



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA):IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Review Article

Herbal Cosmetic: An Best Approach For Treating Skin Disorders

Dhanashri Lakhe^{1*}, Smita Aher², R. S Bachhav³

¹Department of Quality Assurance technique, R. G. Sapkal College of Pharmacy, Kalyani Hills, Anjaneri, Trimbakeshwar Road, Nashik, Maharashtra 422213

²Department of Pharmaceutical Chemistry, R. G. Sapkal College of Pharmacy, Kalyani Hills, Anjaneri, Trimbakeshwar Road, Nashik, Maharashtra 422213.

³Department of Pharmacology, R. G. Sapkal College of Pharmacy, Kalyani Hills, Anjaneri, Trimbakeshwar Road, Nashik, Maharashtra 422213.

ARTICLE INFO

Received: 21 Jan 2024

Accepted: 23 Jan 2024

Published: 24 Jan 2024

Keywords:

Cosmetic, Herbal cosmetic,
Herbal plants

DOI:

10.5281/zenodo.10562930

ABSTRACT

India is a focus for development of Ayurveda, Unani, Siddha, Homoeopathy, and other natural herbs-based health knowledge (AYUSH). Ayush Pharmaceutical industriousness having great possible and contingency for saundarya prasadka group (herbal costumer) development in future. Saundarya prasadak are the formulations, which represent cosmetic base which related with known Ayurveda, Siddha and Unani (ASU) medicines active component. In traditional period people were used lepa, Alepa, Pralepa, Udavartan, etc. for beauty purpose. A herb is a plant or plant extract which obtained naturally from nature including leaves, bark, seeds, stems and flowers which are full of nourishing, nutritional and healing elements. Cosmetics alone cannot take care of skin and others body parts; it requires association of active constituents. Herbal cosmetics have important fashion ability among the population. Herbal cosmetics products claimed to have efficacy and natural adequacy due to routine use in day-to-day life and avoid the adverse effects which are generally seen in synthetic products. The current article deals with the literature of herbal cosmetic and plants related to present status, treatment of ailments and properties related to herbal cosmetic and plants.

INTRODUCTION

The word cosmetic came from the Greek word “Kosm tikos” meaning having the power, arrangement, and skill in decorating¹. Herbal cosmetics are also called “natural cosmetics”. The

demand for herbal drugs is increase due to lack of their side effects². At the beginning of civilization; there were no fancy fairness creams or any other cosmetics surgeries. Raymond Reed, launching member of the US society of cosmetics druggist in

*Corresponding Author: Dhanashri Lakhe

Address: Department of Quality Assurance technique, R. G. Sapkal College of Pharmacy, Kalyani Hills, Anjaneri, Trimbakeshwar Road, Nashik, Maharashtra 422213

Email ✉: dhanashrilakhe777@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



1961 originally used the term cosmeceuticals. He used the word cosmeceuticals to explain active and science-based cosmetics. The term cosmeceuticals were further used by Dr Albert Kligman in the time 1984 to relate the substances that have both cosmetic and therapeutic benefits³. Cosmeceuticals are cosmetic and pharmaceutical intended to enhance beauty and health through constituents that impact the skin's natural texture and body function⁴. In the beginning, only the information about nature was aggregated in the Ayurveda⁵. The only factor they had to calculate was the knowledge of nature collected in the Ayurveda. Ayurveda knowledge had employed numerous herbs to form cosmetics for beautification and protection from external effects. The natural content within botanicals does not cause any side effects on body; rather enriches the body with nutrients and other useful minerals. As per Drug and Cosmetics Act cosmetics are defined as particles intended to be rubbed, poured or spread on, introduced into or applied to the body or any part of body for cleaning, beautifying, promoting attractiveness, or altering the appearance. The cosmetic does not come under the practice of drug license. There is a common belief that chemical based cosmetics are dangerous to the skin and this increased awareness among consumers for herbal products. Therefore, demand for natural products and natural extract in cosmetics formulations increases. The increased demand for natural products has created new avenues in cosmeceutical market. Drug and Cosmetics Act specifies that herbs and essential oil employed in cosmetics must not claim to access beyond the skin layers of the body nor should have any therapeutical side-effects⁶. Herbal cosmetics, refere as products, are formulated, using permissible cosmetic constituents to make base in which one or further herbal constituents are used to give defined cosmetic benefits, shall be called as "Herbal Cosmetics". The history of the herbal

cosmetics industry from about six centuries back includes veritably dark chapters in European and Western countries. The early mixture that was used in Europe for purpose, were so potent that frequently led to paralyse, strokes, or death⁷. There are wide variety of herbal cosmetics that are produced and are generally used for daily purposes. Natural cosmetics are composed entirely of herbs and bushes, which is their best quality. The natural content in the herbs doesn't have any side effect on the body; rather enhances the body with, supplements and other helpful minerals. The plants used in herbal cosmetics, such as saffron (Kesar), ashwagandha, and sandalwood (Chandan), are extended to contain healthy nutrients and all the vibrant necessary ingredients. It is estimated that flavour's areas are employed far and wide, although only about 70 spices are officially honoured. The global herbal industry is currently estimated to be worth more than US \$10 billion and growing at a pace of 3% per year due to rising demand for ethnic foods, natural species, and innovations in beverage goods as well as increased reused food consumption. Regarding manufacturing and consumption, the biggest requests are in Europe, followed by Asia⁸. Herbal medicine includes herbs, herbal medications, and finished herbal products. In some countries, herbal drugs may contain, by tradition, natural organic or inorganic active constituents that are not of herbal plant origin (e.g., animal and mineral materials). Raw plant components such as leaves, flowers, fruit, seeds, stalks, wood, roots, rhizomes, or other plant parts, whether whole, broken, or powdered, are included in the category of herbs. Along with herbs, herbal materials also include fresh juices, gums, essential oils, resins, and dry powdered herb material. The material may be processed using unique methods in some nations, such as steaming, roasting, or stir-baking it with honey, alcoholic beverages, or other ingredients. Finished herbal products refer to



herbal medications made from one or more herbs, but the term "admixture herbal product" can also be used, if further more than one ingredient is used. They also include medicines made by steaming or heating herbal ingredients in alcohol, honey, or through other processes. Still, finished products or herbal products that have been masked with excipients are not included.

Present status

Today herbalists, believe to help people make their good health with the help of natural sources. herbs are considered to be food rather than medicine because they are complete, all- natural, and pure, as nature intended. When herbs are taken in the body, the body starts to get clean, it starts purifying itself. Unlike chemically synthesized, largely concentrated medicines that may produce numerous side effects, can effectively realifing the body. Herbs do not give instant cures, but rather offer a way to put the body in a proper tune with nature9-10.

Advantages of Herbal Cosmetics over Synthetic

Herbal cosmetics are the ultramodern trend in the field of beauty and fashion. These agents are gaining popularity. As currently, most women prefer natural products over chemicals for their particular care to enhance their beauty as these products supply the body with nutrients and enhance health and provide satisfaction because they lack synthetic chemicals and have considerably fewer side effects than synthetic cosmetics. The following are some benefits of utilising natural cosmetics that make them preferable to synthetic ones.

1. Natural products¹¹.
2. Safe to use¹².
3. Compatible with all skin types¹³.
4. Wide selection to choose from¹⁴.
5. No side effects.
6. Not tested on animals.

Marketed products of Herbal Cosmetics⁸

Various retailed skincare products of herbal cosmetic are given in the table below.

Table 1: Herbal skincare product.

Sr. No	Products	Product Name
1	Face pack	Amazine Herbal Scars Face Pack
2	Massage gel	Amazine herbal fruit massage gel
3	Gel	Dr . Jain’s Forest cucumber
4	Face wash	Combi neem Facewash
5	Cream	Vicco turmeric cream
6	Face scrub	Aloe indica face scrub
7	Cold cream	Gayatri papaya & strawberry cold cream
8	Face powder	Agarwal tulsi face powder

Table 2: Herbal hair care products

Sr. No.	Products	Product Name
1	Shampoo	Agarwal honey aloe vera shampoo
2	Anti-dandruff shampoo	Himalaya antidandruff shampoo
3	Hair gel	Aroma sikakai & tulsi hair gel
4	Hair conditioner	Vedico aloeare hair conditioner
5	Hair color	Crown Heena hair colors
6	Hair oil	Prakriti sesam gold hair oil

Table 3: Herbal Lip Care

Sr. No.	Products	Product Name
1	Lip gloss	Komet kozmetik lip gloss
2	Lip plumper	Ruhi lip plumper
3	Lipstick	Kamey lipstick
4	Lip balm	Pallido lip balm

Table 4: Herbal Eyecare Products

Sr. No.	Products	Product Name
1	Eye shadow	Matrix eye shadow
2	Eyeliners	Tonnie eyeliners
3	Mascaras	Uniclor mascaras
4	Eye pencils	Organic rose eye pencils
5	Perfumes	Devy perfumes
6	Deodorants	Always deodorants
7	Soaps	Carmino herbal soaps
8	Foundations	Carmine foundations

Herbal for various skin problem

Table 5: Skin problem and herbs²

Sr. No.	Skin problem	Herbs
1	Dry skin	Coconut oil, Sunflower oil, Aloe Vera
2	Anti-aging	Carrot, Ginkgo, Rhodiola Rosea
3	Dandruff	Henna, Neem, Shikakai
4	Skin protection	Green Tea, Calendula, Turmeric
5	Haircare	Amla, Coconut oil, Almond oil, Arachis Oil, Castor oil, Eucalyptus Oil, Rose oil, Citronella oil, Olive oil, Sunflower oil
6	Antioxidant Activities	Tamarind, Pomegranate, Liquorice

LIST OF HERBS

1. Amla

Scientific name: Emblica Officinalis Linn.

