not only by the active constituents but also by the additives such as fragrances and stabilizers. Benzophenones are probably the most common sensitizers, while dibenzoylmethanes, para-aminobenzoic acid (PABA), and cinnamates may cause photoallergic dermatitis [184].

The allergic reactions associated with deodorants and fragrances are usually caused by fragrance or other ingredients. Fragrance can enter the body through lungs, airways, skin, ingestion, and via pathways from the nose directly to the brain and can cause headaches, irritation to eyes, nose, and throat, dizziness, fatigue, forgetfulness, and other symptoms. Fragrance is the number one cause of skin allergic reactions to cosmetics [185, 186].

Shampoos and conditioners have only a brief contact with the skin and are not a common cause of cutaneous irritant or allergic contact dermatitis. However, eye irritation can be a problem. Possible sensitizers in shampoos include formalin, parabens, hexachlorophene, triclosan, and fragrances. Matting of scalp hair is most commonly a sudden, usually irreversible, and tangling of scalp hair resulting from shampooing [187].

Hair straightening (relaxing) with pressing oils and heated metal combs or round tongs may be associated with hair-shaft breakage and scarring alopecia. Hair removal techniques may partially account for allergic and photoallergic reactions [188].

The adverse effects of shaving include skin irritation, cuts in the skin, ingrown hair (pseudofolliculitis), etc. The active ingredients in hair bleaches are hydrogen peroxide solutions that oxidize melanin to a lighter color. They may be supplemented with persulfate boosters. The disadvantages of bleaching include skin irritation, temporary skin discoloration, pruritus, and the prominence of bleached hair against tanned or naturally dark skin. Ammonium persulfate may cause types I and IV allergic contact reactions [189].

About 12% of cosmetic reactions occur on the eyelid, mainly due to the eye shadow. Irritant contact dermatitis is more common than allergic contact dermatitis. Mascara is the most commonly used eye cosmetic. The most feared adverse effect of mascaras is that of infection, particularly *Pseudomonas aeruginosa* corneal infections, which can permanently destroy visual acuity, due to multiple reuses of applicator and reinsertions into the tube between uses.

Kajal and surma are mainly carbon compounds, but surma also contains mercury or lead and may put at risk of serious health problems.

Nail plate discoloration and allergic contact dermatitis are the major dermatological concerns with the use of nail polish. The nail staining is seen more with dissolved rather than suspended pigments [182].

CONCLUSION: There are also a number of Institutes/Universities in India carrying our research work on herbal drugs and medicinal plants for lesser side effects and rich sources of beneficial compounds including antioxidants, anti-inflammatory, antiseptic and antimicrobial properties. In India more than 70% of the populations use herbal cosmetics for their health care. Now a day's herbal cosmetics has been increased in personal care system and there is a great demand for the herbal cosmetics in daily life. Healthy teeth, shiny hair and glowing skin are fundamental for the good looking of the human body.

In allopathy, the treatment of all the problems is expensive and cannot be afforded by poor people. So, these types of herbal medicines, which are almost free, are a great help. Although, cosmetic preparations have rarely been related with serious health hazards, this does not mean that cosmetics are always safe to use.

Cosmetics and personal-care products may contain ingredients whose safety is unknown or which are known to create health risks. The present review focuses on the potential of herbal extracts for cosmetic purposes.

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REFERENCES:

1. Singh LW: Traditional medicinal plants of Manipur as anti-diabetics. Journal of Medicinal Plants Research 2011; 5(5): 677-687.
2. Grover JK, Yadav S and Vats V: Medicinal plants of India with Antidiabetic potential. J. Ethnopharmacol 2002; 81: 81-100.
3. Scartezzini P and Sproni E: Review on some plants of Indian traditional medicine with antioxidant activity. J. Ethnopharmacol 2000; 71: 23-43.
4. Seth SD and Sharma B: Medicinal plants of India. Indian J. Med. Res 2004; 120: 9-11.
5. Subramanian V: The Case of Selected Indian Healthcare Systems. In: Gautam V, Raman RMV, Prahalathan S, Ashish K, editors. Foreword, in Road Beyond Boundaries. Mumbai: Export-Import Bank of India; 2003: 7-9.
6. Gautam V, Raman RMV and Ashish K: Exporting Indian healthcare (Export potential of Ayurveda and Siddha products and services). Road Beyond Boundaries (The Case of Selected Indian Healthcare Systems) Mumbai: Export-Import Bank of India; 2003: 14-54.
7. Gautam V., Raman R.M.V., Ashish K. Exporting Indian healthcare (Export potential of Ayurveda and Siddha products and services). Road beyond Boundaries (The Case of Selected Indian Healthcare Systems) Mumbai: Export-Import Bank of India; 2003: 14–54.
8. Kamboj V P: Current science 2000; 78: 35.
9. Kapoor VP: Herbal Cosmetics for Skin and Hair Care. Natural Product Radiance 2005; 4(4): 306-314.
10. Vaidya ADB and Devasagayam TPA: Current Status of Herbal Drugs in India: An Overview. J Clin Biochem Nutr 2007; 41(1): 1–11.
11. Mushtaq A, Khan MA and Zafar M: Traditional herbal cosmetics used by local women communities in district Attock of Northern Pakistan. Indian Journal of Traditional Knowledge 2008; 7(3): 421-424.
12. Khole PL, Jadhav HR, Thakurdesai P and Nagappa AN: Cosmetics Potential of Herbal Extracts. Natural Product Radiance 2005; 4(4): 315-321.
13. Draelos ZD: The cosmeceutical realm. Clin Dermatol *2008*; 26(6): 627-632.
14. Abdullah BJ, Nasreen R and Ravichandran N: A Comprehensive Review of Consumption Pattern and Strategies in Cosmeceutical Market with a Focus on Dermaceuticals in Indian Market. International Journal of Scientific and Research Publications 2012; 2(2): 1-10.
15. Thornfeldt C: Cosmeceuticals containing herbs: fact, fiction, and future. Dermatol Surg 2005; 31(7 Pt 2): 873-880.
16. Singh TP, Singh OM and Singh HB: *Adhatoda vasica* Nees: Phytochemical and Pharmacological Profile. The Natural Products Journal 2011; 1(29): 29-39.
17. Kundu P and lascar S: A brief resume on the genus Ailanthus: chemical and pharmacological aspects. Phytochemistry Reviews 2010; 9: 379-412.
18. Lyantagaye SL: Ethnopharmacological and phytochemical review of Allium species (sweet garlic) and tulbaghia species (wild garlic) from southern Africa. Tanz. J. Sci 2011; 37: 17-21.
19. Gupta M, Biswas TK, Saha S and Debnath PK: Therapeutic Utilization of Secretory Products of Some