Family: Euphorbiaceae.



Fig 1. Fruit of Amla

Chemical Constituents:

Vitamin C, phyllembin, gallic acid 5% and phyllemblic acid 6.3%, 5% tannin, lipids 6 %, and emblicol, oil are linoleic (44.0%), palmitic (2.99%) oleic (28.40%), linolenic (8.78%), myristic acid (0.95). stearic (2.15%), and Proteolytic and lipolytic enzymes¹⁵.

Traditional uses:

Fruit extract possesses antioxidant properties, Treat skin pigmentation, good skin tone, prevents dandruff, Tonic to the brain, Used in diarrhoea and convalescent stages of typhoid and other fevers¹⁶.

Pharmacological activity:

Ulcer protective and healing¹⁷, Inhibition of lipid peroxidation¹⁸, Antioxidant, cytoprotective and

immunomodulating¹⁹, Anti-tumour²⁰, Cough suppression²¹, Anti snake venom²², Hypolipidemic and ant atherosclerotic²³, Anti-radiatio²⁴, Maintaining homeostasis and increasing resistance²⁵, Lowering of serum enzymes²⁶, Inhibition of hepatotoxicity²⁷, Inhibition of hyperthermia and writhing²⁸, Antibacterial²⁹, Anti-inflammatory³⁰, Antimicrobial³¹, Radical scavenging³², Anti-hepatocarcinogenic³³, Memory elevating³⁴.

2. Coriander

Scientific name: Coriandrum sativum L.

Family: Umbelliferae



Fig 2. Seeds of coriander

Alkaloids, including oxycanthine, epiberberine, palmatine, dehydrocaroline, jatrorhizine, columbamine, karachine, dihydrokarachine, taximaline, and oxyberberine, are among the chemical components.³⁵⁻³⁶

Traditional uses:

Treat rashes and skin burn, antibacterial, detoxifier, act as a stimulant, aromatic and carminative used as a gargle in sore throat and stomatitis, headache, purgatives, used as a flavour in various commercial foods. Act as a hemostat and thus stop bleeding in epistaxis³⁷.

Pharmacological Action:

The anxiolytic³⁸, Antidepressant³⁹, Sedative-hypnotic⁴⁰, Anticonvulsant⁴¹, Effect on memory⁴², Orofacial dyskinesia⁴³, Neuroprotective⁴⁴, Antibacterial, antifungal, anthelmintic and insecticidal⁴⁵, Antioxidant⁴⁶, Hypolipidemic⁴⁷, Anti-inflammatory and analgesic⁴⁸, Antidiabetic⁴⁹, Mutagenic and antimutagenic⁵⁰, Anticancer⁵¹, Cardiovascular⁵², Gastrointestinal⁵³, Hepatoprotective⁵⁴, Deodorizing⁵⁵,

Detoxification⁵⁶, Diuretic⁵⁷, Dermatological⁵⁸, Effect on fertility⁵⁹, Anti-inflammatory⁶⁰.

3. Daruharidra

Scientific name: Berberis aristata

Family: Baeberidaceae



Fig 3. Stem of Daruharidra

Chemical constituents:

alkaloids which are berberine, Berberine, oxycanthine, epiberberine, palmatine, dehydrocaroline, jatrorrhizine, columbamine, karachine, dihydrokarachine, taximaline, oxyberberine, aromoline. alkaloids, pakistanine, 1-O methyl pakistanine, pseudopalmatine chloride and pseudoberberine chloride⁶¹.

Traditional uses:

Beneficial for skin problems like inflammation and psoriasis, Act as a tonic and also in the preparations of formulations for treating eye diseases, jaundice, diarrhoea, syphilis, chronic rheumatism, and urinary disorders⁶².

Pharmacological Action:

Antidiabetic⁶³, Antidepressant⁶⁴, Anti-inflammatory⁶⁵, Antimicrobial⁶⁶, Immunomodulatory⁶⁷, Influence on T-Cell Mediated Immunity⁶⁸, Hepatoprotective⁶⁹, Ocular Trachoma Infections⁷⁰, Cardiovascular Effects, Antihyperlipidemic activity⁷¹, anti-tumor⁷².

4. Haritaki

Scientific name: Terminalia chebul

Family: Combretaceae



Fig 4. Haritaki fruit

Chemical constituents: tannins contain phenolic carboxylic acids like gallic acid, ellagic acid, chebulic acid, and Gallo tannins, Ellagitannin such as punacalagin, casuarinin, corilagin, and terchebulin, and others such as chebulanin, neochebulinic acid, chebulagic acid and chebulinic acid. The tannin content varies with the geological variation. Flavonol glycosides, triterpenoids, coumarin conjugated with gallic acid called chebulin⁷³⁻⁷⁴.

Traditional uses:

Fever, cough, diarrhoea, gastroenteritis, skin diseases, candidiasis, urinary tract infection and wound infections, and Antibacterial Activity⁷⁵

Pharmacological Action:

Wound healing⁷⁶, Antimicrobial⁷⁷, Antibacterial and antifungal⁷⁸, Antihyperglycemic effect⁷⁹, Antioxidant⁸⁰, Anticlastogenic Effect⁸¹, Immunomodulatory⁸², Radiation protection⁸³, Anti caries agent⁸⁴, Gastrointestinal motility⁸⁵, Cardioprotective⁸⁶, Antiaging⁸⁷, Anti lithiatic⁸⁸, Inhibition of cancer cell growth⁸⁹, Bactericidal activity⁹⁰, Antiviral, Radio protecting Ability and Phytochemical Analysis⁹², Anti-ulcerogenic⁹³.

5. Jatamansi

Scientific name: Nardostachys jatamansi

Family: Valerianaceae



Fig 5. Roots of Jatamansi

Chemical constituents:

Nardostachone, Tetrahydronardostachone, β - Maaliene, Tetrahydronardostachol, Tetrahydronardostachane, Jatamansinone, Nardol, Angelcin, Jatamansic Acid, Seychellene, Seychelane, Valernanone, β -Cedrene, Tricyclovetivene,

Gama-Patchoulene, Seychellanol, Seychellanodiol, Alpha -Patchoulene, Beta -Patchoulene, Patchouli alcohol, Norseychellanone, Dihydrojatamansin, Jatamol, Jatamansonol⁹⁴⁻⁹⁵.

Traditional uses:

Acting as a tonic, stimulant, and antiseptic. It has antibacterial, antifungal, antiviral, and antioxidant effects. Other treatments of this drug may include headache, excitement, menopausal symptoms, flatulence, epilepsy, fungal disease, hyperlipidemia, and intestinal colic⁹⁶.

Pharmacological action:

Antioxidant Activity⁹⁷, Anti Neuroinflammatory Effects⁹⁸, Premenstrual Syndrome⁹⁹, Anticonvulsant and Neurotoxicity Profile¹⁰⁰, chronic fatigue syndrome¹⁰¹, Anxiety and Insomnia¹⁰², Cardiac Function¹⁰³, Anti-Fungal¹⁰⁴, Anticancer¹⁰⁵, Hepatoprotective¹⁰⁶, Antidiabetic action¹⁰⁷, Neuroprotective¹⁰⁸, Nootropic movement¹⁰⁹.

6. Khus-Khus Grass

Scientific name: Chrysopogon zizanioides

Family: Poaceae



Fig 6. Khus grass roots

Chemical constituents:

70–90% of oil components with varying ratios of hydrocarbons, aldehydes, alcohols, esters, ketones, acids, Khusimol, vetivones, isovelencenol, and zizanioic acid, Khusinol, Epiglobulol, Spathulenol, Khusol, Khusimone, nootkatone acid, and Khusinol acetate, Methyl isovalencenate, Selina-4,7-diene, β -Selinene, γ -Selinene, δ -Selinene, Cascarilladiene, β -cyperone, β -agarofuran, β -Eudesmol, camphor, α -eudesmol, γ -eudesmol¹¹⁰⁻¹¹¹.

Traditional uses:

Reduce the effect of heat, it is specially use for oily skin and acne, relieves genital disorders such as urinary calculi, dysuria, and spermatorrhoea reduces fatigue, acts as cardioprotective, and cures anorexia, diarrhoea, asthma, tuberculosis, and cough¹¹²

Pharmacological action:

Anticancer¹¹³, antimicrobial¹¹⁴, Anticonvulsant¹¹⁵, Antioxidant¹¹⁶, Anti-inflammatory¹¹⁷, Anti-melanogenesis¹¹⁸, Mosquito repellent¹¹⁹, Effect on anxiety¹²⁰, Acaricidal¹²¹, Hypoglycaemic¹²², Antidepressant effect¹²³, Protective effect against Cisplatin- induced toxicity¹²⁴, Antidiuretic activity¹²⁵, Sedative activity¹²⁶, Antifungal activity¹²⁷.

7. Kushta

Scientific name: Saussurea lappa C B Clarke.

Family: Compositae

Fig 7. Kushta Roots

Chemical constituent:

Resins, alkaloids, a solid resin, salt of valeric acid, astringent and ash that contains manganese, Camphene 0.04%, phellandrene 0.4%, terpene alcohol 0.2%, A- costene 6.0%, B-costene 6.0%, aplotaxene 20.0%, costol 7.0%, di-hydrocostus lactone 15.0%, costus lactone 10.0%, costic acid 14%, Glycoside¹²⁸.

Traditional uses:

Diuretic, Anthelmintic, Skin diseases, Jaundice, Asthama, Malaria, Leprosy, Aromatic stimulant, Antiseptic¹²⁹.

Pharmacological Action:

Anti-spasmodic activity¹³⁰, Anti-inflammatory¹³¹, anti- cancer/Antitumor¹³², Hepatoprotective¹³³, Anti-ulcer and sialagogic¹³⁴, Immunomodulator¹³⁵, Hypolipidemic¹³⁶, Antiparasitic¹³⁷, Antifeedant¹³⁸, CNS-Depressant¹³⁹.

8. Liquorice

Scientific name: Glycyrrhiza glabra L.

Family: Fabaceae



Fig 8. Liquorice Root

Chemical constituents:

Glycyrrhizin, Liquiritin, Isoliquiritin, Liquiritigenin, Isoliquiritigenin, Neoisoliquiritin, Licoflavonol, Isolicoflavonol, Licochalcone A, LicochalconeB, Licochalcone C, Licochalcone D, Licoricone, Glabridin, Glabrene, Glabranin, Uralenin, Licocoumarin A, Kanzonol R140.

Traditional uses:

Protecting skin from premature ageing, protect skin from sunburn, fever, hypertension, gastric ulcers, paralysis, rheumatism, sexual weakness, hemorrhagic diseases, respiratory diseases, viral cough, viral hepatitis, inflammation, and other diseases¹⁴¹.

Pharmacological action:

Anti-inflammatory Effects¹⁴², Antiviral Effects¹⁴³, ACE2 Inhibition¹⁴⁴, Antibacterial, and Antifungal Effects¹⁴⁵, Immunomodulatory Effects¹⁴⁶, Anti- Pulmonary Fibrosis Effects¹⁴⁷, Protection of Other Organs¹⁴⁸.

9. Lodhra

Scientific name: Symplocos racemosa

Family: Symplococaceae



Fig 9. Lodhra Bark

Chemical constituents:

Flavanol glycoside, Alkaloids loturine, Isoloturine, Oleonealic acid, Betulinic acid, Ellagic acid, Beta-Sitosterol, Loturine, Salireposide, Saponin, Tannins, Phenol¹⁴⁹.

Traditional uses:

Prevent wrinkles, control acne, mainly used for snakebite and scorpion sting, treatment of diarrhea, dysentery, spongy gum, bleeding, leprosy, dropsy, abortion, miscarriages, ulcers of the vagina, uterine disorders, arrests, uterine hemorrhages, abnormal secretions, aphrodisiac¹⁵⁰.

Pharmacological actions:

The anti-acne effect¹⁵¹, Anti-inflammatory and Analgesic¹⁵², Antioxidant¹⁵³, Antibacterial¹⁵⁴.

10. Manjistha

Scientific name: Rubia cordifolia Linn

Family: Rubiaceae



Fig 10. Manjistha Stem

Chemical constituents:

Antraquinones, Naphthoquinones, Cyclic Hexapeptides, Triterpenoids, organic acids, polysaccharides, rubilactone, rubiasin A-C, β -sitostenone, β - sitosterol, 5-methoxygeniposidic acid, 6-methoxygeniposidic acid¹⁵⁵.

Traditional uses:

Acne, infection, anti-inflammatory, antibacterial, Hematemesis, epistaxis, flooding, spotting, traumatic bleeding, amenorrhea caused by obstruction, pain caused by injuries from falls¹⁵⁶.
Pharmacological Actions: Antitumor¹⁵⁷, Immunomodulation¹⁵⁸, Anti-Inflammation¹⁵⁹, Neuroprotection¹⁶⁰, Antioxidation¹⁶¹, Toxicology¹⁶², Anti-osteoclastogenesis¹⁶³.

11. Masoor

Scientific name: Lens esculenta

Family: Papilionaceae



Fig 11. Masoor Seeds

Chemical constituent:

Isoleucine, Leucine, Lysine Methionine, Phenylaniline + tyrosine, Threonine, Tryptophan, Valine, Histidine Limiting amino acid, Sulphur amino acids, Crude protein Total lipids, Total carbohydrates, Crude fiber, Ash, Sodium, Potassium Phosphorus, Calcium, Iron Copper, Zinc, Manganese A164.

Traditional uses:

Fever, eye diseases, tan removal, pain, Antioxidant165.

Pharmacological Actions:

Anti-hyperlipidemic, Anti-diarrheal, Anti spasmotic, Bronchodilator, Vasodilator, Antioxidant, Nephro Protective166.

12. Nutgrass

Scientific name: Cyperus rotundus L.

Family: Cyperaceae



Fig 12. Rhizomes of Nutgrass

Chemical constituents:

α -cyperolone, β -cyperone, p -cymol, calcium, camphene, copaene, cyperene, cyperenone, cyperol, cyperolone, caryophyllene, cyperotundone, d-copadiene, d- epoxyguaiene, isocyperol, isokobusone, kobusone, limonene, linoleic-acid, linolenic acid, mustakone, myristic acid, oleanolic acid, oleic acid, β -pinene, patchoulone, rotundene, rotundenol, rotundone, α -rotunol, β -rotunol, β -selinene, selinatriene, sitosterol, stearic acid, sugeonol, and sugetriol, f alkaloids, flavonoids, glycosides, phenols, tannins, steroids, starch and many novel sesquiterpenoid167-168.

Traditional uses:

Reduce skin aging, pigment, melanin, treatment of stomach and bowel disorders and inflammatory diseases analgesic, antibacterial169.

Pharmacological action: Antioxidant property170, Wound healing171, Anti-inflammator172, Antidiarrheal173, Antihyperglycemic174, Antiplatelet175, Gastroprotective176, Anti-allergic177, Neuroprotectivem178, Antiviral179.

13. Nagakesar

Scientific name: Mesua ferrea Linn

Family: Guttiferae



Fig 13. Nagakesar Buds

Chemical constituents:

Mesuol, Mammeisin, Mesuagin, Mammeigin, Mesuabixanthone A and Mesuabixanthone B, Mesuaferrol, Mesuaxanthone A, Mesuaxanthone B, Euxanthone, Mesuaferrone A, Mesuaferrone B, Mesuanic acid180.

Traditional uses:

Antiseptic, purgative, blood purifier, worm control, tonic properties to treat fever, cold, asthma and as carminative, expectorant, cardiotoxic, diuretic and antipyretic, agent antidotes for snakebite and scorpion sting, cutaneous infection, sores, scabies, wounds and rheumatism, stomachic, expectorant and astringent180.

Pharmacological action:

Disinfection studies181, Antioxidant and hepatoprotective182, Analgesic183, Antispasmodic184, Immunomodulatory185, Anti-convulsant186, Anti-ulcer187, Anti-microbial188, Anti-arthritis180.

14. Neem

Scientific name: Azadirachta indica

Family: Meliaceae



Fig 14. Neem Leaves

Chemical constituents:

Nimbin, Nimbin, Nimbidinin, Nimbolide, and Nimbidic acid. Nimbidin and sodium Nimbidate, tannin, tricyclic diterpenoids, margolone, margolonone, cyclic trisulphide, tetrasulphide¹⁸⁹.

Traditional uses:

antifungal, provide Cooling effect, Antiarthritis, antiulcer effects, antihistamine, reduced blood glucose level, antifungal activity against, diuretic agent, and antimalarial activity¹⁹⁰.