Indian Medicinal Plants - A Review. Indian Journal of Traditional Knowledge 2006; 5(4): 569-575.
20. Shah AJ and Gilani AH: The Calcium Channel Blocking and Phosphodiesterase Inhibitory Activities of the Extract of *Andropogon muricatus* Explains its Medicinal Use in Airways Disorders. Phytotherapy Research 2012; 26(8): 1256-1258.
21. Siddiqui S, Mahmood T, Faizi S and Siddiqui BS: Studies in the chemical constituents of *Azadirachta indica* A. Juss (meliaceae). J.Chem. Soc 1987; 1: 1429-1432.
22. Ammar NM, Mohammed SH, Doha AM, Nabil EK, Ahmed HA and Tom JM: Phytochemical and Biological studies of *butea frondosa* Roxb. leaves growing in Egypt. Medical Journal of Islamic World Academy of Sciences 2011; 19(4): 173-180.
23. Londonkar R and Ranirukmini RK: Antimicrobial activity of *Butea frondosa* Roxb. Journal of Pharmacognosy 2010; 1(1): 01-05.
24. Quintal PC, Flores TG, Buenfil IR and Tintore SG: Antifungal activity in ethanolic extracts of *Carica papaya* L. cv. maradol leaves and Seeds. Indian J Microbiol 2011; 51(1): 54-60.
25. Sadek KM: Antioxidant and immunostimulant effect of *carica papaya* linn. aqueous extract in acrylamide intoxicated rats. Acta Inform Med 2012; 20(3): 180-185.
26. Chaurasia B, Dhakad RS, Dhakar VK and Jain PK: Preliminary phytochemical and pharmacological (Antidiabetic) screening of *Cassia tora* Linn. International journal of pharmacy & life sciences 2011; 2(5): 26-29.
27. Mazumder A, Lahkar V, Sahay J, Oraon A, Mazumder R and Pattnaik AK: Pharmacognostical studies on the leaves of *Cassia tora* Linn. (Fam. caesalpiniaceae). Anc Sci Life 2005; 25(2): 74-78.
28. Kamal GM, Anwar F, Hussain AI, Sarri N and Ashraf MY: Yield and chemical composition of Citrus essential oils as affected by drying pretreatment of peels. International Food Research Journal 2011; 18(4): 1275-1282.
29. Molina EG, Perles RD, Moreno DA and Viguera CG: Natural bioactive compounds of Citrus limon for food and health. Journal of Pharmaceutical and Biomedical Analysis 2010; 51(2): 327-345.
30. Yong JW, Ge L, Ng YF and Tan SN: The chemical composition and biological properties of coconut (Cocos nucifera L.) water. Molecules 2009; 14(12): 5144-5164.
31. Wu XY, Chao ZM, Wang C, Tan ZG and Sun W: Chemical constituents contained in fatty oil from seeds of *Cucumis sativus*. Zhongguo Zhong Yao Za Zhi 2012; 37(21): 3252-3255.
32. Yan XN, Sikora RA and Zheng JW: Potential use of cucumber (*Cucumis sativus* L.) endophytic fungi as seed treatment agents against root-knot nematode *Meloidogyne incognita*. J Zhejiang Univ Sci B 2011; 12(3): 219-225.
33. Awasthi PK and Dixit SC: Chemical composition of *Curcuma Longa* leaves and rhizome oil from the plains of Northern India. Pharmacognosy 2009; 1(4): 312-316.
34. Anis E, Anis I, Ahmed S, Mustafa G, Malik A and Choudhary MI: Alpha-glucosidase inhibitory constituents from *Cuscuta reflexa*. Chem Pharm Bull 2002; 50(1): 112-114.
35. Yang L, Chen Q, Wang F and Zhang G: Antiosteoporotic compounds from seeds of *Cuscuta chinensis*. J Ethnopharmacol 2011; 135(2): 553-560.
36. Silva BM, Andrade PB, Ferreres F, Seabra RM, Oliveira MB and Ferreira MA: Composition of quince (*Cydonia oblonga* Miller) seeds: phenolics, organic acids and free amino acids. Nat Prod Res 2005; 19(3): 275-281.
37. Silva BM, Andrade PB, Valentao P, Ferreres F, Seabra RM and Ferreira MA: Quince (*Cydonia oblonga* Miller) Fruit (Pulp, Peel, and Seed) and Jam: Antioxidant Activity. J. Agric. Food Chem 2004; 52(15): 4705-4712.
38. Mithun NM and Shashidhara S: *Eclipta alba* (L.) A review on its phytochemical and pharmacological profile. PharmaTutor Pharmacy Infopedia 2012.
39. Roy RK, Thakur M and Dixit VK: Hair growth promoting activity of *Eclipta alba* in male albino rats. Archives of Dermatological Research 2008; 300(7): 357-364.
40. Liu Y, Murakami N, Ji H, Pedro A and Zhang S: Antimalarial flavonol glycosides from *Euphorbia hirta*. Pharm Biol 2007; 45: 278-281.
41. Williamson EM. Major Herbs of Ayurveda.China: Churchill Livingstone; 2002.
42. Sadhu SK, Khan MS, Ohtsuki T and Ishibashi M: Secoiridoid components from *Jasminum grandiflorum*. Phytochemistry 2007; 68(13): 1718-1721.
43. Chaturvedi AP and Tripathi YB: Methanolic extract of leaves of *Jasminum grandiflorum* Linn modulates oxidative stress and inflammatory mediators. Inflammopharmacology 2011; 19(5): 273-281.
44. Cabral C, Francisco V, Cavaleiro C, Gonçalves MJ, Cruz MT and Sales F: Essential Oil of *Juniperus communis* subsp. *alpina* (Suter) Celak Needles: Chemical Composition, Antifungal Activity and Cytotoxicity. Phytotherapy Research 2012; 26(9) 1352-1357.
45. Melvina M, Dorothy G, Frank M, Joanne E, Margaret S and Cheryl S: Herbal Therapies and Diabetes among Navajo Indians. Diabetes Care 2005; 28(6): 1534-1535.
46. Apostolova EGK, Georgiev MI, Ilieva MP, Skibsted LH, Rodtjer A and Andersen ML: Extracts of plant cell cultures of *Lavandula vera* and *Rosa damascena* as sources of phenolic antioxidants for use in foods. European Food Research and Technology 2008; 227(4): 1243-1249.
47. Zuzarte MR, Dinis AM, Cavaleiro C, Salgueiro LR and Canhoto JM: Trichomes, essential oils and in vitro propagation of *Lavandula pedunculata* (Lamiaceae). Industrial Crops and Products 2010; 32(3): 580-587.
48. Prajapati MS, Patel JB, Modi K and Shah MB: *Leucas aspera*: A review. Pharmacogn Rev 2010; 4(7): 85-87.
49. Srinivasan R: Leucas Aspera - Medicinal Plant: A Review. International Journal of Pharma and Bio Sciences 2011; 2(1): 153-159.
50. Zaidi SF, Yoshida I, Butt F, Yusuf MA, Usmanghani K and Kadowaki M: Potent bactericidal constituents from *Mallotus philippinensis* against clarithromycin and metronidazole resistant strains of Japanese and Pakistani Helicobacter pylori. Biol Pharm Bull 2009; 32(4): 631-6.
51. Oudhia P: Kamala or kamopillaka (*Mallotus philippinensis* Muell.). Society for Parthenium Management (SOPAM) 2013.
52. Barreto JC, Trevisan MTS, Hull WE, Erben G, De Brito ES and Pfundstein B: Characterization and quantitation of polyphenolic compounds in bark, kernel, leaves, and peel of mango (*Mangifera indica* L.). Journal of Agricultural and Food Chemistry 2008; 56(14): 5599-5610.
53. Scartezzini P and Speroni E: Review on some plants of Indian traditional medicine with antioxidant activity. J Ethnopharmacol 2000; 71: 23-43.
54. Pino JA, Bayat F, Marbot R and Aguero J: Essential oil of *Chamomilla recutita* (L.) Rausch. J Essent Oil Res 2002; 14: 407-408.
55. Pirzad A, Alyari MR, Shaliba S, Zehtab-Salmasi and Moammadi A: Essential oil content and composition of German chamomile (*Matricaria chamomilla* L.) at different irrigation regimes. J Agron 2006; 5: 451-455.
56. Singh O, Khanam Z, Misra N and Srivastava MK: Chamomile (*Matricaria chamomilla* L.): An overview. Pharmacogn Rev 2011; 5(9): 82-95.
57. Zhang J, Yuan K, Zhou WL, Zhou J and YangP: Studies on the active components and antioxidant activities of the extracts of *Mimosa pudica* Linn. from southern China. Pharmacogn Mag 2011; 7(25): 35–39.