Pharmacological action:

The analgesic effect¹⁹¹, Antifungal effects¹⁹², Antibacterial¹⁹³, Antiviral¹⁹⁴, Hepatoprotective¹⁹⁵, Antihyperglycemic agent¹⁹⁶.

15. Orange peel

Scientific name: Citrus aurantium L

Family: Rutaceae



Fig15. Orange peel powder

Chemical constituents:

Isoquinoline alkaloid, Synephrine, 5-methyl tyramine, Alkaloid- Diphenylamine Triterpene - Limonin, Nomilin, Sesquiterpene- α -Bergamotene, β -Bisabolene, β Caryophyllene, Monoterpene- Linalool, Linalool acetate and Alkaloid 3-(but-cis-1-enyl) pyridine, Geranyl-oxy pyranocoumarin, Seselin, Suberosin, Xanthoxyletin, Xanthyletin¹⁹⁷⁻¹⁹⁸.

Traditional uses:

Helps to lighten and brighten the skin, fight acne, moisturise the skin, stomach ache, vomiting, blood pressure, cough, cold, bronchitis, earache, dysentery, diarrhea, abdominal pain and fever, UTI ailments, influenza, insomnia, a cardiovascular analeptic, antispasmodic, cold, sedative, digestive, urinary tract infections¹⁹⁹.

Pharmacological action:

Laxative¹⁹⁹, Antiulcer²⁰⁰, Antifungal²⁰¹, Antiyeast activity²⁰², Antiulcer²⁰³, Immunosuppressant²⁰⁴, Antimicrobial²⁰⁵ Protein Binding Activity¹⁹⁹.

16. Padmakashta

Scientific name: Prunus padus L.

Family: Rosaceae



Fig 16. Padmakashta Bark

Chemical constituents:

beta-carotene, anthocyanins, Tocopherols and Vitamin C, Non- glycosylated pentacyclic triterpenoids, malic acid, citric acid and tartaric acid, shikimic acid, organic acids as oxalic acid, malic acid or fumaric acid, organic acids, polyphenols, monoterpenes and vitamin C, Polyphenols, cinnamic acid, flavonols, benzoic acids, catechins and tannins, quercitrin and quercetin, ellagic acid, gallic acid, and vanillic acid²⁰⁶.

Traditional uses:

Use in the pharmaceutical, food and cosmetics, hypertension, inflammatory diseases, rheumatoid arthritis, asthma and cancer, antioxidant and Nutrients, antibacterial properties²⁰⁷.

Pharmacological actions:

Antioxidant Activity²⁰⁸, Antimicrobial²⁰⁹, Antidiabetic Effect²¹⁰, Cardiovascular²¹¹, Anti-Inflammatory and Anti-Nociceptive Properties²¹².

17. Sariva

Scientific name: Hemidesmus indicus L.

Family: Asclepiadaceae



Fig 17. Sariva Roots

Chemical constituents:

Glycoside, Hemindicusin. Coumarinolignoids, α -amyrin, β amyryl, lupeol acetate, β -sitosterol, hexadecanoic acid, hexatriacontane, lupeol octasonate, crystalline matter, glucose, hemidesmol, hemidesterol, 2-hydroxy-4-methoxy benzaldehyde, resin acid, glucoside, α -amyryl triterpene, β -amyryl triterpene, and benzaldehyde, Isoquercetin, and Rutin²¹³⁻²¹⁴. Traditional uses include treating eczema and psoriasis, syphilis, dyspepsia, leucoderma, persistent fever, asthma, liver ailments, venereal disorders, leprosy, urinary tract infections, and scorching of the body, arthritis, bronchitis, epileptic seizures, high blood pressure, , rheumatism, chronic nervous diseases, impotence, and immune disorders²¹⁵.

Pharmacological action:

Antimicrobial²¹⁶, Anticarcinogenic²¹⁷, Antithrombotic²¹⁸, Wound healing²¹⁵, Antivenom²¹⁹, Anti-ulcer activity²²⁰, Larvicidal²²¹, Anticonvulsant²²², Anti-psychotic and Antidiarrheal²¹⁵.

18. Turmeric

Scientific name: Curcuma longa

Family: Zingiberaceae



Fig 18. Turmeric Rhizome

Chemical constituents:

Flavonoid Curcuminoids, diferuloylmethane, monodemethoxycurcumin, and bisdesmethoxycurcumin, approximately 90% of the curcuminoid content. Sugars, proteins, and resins, tumerone, atlantone, and zingiberone²²³. Traditional uses: As an anti-inflammatory , hemorrhages and skin diseases like herpes zoster and pemphigus, applied topically for urticaria and skin allergy, for the treatment of jaundice, menstrual difficulties, haematuria, hemorrhage,

sore throat, and wounds, for the treatment of acne, wounds, boils, bruises, blistering, ulcers, eczema, insect bites, parasitic infections²²⁴.

Pharmacological actions:

anti-inflammatory²²⁵, antioxidant²²⁶, hepatoprotective²²⁷, anticarcinogenic²²⁸, antidiabetic²²⁹, antimicrobial²³⁰, antidepressant²³¹, cardiovascular disease²³², gastrointestinal and neurological disorders²³³, Pregnancy/Neonates²²⁴.

19. White Sandalwood

Scientific name: Santalum album L.

Family: Santalaceae



Fig 19. White Sandal heartwood Powder

Chemical constituents: Sesquiterpene, α - santalol and β -santalol, hydrocarbons santene, nor- tricycloekasantalene, and α - and, β -santalenes; the alcohols santenol and teresantalol; the aldehydes nor-tricycloekasantal, and isovaleraldehyde, ketones Isantenone, teresantalic acid occurring partly free and partly in ester and S-santalic acids²³⁴⁻²³⁵.

Traditional uses:

Perfumery, cosmetics, aromatherapy and pharmaceutical industry, flavouring substance in food products, for ornamental and carving work, treating gastric irritability, jaundice, dysentery, tension, and confusion, and also used a blood purifier, anti- poison, tonic for the heart, stomach, and liver, anti-fever, and tonic for poisons., fever, memory improvement and as a blood purifier.

Pharmacological actions: Aromatherapy²³⁶, Antitumor²³⁷, Infantile hyperhidrosis²³⁸, Facial scrub²³⁹, Anti-Helicobacter pylori Compounds from Santalum album²⁴⁰, In Bladder infections²⁴¹, Acute dermatitis, Bronchitis,

Cystitis, Eye diseases, Gonorrhoea, Herpes Zoster Infection, Palpitation, Sunstroke, Urethritis²⁴².

CONCLUSION

Over 70% of the population uses herbal cosmetics. A modern herbal cosmetic has become a significant necessity in daily life. A basis of herbal ingredients is used to create herbal cosmetics, which may contain one or more herbal ingredients to treat a variety of skin issues and to enhance beauty. All of these cosmetic compositions' chemical ingredients include diverse natural components like waxes, liquid natural colours, natural scents, and plant parts like leaves, bark, and flowers, among others. The term "cosmeceuticals" refers to products that sit in the middle of the spectrum between pure cosmetics (like eye shadow and cream) and pure pharmaceuticals (like antibiotics and corticosteroids). Corrective formulation is dependent on natural beauty formulations, which may include additives with aesthetic benefits to replace synthetic components. To demonstrate the effectiveness of herbal cosmetics, more research and development are required in this area. Herbal cosmetics must pass a quality control test. Longer-term safety is anticipated. It appears that the people and tradition have a strong understanding of the therapeutic herbs they use. Numerous plants that people use as cosmetics and to treat dermatological conditions were related in the current study. Some of the plants were created with the dual purposes of beauty and restoration in mind.

REFERENCES

1. Bijauliya RK, Alok S, Kumar M, Chanchal DK, Yadav S. A comprehensive review on herbal cosmetics. *International Journal of Pharmaceutical Sciences and Research*. 2017 Dec 1; 8(12):4930-49.
2. Kumar D, Rajora G, Parkash O, Antil M, Kumar V. Herbal cosmetics: An overview. *International Journal of Advanced Scientific Research*. 2016; 1(4):36- 41.
3. Saha R. Cosmeceuticals and herbal drugs: practical uses. *International Journal of Pharmaceutical Sciences and Research*. 2012 Jan 1; 3(1):59.
4. Datta HS, Paramesh R. Trends in aging and skin care: Ayurvedic concepts. *Journal of Ayurveda and integrative medicine*. 2010 Apr; 1(2):110.
5. Grover JK, Yadav S, Vats V. Medicinal plants of India with anti-diabetic potential. *Journal of ethnopharmacology*. 2002 Jun 1; 81(1):81-100.
6. Sankholkar DS. Current Regulations and Suggested Way Forward, the *Pharma Times*, 2009; 41(8): 30-31.
7. www.ayurvedic-herbal-products.com/herbalextracts.html
8. Gediya SK, Mistry RB, Patel UK, Blessy M, Jain HN. Herbal plants: used as a cosmetic. *J Nat Prod Plant Resour*. 2011; 1(1):24-32.
9. Solberg LI. Guideline implementation: what the literature doesn't tell us. *The Joint Commission journal on quality improvement*. 2000 Sep 1; 26(9):525-37.
10. www.indo-world.com/cosmeticherbhistory.html
11. Akinyele BO, Odiyi AC. Comparative study of vegetative morphology and the existing taxonomic status of *Aloe vera* L. *Journal of plant Sciences*. 2007; 2(5):558-63.
12. International Agency for Research on Cancer (IARC) monographs on the evaluation of carcinogenic risks to humans, 1978; 17: 1-365.
13. Winter RA. *Consumer's dictionary of cosmetic ingredients*. Three Rivers press United states USA, Edition 7th, 2009.
14. Sharma A, Shanker C, Tyagi LK, Singh M, Rao CV. Herbal medicine for market potential

- in India: an overview. Acad J Plant Sci. 2008; 1(2):26-36.
15. Gourley DR, Herfindal ET. Textbook of therapeutics: drug and disease management. Williams & Wilkins; 2000 Jun.
 16. Deshmukh C, Shradha CP. Phytochemical and pharmacological profile of *Emblica officinalis* Linn. Journal of Medical Pharmaceutical and Allied Sciences. 2021; 10(2):2698–2703.
 17. Bafna PA, Balaraman R. Anti-ulcer and anti-oxidant activity of pepticare, a herbomineral formulation. Phytomedicine. 2005 Apr 20;12(4):264-70.
 18. Sabu MC, Kuttan R. Anti-diabetic activity of medicinal plants and its relationship with their antioxidant property. Journal of ethnopharmacology. 2002 Jul 1;81(2):155-60.
 19. Scartezzini P, Antognoni F, Raggi MA, Poli F, Sabbioni C. Vitamin C content and antioxidant activity of the fruit and of the Ayurvedic preparation of *Emblica officinalis* Gaertn. Journal of ethnopharmacology. 2006 Mar 8;104(1-2):113-8.
 20. Jose JK, Kuttan G, Kuttan R. Antitumour activity of *Emblica officinalis*. Journal of Ethnopharmacology. 2001 May 1;75(2-3):65-9.
 21. Nosalova G, Mokry J, Hassan KT. Antitussive activity of the fruit extract of *Emblica officinalis* Gaertn.(Euphorbiaceae). Phytomedicine. 2003 Jan 1;10(6- 7):583-9.
 22. Alam MI, Gomes A. Snake venom neutralization by Indian medicinal plants (*Vitex negundo* and *Emblica officinalis*) root extracts. Journal of Ethnopharmacology. 2003 May 1;86(1):75-80.
 23. Mathur R, Sharma A, Dixit VP, Varma M. Hypolipidaemic effect of fruit juice of *Emblica officinalis* in cholesterol-fed rabbits. Journal of Ethnopharmacology. 1996 Feb 1;50(2):61-8.
 24. Jagetia GC, Baliga MS, Malagi KJ, Kamath MS. The evaluation of the radioprotective effect of Triphala (an ayurvedic rejuvenating drug) in the mice exposed to γ -radiation. Phytomedicine. 2002 Jan 1;9(2):99-108.
 25. Parle M, Bansal N. Traditional medicinal formulation, Chyawanprash-A review. Ind J of Tradi Know. 2006;5(4), 484-88.
 26. Pramyothin P, Samosorn P, Pongshompoo S, Chaichantipyuth C. The protective effects of *Phyllanthus emblica* Linn. extract on ethanol induced rat hepatic injury. Journal of ethnopharmacology. 2006 Oct 11;107(3):361-4.
 27. Jose JK, Kuttan R. Hepatoprotective activity of *Emblica officinalis* and Chyawanprash. Journal of Ethnopharmacology. 2000 Sep 1;72(1-2):135-40.
 28. Perianayagam JB, Sharma SK, Joseph A, Christina AJ. Evaluation of anti-pyretic and analgesic activity of *Emblica officinalis* Gaertn. Journal of ethnopharmacology. 2004 Nov 1;95(1):83-5.
 29. Ahmad I, Mehmood Z, Mohammad F. Screening of some Indian medicinal plants for their antimicrobial properties. Journal of ethnopharmacology. 1998 Sep 1;62(2):183-93.
 30. Nicolis E, Lampronti I, Dehecchi MC, Borgatti M, Tamanini A, Bianchi N, Bezzeri V, Mancini I, Giri MG, Rizzotti P, Gambari R. Pyrogallol, an active compound from the medicinal plant *Emblica officinalis*, regulates expression of pro-inflammatory genes in bronchial epithelial cells. International immunopharmacology. 2008 Dec 10;8(12):1672-80.
 31. Mayachiew P, Devahastin S. Antimicrobial and antioxidant activities of Indian gooseberry and galangal extracts. LWT-Food Science and Technology. 2008 Sep 1;41(7):1153-9.

32. Luo W, Zhao M, Yang B, Shen G, Rao G. Identification of bioactive compounds in *Phyllanthus emblica* L. fruit and their free radical scavenging activities. *Food Chemistry*. 2009 May 15;114(2):499-504.
33. Sultana S, Ahmed S, Jahangir T. *Emblica officinalis* and hepatocarcinogenesis: a chemopreventive study in Wistar rats. *Journal of ethnopharmacology*. 2008 Jun 19;118(1):1-6.
34. Vasudevan M, Parle M. Memory enhancing activity of Anwala churna (*Emblica officinalis* Gaertn.): An Ayurvedic preparation. *Physiology & behavior*. 2007 May 16;91(1):46-54.
35. Chauhan PK, Jaryal M, Kumari K, Singh M. Phytochemical and in vitro antioxidant potential of aqueous leaf extracts of *Brassica juncea* and *Coriandrum sativum*. *IJPSR* 2012; 3(8): 2862-2865.
36. Sreelatha S, Inbavalli R. Antioxidant, antihyperglycemic, and antihyperlipidemic effects of *Coriandrum sativum* leaf and stem in alloxan-induced diabetic rats. *Journal of Food Sci* 2012; 77(7):T119-123
37. Al-Snafi AE. A review on chemical constituents and pharmacological activities of *Coriandrum sativum*. *IOSR Journal of Pharmacy*. 2016 Jul; 6(7):17-42.
38. Pathan AR, Kothawade KA, Logade MN. Anxiolytic and analgesic effect of seeds of *Coriandrum sativum* Linn. *International Journal Research Pharm Chem*. 2011;1(4):1087-99.
39. Sudha K, Deepak G, Sushant K, Vipul P, Nilofer N. Study of antidepressant like effect of *Coriandrum sativum* and involvement of monoaminergic and GABAergic system. *IJRAP*. 2011;2:267-70.
40. Al-Snafi AE. A review on chemical constituents and pharmacological activities of *Coriandrum sativum*. *IOSR Journal of Pharmacy*. 2016 Jul;6(7):17-42.
41. Hosseinzadeh H, Madanifard M. Anticonvulsant effects of *Coriandrum sativum* L. seed extracts in mice. *Iranian Journal of pharmacy* 2005; 3: 1-4.
42. Cioanca O, Hritcu L, Mihasan M, Hancianu M. Cognitive-enhancing and antioxidant activities of inhaled coriander volatile oil in amyloid β (1-42) rat model of Alzheimer's disease. *Physiol Behav* 2013;120:193-202.
43. Mohan M, Yarlagadda S, Chintala S. Effect of ethanolic extract of *Coriandrum sativum* L on tacrine induced orofacial dyskinesia. *Indian Journal Exp Biol* 2015; 53(5):292-296.
44. Vekaria RH, Patel MN, Bhalodiya PN, Patel V, Desai TR and Tirgar PR. Evaluation of neuroprotective effect of *Coriandrum sativum* Linn. against ischemic - reperfusion insult in brain. *International Journal of Phytopharmacology* 2012; 3(2): 186-193.
45. Oudah IM, Ali YH. Evaluation of aqueous and ethanolic extraction for Coriander seeds, leaves and stems and studying their antibacterial activity. *Iraqi Sci Journal Nursing* 2010; 23(2):1-7.
46. Melo EA, Filho JM, Guerra NB. Characterization of antioxidant compounds in aqueous coriander extract (*Coriandrum sativum* L.). *Food Sci Technol* 2005; 38(1): 15-19.
47. Kousar S, Jahan N, Khalil-ur-Rehman, Nosheen S. Antilipidemic activity of *Coriandrum sativum*. *Bioscience Research* 2011; 8(1): 8-14.
48. Nair V, Singh S, Gupta YK. Anti-granuloma activity of *Coriandrum sativum* in experimental models. *J Ayurveda Integr Med* 2013; 4(1): 13-18.
49. Rajeshwari CU, Andallu B. Oxidative stress in NIDDM patients: influence of coriander (*Coriandrum sativum*) seeds. *Research*