58. Behera SK, Panda A and Misra MK: Medicinal Plants Used By the Kandhas of Kandhamal District of Orissa. Indian J Traditi Knowl 2006; 5: 519-528.
59. Toshihiro A, Naoki H, Harukuni T, Motohiko U, Hiroyuki A and Yuichi T: Cucurbitane-type triterpenoids from the fruits of *Momordica charantia* and their cancer chemopreventive effects. Journal of Natural Products 2007; 70: 1233-1239.
60. Beloin N, Gbeassor M, Akpagana K, Hudson J, De Soussa K and Koumaglo K: Ethnomedicinal uses of *Momordica charantia* (Cucurbitaceae) in Togo and relation to its phytochemistry and biological activity. Journal of Ethnopharmacology 2005; 96(1-2): 49-55.
61. Hussain AI, Anwar F, Sherazi STH and Przybylski R: Chemical composition, antioxidant and antimicrobial activities of basil (*Ocimum basilicum*) essential oils depends on seasonal variations. Food Chemistry 2008; 108(3): 986-995.
62. Prakash P and Gupta N: Therapeutic uses of Ocimum sanctum Linn (Tulsi) with a note on eugenol and its pharmacological actions: a short review. Indian J Physiol Pharmacol 2005; 49(2): 125-131.
63. Habib-ur-Rehman, Yasin KA and Choudhary MA: Studies on the chemical constituents of *Phyllanthus emblica*. Nat. Prod. Res 2007; 21(9): 775-781.
64. Tiwari V, Kuhad A and Chopra K: *Emblica officinalis* Corrects Functional, Biochemical and Molecular Deficits in Experimental Diabetic Neuropathy by Targeting the Oxido-nitrosative Stress Mediated Inflammatory Cascade. Phytotherapy Research 2011; 25(10): 1527-1536.
65. Khare CP: Encyclopedia of Indian medicinal plants. Berlin Heidelberg, Germany: Springer-Verlag; 2005: 372.
66. Tripathi P, Kumar R, Sharma AK, Mishra A and Gupta R: *Pistia stratiotes* (Jalkumbhi). Pharmacogn Rev 2010; 4(8): 153-160.
67. Sang S, Lapsley K, Jeong WS, Lachance PA , Ho CT and Rosen RT: Antioxidative Phenolic Compounds Isolated from Almond Skins (*Prunus amygdalus* Batsch). J. Agric. Food Chem 2002; 50(8): 2459-2463.
68. Esfahlan AJ, Jamei R and Esfahlan RJ: The importance of almond (*Prunus amygdalus* L.) and its by-products. Food Chemistry 2010; 120(2): 349-360.
69. Ruan B, Kong LY, Takaya Y and Niwa M: Studies on the chemical constituents of *Psoralea corylifolia* L. Journal of Asian Natural Products Research 2007; 9(1): 20-25.
70. Zhao G, Li S, Qin GW, Fei J and Guo LH: Inhibitive effects of *Fructus Psoraleae* extract on dopamine transporter and noradrenaline transporter. J Ethnopharmacol 2007; 112(3): 498-506.
71. Mostafavi A and Afzali D: Chemical composition of the essential oils of Rosa damascena from two different locations in Iran. Chemistry of Natural Compounds 2009; 45(1): 110-113.
72. Zhang XH, da Silva JA, Jia YX, Zhao JT and Ma GH: Chemical composition of volatile oils from the pericarps of Indian sandalwood (*Santalum album*) by different extraction methods. Nat Prod Commun 2012; 7(1): 93-6.
73. Misra BB and Dey S: Evaluation of *in vivo* anti-hyperglycemic and antioxidant potentials of α-santalol and sandalwood oil. Phytomedicine 2013; 12: 17.
74. Misra BB and Dey S: Differential Extraction and GC-MS based Quantification of Sesquiterpenoids from Immature Heartwood of East Indian Sandalwood Tree. Journal of Natural Sciences Research 2012; 2(6): 29-33.
75. Misra BB and Dey S: Shikimic Acid (Tamiflu Precursor) Production in Suspension Cultures of East Indian Sandalwood (*Santalum album*) in Air-lift Bioreactor. Journal of Postdoctoral Research 2013; 1(1): 1-9.
76. Zhang T, Wang H, Du G and Chen R: Study on chemical constituents from roots of *Saussurea lappa*. Zhongguo Zhong Yao Za Zhi 2009; 34(10): 1223-1224.