- Journal of Pharmaceutical, Biological and Chemical Sciences 2011; 2(1): 31-41.
50. Reyes MR, Reyes-Esparza J, Angeles OT, Rodriguez-Fragoso L. Mutagenicity and safety evaluation of water extract of *Coriandrum sativum* leaves. *Journal Food Sci* 2010;75(1):T6-12.
51. Tang EL, Rajarajeswaran J, Fung SY, Kanthimathi MS. Antioxidant activity of *Coriandrum sativum* and protection against DNA damage and cancer cell migration. *BMC Complement Altern Med* 2013;13:347.
52. Abeen Q, Bashir S, Lyoussi B, Gilani AH. Coriander fruit exhibits gut modulatory, blood pressure lowering and diuretic activities. *J Ethnopharmacol* 2009;122(1):123-130.
53. Yaghini J, Shahabooei M, Aslani A, Zadeh MR, Kiani S, Naghsh N. Efficacy of a local-drug delivery gel containing extracts of *Quercus brantii* and *Coriandrum sativum* as an adjunct to scaling and root planing in moderate chronic periodontitis patients. *J Res Pharm Pract* 2014; 3(2): 67-71.
54. Farag MFS. Evaluation of radio protective effects of Coriander (*Coriandrum sativum* L.) in male rats. *Arab Journal of Nuclear Science and Applications* 2013; 46(1): 240-249
55. Ikeura H, Kohara K, Li XX, Kobayashi F, Hayata Y. Identification of (E,E)-2,4-undecadienal from coriander (*Coriandrum sativum* L.) as a highly effective deodorant compound against the offensive odor of porcine large intestine. *Journal of Agric Food Chem* 2010;58(20):11014-11017.
56. Aga M, Iwaki K, Ueda Y, Ushio S, Masaki N, Fukuda S, Kimoto T, Ikeda M, Kurimoto M. Preventive effect of *Coriandrum sativum* (Chinese parsley) on localized lead deposition in ICR mice. *Journal of Ethnopharmacol* 2001; 77(2-3): 203-208.
57. Aissaoui A, El-Hilaly J, Israili ZH, Lyoussi B. Acute diuretic effect of continuous intravenous infusion of an aqueous extract of *Coriandrum sativum* L. in anesthetized rats. *Journal of Ethnopharmacol* 2008; 115(1): 89-95.
58. Hwang E, Lee DG, Park SH, Oh MS, Kim SY. Coriander leaf extract exerts antioxidant activity and protects against UVB-induced photoaging of skin by regulation of procollagen type I and MMP-1 expression. *Journal of Med Food* 2014; 17(9): 985-995.
59. Al-Said MS, Al-Khamis KI, Islam MW, Parmar NS, Tariq M, Ageel AM. Post-coital antifertility activity of the seeds of *Coriandrum sativum* in rats. *Journal of Ethnopharmacol* 1987; 21(2): 165-173.
60. Ozbek H, Him A, Turkozu D. The levels of lethal dose and anti-inflammatory effect of *Coriandrum sativum* L. Essential oil extract. *Ege Journal of Med* 2006; 45(3): 163-167.
61. Saied S, Batool S, Naz S. Phytochemical studies of *berberis aristata*, *Journal of basic and applied sciences* 2007; 3(1):1-4.
62. Blasko G, Sharma M. Taxilamine: A Pseudo benzyl pyro quinoline alkaloid. *Heterocycle* 1982; 19(2):257-9.
63. Yin J, Xing H, Ye J. Efficacy of berberine in patients with type 2 diabetes mellitus. *Metabolism*. 2008 May 1;57(5):712-7.
64. Peng WH, Lo KL, Lee YH, Hung TH, Lin YC. Berberine produces antidepressant-like effects in the forced swim test and in the tail suspension test in mice. *Life Sciences*. 2007 Aug 23;81(11):933-8.
65. Gacche RN, Dhole NA. Antioxidant and possible anti-inflammatory potential of selected medicinal plants prescribed in the Indian traditional system of medicine. *Pharmaceutical biology*. 2006 Jan 1;44(5):389-95.
66. Sharma RS, Mishra V, Singh R, Seth N, Babu CR. Antifungal activity of some Himalayan medicinal plants and cultivated ornamental

- species. *Fitoterapia*. 2008 Dec 1;79(7-8):589-91.
67. Sharma PC, Yelne MB, Dennis TJ. Database on medicinal plants used in Ayurveda. Vol. 1. New Delhi: Central Council for Research in Ayurveda & Siddha, 2000. p. 120-123.
68. Ayurvedic Pharmacopoeia Committee. The ayurvedic pharmacopoeia of India. Government of India, Ministry of Health and Family Welfare. New Delhi, India: Department of AYUSH. 2001.
69. Singhal GD, Sharma KR. Ophthalmic & Otorhinolaryngological Considerations in Ancient Indian Surgery: Based on Salakya-tantra Portion of Uttara-tantra of Susruta Samhita. GD Singhal; 1976.
70. Babbar OP, Chhatwal VK, Ray IB, Mehra MK. Effect of berberine chloride eye drops on clinically positive trachoma patients. *Indian J Med Res* 1982; 76:S83- S82.
71. Chun YT, Yip TT, Lau KL, Kong YC, Sankawa U. A biochemical study on the hypotensive effect of berberine in rats. *General Pharmacology: The Vascular System*. 1979 Jan 1;10(3):177-82.
72. Lee S, Lim HJ, Park JH, Lee KS, Jang Y, Park HY. Berberine-induced LDLR up- regulation involves JNK pathway. *Biochemical and biophysical research communications*. 2007 Nov 3;362(4):853-7
73. Han Q, Song J, Qiao C, Wong L, Xu H. Preparative isolation of hydrolysable tannins chebulagic acid and chebulinic acid from *Terminalia chebula* by high-speed counter-current chromatography. *Journal of separation science*. 2006 Jul; 29(11):1653-7.
74. Chattopadhyay RR, Bhattacharyya SK. PHCOG REV: Plant Review. *Terminalia chebula*: An update. *Pharmacognosy Reviews* Jan-May, 2007; 1: 151. 2007 Jan; 157.
75. Rathinamoorthy R, Thilagavathi G. *Terminalia chebula*-review on pharmacological and biochemical studies. *Int. J. Pharm. Tech. Res.* 2014 Jan; 6:97-116.
76. Ashwini R, Gajalakshmi S, Mythili S, Sathiavelu A. *Terminalia chebula*-a pharmacological review. *J Pharm Res*. 2011 Sep;4(9):2884-7.
77. Kumar M, Agarwal RC, Dey S, Rai VK, Johnson B. Antimicrobial activity of aqueous extract of *Terminalia chebula* Retz. on gram positive and gram negative microorganisms. *International Journal of current pharmaceutical research*. 2009;1(1):56-60.
78. Naqvi SH, Asif M, Rehman AB, Ahmad M. Evaluation of Antimicrobial Properties of *Terminalia Chebula* Retz, *Pakistan Journal of Pharmacology*. 2010, 27(1), 29-35.
79. Murali YK, Chandra R, Murthy PS. Antihyperglycemic effect of water extract of dry fruits of *Terminalia chebula* in experimental diabetes mellitus. *Indian Journal of Clinical Biochemistry*. 2004 Jul;19(2):202-4.
80. Chang CL, Lin CS. Development of antioxidant activity and pattern recognition of *Terminalia chebula* Retzius extracts and its fermented products. 2010 Dec 1(61):115-29.
81. Raja W, Pandey S, Agrawal RC. Studies on the anticlastogenic effect of *Terminalia chebula* extract on cyclophosphamide-induced micronucleus formation and chromosome aberrations in Swiss albino mice. *Int J Gen*. 2011;1(2):13-7.
82. Aher V, Wahi A. Immunomodulatory activity of alcohol extract of *Terminalia chebula* retz combretaceae. *Tropical Journal of Pharmaceutical Research*. 2011;10(5):567-75.
83. Suguna L, Singh S, Sivakumar P, Sampath P, Chandrakasan G. Influence of *Terminalia chebula* on dermal wound healing in rats. *Phytotherapy Research*. 2002 May;16(3):227-31.