77. Zhang T, Ma L, Wu F and Chen R: Chemical constituents from a portion of ethanolic extract of *Saussurea lappa* roots. Zhongguo Zhong Yao Za Zhi 2012; 37(9): 1232-1236.
78. Jia JM, Wu CF, Liu W, Yu H, Hao Y and Zheng JH: Antiinflammatory and analgesic activities of the tissue culture of *Saussurea involucrata*. Biological & Pharmaceutical Bulletin 2005; 28(9): 1612-1614.
79. Hu YM, Ye WC, Yin ZQ and Zhao SX: Chemical constituents from flos *Sesamum indicum* L. Yao Xue Xue Bao 2007; 42(3): 286-291.
80. Suja KP, Jayalekshmy A and Arumughan C: Free Radical Scavenging Behavior of Antioxidant Compounds of Sesame (*Sesamum indicum* L.) in DPPH$^{\bullet}$ System. J. Agric. Food Chem 2004; 52(4): 912-915.
81. Negi JS, Singh P and Rawat B: Chemical Constituents and Biological Importance of Swertia: A Review. Current Research in Chemistry, 2011; 3: 1-15.
82. Chen Y, Huang B, He J, Han L, Zhan Y and Wang Y: In vitro and in vivo antioxidant effects of the ethanolic extract of *Swertia chirayita*. Journal of Ethnopharmacology 2011; 136(2):309-315.
83. Sukanya DH, Lokesha AN, Datta G and Himabindu K: Phytochemical diversity in ashwagandha (*Withania somnifera*). Journal of Medicinal and Aromatic Plants 2010; 1(2): 27-30.
84. Mishra LC, Singh BB and Dagenais S: Scientific Basis for the Therapeutic Use of *Withania somnifera* (Ashwagandha): A Review. Alternative Medicine Review 2000; 5(4): 33-38.
85. Suzuki R, Iijima M, Okada Y and Okuyama T: Chemical constituents of the style of *Zea mays* L. with glycation inhibitory activity. Chem Pharm Bull 2007; 55(1): 153-155.
86. Negrotto D, Jolley M, Beer S, Wenck AR and Hansen G: The use of phosphomannose-isomerase as a selectable marker to recover transgenic maize plants (Zea mays L.) via Agrobacterium transformation. Plant Cell Reports 2000; 19(8): 798-803.
87. Mutai C, Abatis D, Vagias C, Moreau D, Roussakis C and Roussis V: Cytotoxic lupane-type triterpenoids from Acacia mellifera. Phytochemistry 2004; 65(8): 1159-1164.
88. Karanth KD: Forest use and human-wildlife conflicts in Bhadra Wildlife Sanctuary. Tropical Resources: Bulletin of the Yale Tropical Resources Institute, India, Karnataka. 2003; 22: 48-58.
89. Judzentiene A and Budiene J: Analysis of the chemical composition of flower essential oils from *Arnica montana* of Lithuanian origin. chemija 2009; 20(3): 190-194.
90. Knuesel O, Weber M and Suter A: *Arnica montana* gel in osteoarthritis of the knee: An open, multicenter clinical trial. Advances in Therapy 2002; 19(5): 209-218.
91. Oksanen E, Riikonen J, Kaakinen S, Holopainen T and Vapaavuori E: Structural characteristics and chemical composition of birch (*Betula pendula*) leaves are modified by increasing CO_2 and ozone. Global Change Biology 2007; 11(5): 305-310.
92. Rytter L, Ericsson T and Rytter RM: Effects of Demand-driven Fertilization on Nutrient Use, Root: Plant Ratio and Field Performance of *Betula pendula* and *Picea abies*. Scandinavian Journal of Forest Research 2003; 18 (5): 225-229.
93. Miean KH and Mohamed S: Flavonoid (Myricetin, Quercetin, Kaempferol, Luteolin, and Apigenin) Content of Edible Tropical Plants. J. Agric. Food Chem 2001; 49(6): 3106–3112.
94. Breeding Better Broccoli: Research Points To Pumped Up Lutein Levels In Broccoli. Science Daily 2010.
95. Chalchat JC, Garry RP and Michet A: Chemical composition of essential oil of *Calendula officinalis* L. (pot marigold). Flavour and Fragrance Journal 2010; 6(3): 316-20.
96. *Calendula officinalis* - L. Plants for a Future. 2007; 12-9.

97. Zhi ZY, Huan C, Li Q, Fang HD, Ming HH and Hu PY: Chemical constituents from *Carthamus tinctorius* L. Chinese Journal of Medicinal Chemistry 2007; 06: 34-37.
98. Bassil ES and Kaffka SR: Response of safflower (*Carthamus tinctorius* L.) to saline soils and irrigation: I. Consumptive water use. Agricultural Water Management 2002; 54(1): 67-80.
99. Siddiqui BS, Aslam H, Ali ST, Khan S and Begum S: Chemical constituents of *Centella asiatica*. J Asian Nat Prod Res2007; 9(3-5): 407-414.
100. Zheng CJ and Qin LP: Chemical components of Centella asiatica and their bioactivities. Journal of Chinese Integrative Medicine 2007; 5(3): 167-170.
101. Gohil KJ, Patel JA and Gajjar AK: Pharmacological Review on *Centella asiatica*: A Potential Herbal Cure-all. Indian J Pharm Sci 2010; 72(5): 546-556.
102. Yong JW, Ge L, Ng YF and Tan SN: The chemical composition and biological properties of coconut (Cocos nucifera L.) water. Molecules 2009; 9; 14(12): 5144-5164.
103. Singla RK: Review on the Pharmacological Properties of Cocos Nucifera Endocarp. Pharmaceutical Sciences 2012; 3(5): 278-284.
104. Jadhav VM, Thorat RM, Kadam VJ and Salaskar KP: Chemical composition, pharmacological activities of *Eclipta alba*. Journal of Pharmacy Research 2009; 2(8): 1229-1231.
105. Roy RK, Thakur M and Dixit VK: Hair growth promoting activity of *Eclipta alba* in male albino rats. Archives of Dermatological Research 2008; 300(7): 357-364.
106. Ahmed F and Urooj A: Traditional uses, medicinal properties, and phytopharmacology of *Ficus racemosa*: a review. Pharmaceutical Biology 2010; 48(6): 672-81.
107. Paarakh K and Padmaa M: *Ficus racemosa* Linn.–An overview. Natural product radiance 2009; 8(1): 84-90.
108. Venkatachalam M and Sathe SK: Chemical Composition of Selected Edible Nut Seeds. J. Agric. Food Chem 2006; 54(13): 4705-4714.
109. Gaur RD: Traditional dye yielding plants of Uttarakhand, India. Natural Product Radiance 2008; 7(2): 2734-2739.
110. Hsouna AB, Trigui M, Culioli G, Blache Y and Jaoua S: Antioxidant constituents from *Lawsonia inermis* leave: Isolation, structure elucidation and antioxidative capacity. Food Chemistry 2011; 125(1): 193–200.
111. Siddiqui BS, Kardar MN, Ali ST and Khan S: Two New and a Known Compound from *Lawsonia inermis*. Helvetica Chimica Acta 2003; 86(6): 2164-9.
112. Makhija IK: Lawsonia Inermis - From Traditional Use to Scientific Assessment. PharmaTutor Pharmacy Infopedia 2010.
113. Gottumukkala VR, Annamalai T and Mukhopadhyay T: Phytochemical investigation and hair growth studies on the rhizomes of *Nardostachys jatamansi* DC. Pharmacogn Mag 2011; 7(26): 146–150.
114. Amatya G and Sthapit VM: A Note on *Nardostachys jatamansi*. Journal of Herbs, Spices & Medicinal Plants 1994; 2(2): 39-47.
115. Zhang LZ, Zhao WH, Guo YJ, Tu GZ, Lin S and Xin LG: Studies on chemical constituents in fruits of Tibetan medicine *Phyllanthus emblica*. Zhongguo Zhong Yao Za Zhi 2003; 28(10): 940-943.
116. Krishnaveni M and Mirunalini S: Therapeutic potential of *Phyllanthus emblica* (amla): the Ayurvedic wonder. J Basic Clin Physiol Pharmacol 2010; 21(1): 93-105.
117. Oniga I, Oprean R, Toiu A and Benedec D: Chemical composition of the essential oil of Salvia officinalis L. from Romania. Rev Med Chir Soc Med Nat Iasi 2010; 114(2): 593-595.
118. Miura K, Kikuzaki H and Nakatani N: Antioxidant Activity of Chemical Components from Sage (Salvia officinalis L.) and Thyme (Thymus vulgaris L.) Measured by the Oil Stability Index Method. J. Agric. Food Chem 2002; 50(7); 1845-1851.
119. Bozin B, Dukic NM, Samojlik I and Jovin E: Antimicrobial and Antioxidant Properties of Rosemary and Sage (*Rosmarinus officinalis* L. and *Salvia officinalis* L., Lamiaceae) Essential Oils. J. Agric. Food Chem 2007; 55(19): 7879-7885.
120. Nivsarkar M, Shrivastava N, Patel M, Padh H and Bapu C: Sperm membrane modulation by Sapindus mukorossi during sperm maturation. Asian J Androl 2002; 4: 233-235.
121. Sinha RK, Majumdar K and Sinha S: Somatic embryogenesis and plantlet regeneration from leaf explants of *Sapindus mukorossi* Gaertn: a soapnut tree. Current Science 2000; 78(5): 620-623.
122. Oliveira JTA, Vasconcelos IM, Bezerra LCNM, Silveira SB, Monteiro ACO and Moreira RA: Composition and nutritional properties of seeds from *Pachira aquatica* Aubl, *Sterculia striata* St Hil et Naud and *Terminalia catappa* Linn. Food Chemistry 2000; 70(2): 185-191.
123. Misra M: Modern drug development from traditional medicinal plants using radioligand receptor-binding assays. Medicinal Research Reviews 1998; 18(6): 383-402.
124. Ali Z and Khan IA: Chemical Constituents of Terminalia chebula. Planta Med 2009; 75: 41.
125. Paaver U, Orav A, Arak E, Mäeorg U and Raal A: Phytochemical analysis of the essential oil of Thymus serpyllum L. growing wild in Estonia. Nat Prod Res 2008; 22(2): 108-115.
126. Jaric S, Popovic Z, Jocic MM, Djurdjevic L, Mijatovic M and Karadzic B: An ethnobotanical study on the usage of wild medicinal herbs from Kopaonik Mountain (Central Serbia). Journal of Ethnopharmacology 2007; 111(1): 160-175.
127. Govindarajan M: Chemical composition and larvicidal activity of leaf essential oil from *Clausena anisata* (Willd.) Hook. f. ex Benth (Rutaceae) against three mosquito species. Asian Pacific Journal of Tropical Medicine 2010; 3(11): 874-877.
128. Shukla A, Bukhariya V, Bajaj J and Charde R: *Achyranthes aspera* linn. (chirchira): a magic herb in folk medicine. International Journal of Biomedical and Advance Research 2011; 2(6): 372-376.
129. Singh S, Singh TD, Singh VP and Pandey VB: Quaternary Alkaloids of *Argemone mexicana*. Pharmaceutical Biology 2010; 48(2): 158–160.
130. Bhattacharjee I, Chatterjee SK, Chatterjee S and Chandra G: Antibacterial potentiality of *Argemone mexicana* solvent extracts against some pathogenic bacteria. Memorias do Instituto Oswaldo Cruz 2006; 101(6): 456-460.
131. Siddiqui BS, Ali ST, Rasheed M and Kardar MN: Chemical Constituents of the Flowers of *Azadirachta indica*. Helvetica Chimica Acta 2003; 86(8): 2787-2796.
132. Koul O, Isman MB and Ketkar CM: Properties and uses of neem, Azadirachta indica. Canadian Journal of Botany 1990; 68(1): 1-11.
133. Imanshahidi M and Hosseinzadeh H: Pharmacological and therapeutic effects of Berberis vulgaris and its active constituent, berberine. Phytotherapy Research 2008; 22(8): 999-1012.
134. Hart NK, Johns SR, Lamberton JA, Loder JW and Nearn RH: New imidazole alkaloids from Cypholophus friesianus (Urticaceae). The structures and synthesis of cypholophine and O-acetylcypholophine. Australian Journal of Chemistry 2000; 24(4): 857-864.
135. Samant and Rawal, D: Diversity, extraction and status of fodder species in Askot Wildlife Sanctuary, West Himalaya, India. International Journal of Biodiversity Science & Management 2006; 2(2): 29-42.
136. Moustafa AM, Ahmed SH, Nabil ZI, Hussein AA and Omran MA: Extraction and phytochemical investigation of *Calotropis procera*: effect of plant extracts on the