84. Jagtap AG, Karkera SG. Potential of the aqueous extract of Terminalia chebula as an anticaries agent. *Journal of Ethnopharmacology*. 1999 Dec 15;68(1-3):299-306.
85. Tamhane MD, Thorat SP, Rege NN, Dahanukar SA. Effect of oral administration of Terminalia chebula on gastric emptying: an experimental study. *Journal of Postgraduate Medicine*. 1997 Jan 1;43(1):12.
86. Suchalatha S, Devi CS. Protective effect of Terminalia chebula against lysosomal enzyme alterations in isoproterenol-induced cardiac damage in rats. *Experimental & Clinical Cardiology*. 2005;10(2):91.
87. Manosroi A, Jantrawut P, Akihisa T, Manosroi W, Manosroi J. In vitro anti-aging activities of Terminalia chebula gall extract. *Pharmaceutical Biology*. 2010 Apr 1;48(4):469-81.
88. Tayal S, Duggal S, Bandyopadhyay P, Aggarwal A, Tandon S, Tandon C. Cytoprotective role of the aqueous extract of Terminalia chebula on renal epithelial cells. *International braz j urol*. 2012;38:204-14.
89. Saleem A, Husheem M, Harkonen P, Pihlaja K. Inhibition of cancer cell growth by crude extract and the phenolics of Terminalia chebula retz. fruit. *Journal of Ethnopharmacology*. 2002 Aug 1;81(3):327-36.
90. Rahman M, Mostafa MG, Karim MM. The bactericidal activity of medicinal plants, Terminalia chebula is enhanced upon addition of manganese salts. *Int. J. Med. Plants*. 2012;2:214-218.
91. Badmaev V, Nowakowski M. Protection of epithelial cells against influenza A virus by a plant derived biological response modifier Ledretan-96. *Phytotherapy Research: An International Journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives*. 2000 Jun;14(4):245-9.
92. Naik GH, Priyadarsini KI, Naik DB, Gangabhairathi R, Mohan H. Studies on the aqueous extract of Terminalia chebula as a potent antioxidant and a probable radioprotector. *Phytomedicine*. 2004 Sep 20;11(6):530-8.
93. Sharma P, Prakash T, Kotresha D, Ansari MA, Sahrm UR, Kumar B, Debnath J, Goli D. Antiulcerogenic activity of Terminalia chebula fruit in experimentally induced ulcer in rats. *Pharmaceutical Biology*. 2011 Mar 1;49(3):262-8.
94. Sharma N, Sharma AR, Patel BD, Shrestha K. Investigation on phytochemical, antimicrobial activity and essential oil constituents of Nardostachys jatamansi DC. In different regions of Nepal. *Journal of Coastal life medicine*. 2016; 4(1):56-60.
95. Malik R, Firdose KF, Bhat MD. Efficacy of Nardostachys jatamansi DC. In the management of premenstrual syndrome: A randomized controlled study. *Journal of herbal medicine*. 2018 Dec 1; 14:17-21.
96. Singh TG. Phytochemical Activities and Pharmacology of Herbal Drug: Nardostachys Jatamansi. *Plant Archives*. 2020; 20(1):3842-8.
97. Yoon CS, Kim DC, Park JS, Kim KW, Kim YC, Oh H. Isolation of novel sesquiterpenoids and anti-neuroinflammatory metabolites from Nardostachys jatamansi. *Molecules*. 2018 Sep 17;23(9):2367.
98. Malik R, Firdose KF, Bhat MD. Efficacy of Nardostachys jatamansi DC. in the management of premenstrual syndrome: A randomized controlled study. *Journal of herbal medicine*. 2018 Dec 1;14:17-21.
99. Rao VS, Rao A, Karanth KS. Anticonvulsant and neurotoxicity profile of Nardostachys jatamansi in rats. *Journal of*

- ethnopharmacology. 2005 Dec 1;102(3):351-6.
100. Lyle N, Gomes A, Sur T, Munshi S, Paul S, Chatterjee S, Bhattacharyya D. The role of antioxidant properties of *Nardostachys jatamansi* in alleviation of the symptoms of the chronic fatigue syndrome. *Behavioural Brain Research*. 2009 Sep 14;202(2):285-90.
101. You JS, Peng M, Shi JL, Zheng HZ, Liu Y, Zhao BS, Guo JY. Evaluation of anxiolytic activity of compound *Valeriana jatamansi* Jones in mice. *BMC complementary and alternative medicine*. 2012 Dec;12(1):1-9.
102. Subashini R, Ragavendran B, Gnanaprasagam A, Kumar Yogeeta S, Devaki T. Biochemical study on the protective potential of *Nardostachys jatamansi* extract on lipid profile and lipid metabolizing enzymes in doxorubicin intoxicated rats. *Die pharmazie-an international journal of pharmaceutical sciences*. 2007 May 1;62(5):382-7.
103. Singh AK, Dikshit A, Sharma ML, Dixit SN. Fungitoxic activity of some essential oils. *Economic Botany*. 1980 Apr;34(2):186-90.
104. Rücker G, Tautges J, Sieck A, Wenzl H, Graf E. Isolation and pharmacodynamic activity of the sesquiterpene valeranone from *Nardostachys jatamansi* DC. *Arzneimittelforschung*. 1978 Jan 1;28(1):7-13.
105. Middleton E, Kandaswami C, Theoharides TC. The effects of plant flavonoids on mammalian cells: implications for inflammation, heart disease, and cancer. *Pharmacological reviews*. 2000 Dec 1;52(4):673-751.
106. Ali S, Ansari KA, Jafry MA, Kabeer H, Diwakar G. *Nardostachys jatamansi* protects against liver damage induced by thioacetamide in rats. *Journal of ethnopharmacology*. 2000 Aug 1;71(3):359-63.
107. Purnima BM, Kothiyal P. A review article on phytochemistry and pharmacological profiles of *Nardostachys jatamansi* DC-medicinal herb. *J Pharmacogn Phytochem*. 2015;3(5):102-6.
108. Salim S, Ahmad M, Zafar KS, Ahmad AS, Islam F. Protective effect of *Nardostachys jatamansi* in rat cerebral ischemia. *Pharmacology Biochemistry and Behavior*. 2003 Jan 1;74(2):481-6.
109. Bhattacharya SK, Bhattacharya D. Effect of restraint stress on rat brain serotonin. *Journal of Biosciences*. 1982 Sep;4(3):269-74.
110. Champagnat P, Figueredo G, Chalchat CJ, Carnat AP, Bessiere JM (2011) a study on the composition of commercial *Vetiveria zizanioides* oils from different geographical origins. *J Essent Oil Res* 18(4):416–422. <https://doi.org/10.1080/10412905.2006.9699129>
111. Mallavarapu GR, Syamamsundar KV, Ramesh S, Rao BRR (2012) Constituents of South Indian Vetiver Oils. *Nat Prod Commun* 7(2):223–225. <https://doi.org/10.1177/1934578X1200700228>
112. Grover M, Behl T, Virmani T, Bhatia S, Al-Harrasi A, Aleya L. *Chrysopogon zizanioides* a review on its pharmacognosy, chemical composition and pharmacological activities. *Environmental Science and Pollution Research*. 2021 Sep; 28(33):44667-44692.
113. Powers CN, Osier JL, McFeeters RL, Brazell CB, Olsen EL, Moriarity DM, Satyal P, Setzer WN. Antifungal and cytotoxic activities of sixty commercially- available essential oils. *Molecules*. 2018 Jun 27;23(7):1549.
114. Sharifi-Rad M, Fokou PV, Sharopov F, Martorell M, Ademiluyi AO, Rajkovic J, Salehi B, Martins N, Iriti M, Sharifi-Rad J. Antiulcer agents: From plant extracts to