activity of diverse muscles. Pharm Biol 2010; 48(10): 1080-1190.
137. Iqbal Z, Lateef M, Jabbar A, Muhammad G and Khan MN: Anthelmintic activity of *Calotropis procera* (Ait.) Ait. F. flowers in sheep. Journal of Ethnopharmacology 2005; 102(2): 256-261.
138. Tundis R, Loizzo MR, Menichini F, Bonesi M, Conforti F and Statti G: Comparative study on the chemical composition, antioxidant properties and hypoglycaemic activities of two *Capsicum annuum* L. cultivars (*Acuminatum small* and Cerasiferum). Plant Foods Hum Nutr 2011; 66(3): 261-269.
139. Kwon YS, Lee JM, Yi GB, Yi SI, Kim KM and Soh EH: Use of SSR markers to complement tests of distinctiveness, uniformity, and stability (DUS) of pepper (*Capsicum annuum* L.) varieties. Mol Cells 2005; 19(3): 428-435.
140. Daniel M: Medicinal plants: Chemistry and properties, New Hempshire. Science publishers; 2005: 174-75.
141. Yadav JP, Arya V, Yadav S, Panghal M, Kumar S and Dhankhar S: *Cassia occidentalis* L.: A review on its ethnobotany, phytochemical and pharmacological profile. Fitoterapia 2010; 81(4): 223-30.
142. Mir SR, Ali M and Kapoor R: Chemical composition of essential oil of *Cinnamomum tamala* Nees et Eberm. Leaves. Flavour and Fragrance Journal 2000; 19(2): 112-114.
143. Rao CV, Vijayakumar M, Sairam K and Kumar V: Antidiarrhoeal activity of the standardised extract of *Cinnamomum tamala* in experimental rats. Journal of Natural Medicines 2008; 62(4): 396-402.
144. Kiss AS, Markus MT and Sass M: Chemical Composition of Citrus Fruits (Orange, Lemon, and Grapefruit) with Respect to Quality Control of Juice Products. Nutraceutical Beverages 2009; 3: 24-34.
145. Rio JAD, Fuster MD, Gomez P, Porras I, Lidon AG and Ortuno A: Citrus Limon: A Source of Flavonoids of Pharmaceutical Interest. Food Chemistry 2004; 84(3): 457-461.
146. Gao Y, Huang H, Xu H, Diao Y and Dong Z: Studies on the chemical constituents of *Citrus medica* var. sarcodactylis. Zhong Yao Cai 2002; 25(9): 639-640.
147. Arias BA and Laca LR: Pharmacological properties of citrus and their ancient and medieval uses in the Mediterranean region. Journal of Ethnopharmacology 2005; 97(1): 89-95.
148. Ahmad S, Ali M, Ansari SH and Ahmed F: Chemical constituents from the rhizomes of *Curcuma aromatica* Salisb. Der Pharma Chemica 2011; 3(2): 505-511.
149. Huang KX, Tao ZM, Zhang AJ, Peng SL and Ding LS: Studies on chemical constituents of *Curcuma aromatica* salisb. Zhongguo Zhong Yao Za Zhi 2000; 25(3): 163-165.
150. Bhavana D, Dwivedi S, Dubey K and Joshi H: Pharmacognostical and antimicrobial activity of leaf of *Curcuma angustifolia* Roxb. International Journal of Drug Discovery and Herbal Research 2012; 1(2): 46-49.
151. Peraza-Sanchez SR, Chai HB, Shin YG, Santisuk T, Reutrakul V and Farnsworth NR: Constituents of the leaves and twigs of *Ficus hispida*. Planta Med 2002; 68(2): 186-188.
152. Ali M and Chaudhary N: *Ficus hispida* Linn: A review of its pharmacognostic and ethnomedicinal properties. Pharmacogn Rev 2011; 5(9): 96-102.
153. Haraguchi M, Gorniak SL, Ikeda K, Minami Y, Kato A and Watson AA: Alkaloidal Components in the Poisonous Plant, *Ipomoea carnea* (Convolvulaceae). J. Agric. Food Chem 2003; 51(17): 4995-5000.
154. . Austin DF: *Ipomoea carnea* Jacq. vs. *Ipomoea fistulosa* Mart. ex Choisy. Taxon 1977; 26(2-3): 235-238.
155. Augustus GDPS, Jayabalan M and Seiler GJ: Evaluation and bioinduction of energy components of *Jatropha curcas*. Biomass and Bioenergy 2002; 23(3): 161-164.
156. Openshaw K: A review of *Jatropha curcas*: an oil plant of unfulfilled promise. Biomass and Bioenergy 2000; 19(1): 1-15.
157. Gulcan O and Ali KM: Physical and chemical composition of some walnut (*Juglans regia* L) genotypes grown in Turkey. Grasas y Aceites 2005; 56(2): 141-146.
158. Wang YN, Wang HX, Shen ZJ, Zhao LL, Clarke SR and Sun JH: Methyl palmitate, an acaricidal compound occurring in green walnut husks. J Econ Entomol 2009; 102(1): 196-202.
159. Rana VS, Juyal JP, Rashmi and Blazquez MA: Chemical constituents of the volatile oil of *Murraya koenigii* leaves. International Journal of Aromatherapy 2004; 14(1): 23-5.
160. Bhandari PR: Curry leaf (Murraya koenigii) or Cure leaf: Review of its curative properties. J Med Nutr Nutraceut 2012; 1: 92-7.
161. Olawore NO, Ogunwande IA, Ekundayo O and Adeleke KA: Chemical composition of the leaf and fruit essential oils of Murraya paniculata (L.) Jack. (Syn. Murraya exotica Linn.). Flavour and Fragrance Journal 2005; 20(1): 54-56.
162. Gilman EF: University of Florida Cooperative Extension Service. Institute of Food and Agricultural Sciences; 2007.
163. Wakeling LT, Mason RL, D'Arc y BR and Caffin NA: Composition of Pecan Cultivars Wichita and Western Schley [*Carya illinoinensis* (Wangenh.) K. Koch] Grown in Australia. J. Agric. Food Chem 2001; 49(3): 1277-1281.
164. Osorio E, Flores M, Hernández D, Janeth Ventura J, Rodriguez R and Aguilar CN: Biological efficiency of polyphenolic extracts from pecan nuts shell (Carya Illinoensis), pomegranate husk (Punica granatum) and creosote bush leaves (Larrea tridentata Cov.) against plant pathogenic fungi. Industrial Crops and Products 2010; 31(1): 153-157.
165. 165. Ullah Z, Mehmood R, Imran M, Malikb A and Afzal RA: Flavonoid constituents of Pistacia integerrima. Nat Prod Commun 2012; 7(8): 1011-1014.
166. 166. Ahmad NS, Farman M, Najmi MH, Mian KB and Hasan A: Pharmacological basis for use of Pistacia integerrima leaves in hyperuricemia and gout. Journal of Ethnopharmacology 2008; 117(3): 478-482.
167. Pant S and Samant SS: Ethnobotanical observations in the Mornaula Reserve Forest of Kumoun, West Himalaya, India. Ethnobotanical Leaflets 2010; 14: 193.
168. Ming Y, Wang J, Yang J and Liu W: Chemical Constituents of *Plumbago Zeylanica* L. Advanced Materials Research 2011; 1662: 308-310.
169. Dang GK, Parekar RR, Kamat SK, Scindia AM and Rege NN: Anti-inflammatory activity of *Phyllanthus emblica*, *Plumbago zeylanica* and *Cyperus rotundus* in acute models of inflammation. Phytotherapy Research 2011; 25(6): 904-908.
170. Poonam V, Raunak, Kumar G, Reddy LCS, Jain R and Sharma SK: Chemical constituents of the genus Prunus and their medicinal properties. Curr Med Chem 2011; 18(25): 3758-3824.
171. Uniyal SK, Singh KN, Jamwal P and Lal B: Traditional use of medicinal plants among the tribal communities of Chhota Bhangal, Western Himalaya, Journal of Ethnobiology and Ethnomedicine 2006, 2: 14.
172. Begum S, Hassan SI, Ali SN and Siddiqui BS: Chemical constituents from the leaves of *Psidium guajava*. Nat Prod Res 2004; 18(2): 135-140.
173. Gutierrez RM, Mitchell S and Solis RV: Psidium guajava: a review of its traditional uses, phytochemistry and pharmacology. J Ethnopharmacol 2008; 117(1): 1-27.
174. Celik A, Kartal AA, Akdogan A and Kaska Y: Determining the heavy metal pollution in Denizli (Turkey) by using *Robinio pseudo-acacia* L. Environment International 2005; 31(1): 105-112.

175. Varga L: Effect of acacia (*Robinia pseudo-acacia* L.) honey on the characteristic microflora of yogurt during refrigerated storage. International Journal of Food Microbiology 2006; 108(2): 272-275.
176. 176. Borges LDS, Vieira MAR, Marques MOM, Vianello F and Lima GPP: Influence of Organic and Mineral Soil Fertilization on Essential Oil of *Spilanthes oleracea* cv. American Journal of Plant Physiology 2012; 7: 135-412.
177. Tiwari KL, Jadhav SK and Joshi V: An updated review on medicinal herb genus Spilanthes. Journal of Chinese Integrative Medicine 2011; 9(11):1170-1179.
178. Khokra SL, Prakash O, Jain S, Aneja KR and Dhingra Y: Essential Oil Composition and Antibacterial Studies of *Vitex negundo* Linn. Extracts. Indian J Pharm Sci 2008; 70(4): 522-526.
179. Zheng CJ, Tang WZ, Huang BK, Han T, Zhang QY and Zhang H: Bioactivity-guided fractionation for analgesic properties and constituents of *Vitex negundo* L. seeds. Phytomedicine 2009; 16(6-7): 560-567.
180. Luong NX, Hac LV and Dung NX: Chemical composition of the leaf oil of *Zanthoxylum alatum* Roxb. from Vietnam. Journal of Essential Oil Bearing Plants 2003; 6(3): 179-184.
181. Kala CP, Farooquee NA and Dhar U: Traditional Uses and Conservation of Timur (*Zanthoxylum armatum* DC.) through Social Institutions in Uttaranchal Himalaya, India. Conservat Soc 2005; 3(1): 224-230.
182. 182. Nigam PK. Adverse Reactions to Cosmetics and Methods of Testing. Indian Journal of Dermatology Venereology and Leprology 2009; 75(1): 10-9.
183. 183. Nigam PK and Saxena AK: Allergic contact dermatitis from henna. Contact Dermatitis 1988; 55-56.
184. 184. Johansen JD, Rastogi SC and Menne T: Threshold responses in cinnamic-aldehyde-sensitive subjects: Results and methodological aspects. Contact Dermatitis 1996; 34: 165-171.
185. 185. De Groot AC and Frosch PJ: Adverse reactions to fragrances: A clinical review. Contact Dermatitis 1997; 36: 57-86.
186. Bridges B: Fragrance: emerging health and environmental concerns. Flavour Fragrances J 2002; 17: 361-371.
187. Wilson CL, Ferguson DJ and Dawber RP: Matting of scalp hair during shampooing: A new look. Clin Exp Dermatol 1990; 15: 139-142.
188. LoPresti P, Papa CM and Kligman A: Hot comb alopecia. Arch Dermatol 1968; 98: 234-238.
189. Schafer T, Bohler E, Ruhdorfer S, Weigl L, Wessner D and Filipiak B: Epidemiology of contact allergy in adults. Allergy 2001; 56: 1192-1196.

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