- phytochemicals in healing promotion. *Molecules*. 2018 Jul 17;23(7):1751.
115. Gupta R, Sharma KK, Afzal M, Damanhour ZA, Ali B, Kaur R, Kazmi I, Anwar F. Anticonvulsant activity of ethanol extracts of *Vetiveria zizanioides* roots in experimental mice. *Pharmaceutical Biology*. 2013 Dec 1;51(12):1521-4.
116. Elzaawely AA, Xuan TD, Tawata S. Antioxidant and antibacterial activities of *Rumex japonicus* H OUTT. *Aerial Parts. Biological and Pharmaceutical Bulletin*. 2005;28(12):2225-30.
117. Chou ST, Lai CP, Lin CC, Shih Y. Study of the chemical composition, antioxidant activity and anti-inflammatory activity of essential oil from *Vetiveria zizanioides*. *Food Chemistry*. 2012 Sep 1;134(1):262-8.
118. Paillat L, Périchet C, Pierrat JP, Lavoine S, Filippi JJ, Meierhenrich U, Fernandez X. Purification of vetiver alcohols and esters for quantitative high- performance thin-layer chromatography determination in Haitian vetiver essential oils and vetiver acetates. *Journal of Chromatography A*. 2012 Jun 8;1241:103-11.
119. Khater HF, Geden CJ. Efficacy and repellency of some essential oils and their blends against larval and adult house flies, *Musca domestica* L.(Diptera: Muscidae). *Journal of Vector Ecology*. 2019 Dec;44(2):256-63.
120. Anything S, Pongmayteegul S, Marsden CA, Phansuwan-Pujito P. Anxiety- like behaviour and c-fos expression in rats that inhaled vetiver essential oil. *Natural Product Research*. 2015 Nov 17;29(22):2141-4.
121. Bizzo HR, Rezende CM. Essential oils in Brazil: General aspects, production and perspective. *Quim. Nova*. 2009;32:588-94.
122. Karan SK, Pal D, Mishra SK, Mondal A. Antihyperglycaemic effect of *Vetiveria zizanioides* (L.) Nash root extract in alloxan induced diabetic rats. *Asian Journal of Chemistry*. 2013 Feb 11;25(3):1555.
123. Bilici M, Efe H, Köroğlu MA, Uydu HA, Bekaroğlu M, Değer O. Antioxidative enzyme activities and lipid peroxidation in major depression: alterations by antidepressant treatments. *Journal of affective disorders*. 2001 Apr 1;64(1):43-51.
124. Al-Kharusi N, Babiker HA, Al-Salam S, Waly MI, Nemmar A, Al-Lawati I, Yasin J, Beegam S, Ali BH. Ellagic acid protects against cisplatin-induced nephrotoxicity in rats: a dose-dependent study. *Eur Rev Med Pharmacol Sci*. 2013 Feb 1;17(3):299-310.
125. Rao RC, Gal CS, Granger I, Gleye J, Augereau JM, Bessibes C. Khusimol, a non-peptide ligand for vasopressin V1a receptors. *Journal of natural products*. 1994 Oct;57(10):1329-35.
126. Thubthimthed S, Thisayakorn K, Rerk-am U, Tangstirapakdee S, Suntornatanasat T. Vetiver oil and its sedative effect. In *The 3rd International Vetiver Conference, Guangzhou, China 2003 Oct* (pp. 492-494).
127. Dikshit A. Antifungal action of some essential oils against animal pathogens. *Fitoterapia*. 1984;55:171-6.
128. Kumar S, Ahuja NM, Juawanda GS, Chhabra BR. New guaianolides from *Saussurea lappa* roots. *Fitoterapia (Milano)*. 1995; 66(3).
129. Madhavi M, Mallika G, Lokanath N, Vishnu MN, Chetty CM, Saleem TM. A review on phytochemical and pharmacological aspects of *Saussurea lappa*. *Int. J. Life Sci. Med. Res*. 2012; 2:24-31.
130. Gupta OP, Ghatak BJ. Pharmacological investigations on *Saussurea lappa* (Clarke). *The Indian journal of medical research*. 1967 Oct;55(10):1078-83.

131. Lee GI, Ha JY, Min KR, Nakagawa H, Tsurufuji S, Chang IM, Kim Y. Inhibitory effects of oriental herbal medicines on IL-8 induction in lipopolysaccharide-activated rat macrophages. *Planta Medica*. 1995 Feb;61(01):26-30.
132. Ko SG, Koh SH, Jun CY, Nam CG, Bae HS, Shin MK. Induction of apoptosis by *Saussurea lappa* and *Pharbitis nil* on AGS gastric cancer cells. *Biological and Pharmaceutical Bulletin*. 2004;27(10):1604-10.
133. Chen HC, Chou CK, Lee SD, Wang JC, Yeh SF. Active compounds from *Saussurea lappa* Clarks that suppress hepatitis B virus surface antigen gene expression in human hepatoma cells. *Antiviral Research*. 1995 May 1;27(1-2):99- 109.
134. Venkataranganna MV, Gopumadhavan S, Sundaram R, Mitra SK. Evaluation of possible mechanism of anti-ulcerogenic activity of UL-409, a herbal preparation. *Journal of ethnopharmacology*. 1998 Dec 1;63(3):187-92.
135. Yuuya S, Hagiwara H, Suzuki T, Ando M, Yamada A, Suda K, Kataoka T, Nagai K. Guaianolides as immunomodulators. Synthesis and biological activities of dehydrocostus lactone, mokko lactone, eremanthin, and their derivatives. *Journal of natural products*. 1999 Jan 22;62(1):22-30.
136. Upadhyay OP, Singh RM, Dutta K. Studies on antidiabetic medicinal plants used in Indian folk-lore. *Aryavaidyan*. 1996;9(3):159-67.
137. Lirussi D, Li J, Prieto JM, Gennari M, Buschiazzo H, Rios JL, Zaidenberg A. Inhibition of *Trypanosoma cruzi* by plant extracts used in Chinese medicine. *Fitoterapia*. 2004 Dec 1;75(7-8):718-23.
138. Naik SN, Kumar A, Maheshwari RC, Guddesar MB, Chandra R, Kumar B. Pesticidal properties of sub-critically extracted plant essential oils against storage pest *Tribolium castaneum* (Herbst). *Indian perfumer*. 1995;39:171-6.
139. Okugawa H, Ueda R, Matsumoto K, Kawanishi K, Kato A. Effect of dehydrocostus lactone and costunolide from *Saussurea* root on the central nervous system in mice. *Phytomedicine*. 1996 Sep 1;3(2):147-53.
140. Batiha GE, Beshbishy AM, El-Mleeh A, Abdel-Daim MM, Devkota HP. Traditional uses, bioactive chemical constituents, and pharmacological and toxicological activities of *Glycyrrhiza glabra* L.(Fabaceae). *Biomolecules*. 2020 Mar; 10(3).
141. Qianhui Z. Traditional uses, pharmacological effects, and molecular mechanisms of licorice in potential therapy of COVID-19. *Frontiers in pharmacology*. 2021 Nov 26:3249.
142. Wu C, Chen X, Cai Y, Zhou X, Xu S, Huang H, Zhang L, Zhou X, Du C, Zhang Y, Song J. Risk factors associated with acute respiratory distress syndrome and death in patients with coronavirus disease 2019 pneumonia in Wuhan, China. *JAMA internal medicine*. 2020 Jul 1;180(7):934-43.
143. Adianti M, Aoki C, Komoto M, Deng L, Shoji I, Wahyuni TS, Lusida MI. Soetjipto; Fuchino, H.; Kawahara, N.; Hotta, H. *Microbiol. Immunol*. 2014;58(3):180-7.
144. Fang L, Karakiulakis G, Roth M. Are patients with hypertension and diabetes mellitus at increased risk for COVID-19 infection?. *The lancet respiratory medicine*. 2020 Apr 1;8(4):e21.
145. Rodino S, Butu A, Butu M, Cornea PC. Comparative studies on antibacterial activity of licorice, elderberry and dandelion. *Digest Journal of Nanomaterials and Biostructures*. 2015 Jul 1;10(3):947-55.
146. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, Qiu Y, Wang J, Liu Y, Wei Y, Yu T.

- Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *The Lancet*. 2020 Feb 15;395(10223):507-13.
147. Matsuyama T, Kubli SP, Yoshinaga SK, Pfeffer K, Mak TW. An aberrant STAT pathway is central to COVID-19. *Cell Death & Differentiation*. 2020 Dec;27(12):3209-25.
148. Varga Z. Endotheliitis bei COVID-19. *Der Pathologe*. 2020 Dec;41(2):99-102.
149. De Silva LB, De Silva UL, Mahendran M. The chemical constituents of *Symplocos racemosa* Roxb. 1997,7:1-3
150. Johnson T, Krishnakumar K, Dineshkumar B. Phyto-pharmacological review of *Symplocos Racemosa* bark. *J. Bio. Innov*7 (4). 2018:611-7.
151. Kumar GS, Jayaveera KN, Kumar CK, Sanjay UP, Swamy BM, Kumar DV. Antimicrobial effects of Indian medicinal plants against acne-inducing bacteria. *Tropical journal of pharmaceutical research*. 2007 Jul 31;6(2):717-23.
152. Sharma SK, Sharma SM, Saini V, Mohapatra S. Evaluation of analgesic and anti-inflammatory activity of *Symplocos racemosa*. *Int Res J Pharm*. 2013;4:136- 9.
153. Vijayabaskaran M, Yuvaraja KR, Babu G, Perumal P, Jayakar B. Isolation and Characterization of Phenolic Glycoside from the Bark of *Symplocos Racemosa*Roxb. *E-Journal of Chemistry*. 2010 Jan 2;7(S1):S255-60.
154. Devmurari VP. Phytochemical screening study and antibacterial evaluation of *Symplocos racemosa* Roxb. *Archives of applied science research*. 2010;2(1):354- 9.
155. Siril EA. Pharmacognostic studies on Indian madder (*Rubia cordifolia* L.). *Journal of pharmacognosy and Phytochemistry*. 2013 Jan 1;1(5).
156. Shan M, Yu S, Yan H, Chen P, Zhang L, Ding A. A review of the botany, phytochemistry, pharmacology and toxicology of *rubiae radix et rhizoma*. *Molecules*. 2016 Dec; 21(12):1747.
157. Shilpa PN, Sivaramakrishnan V, Devaraj SN. Induction of apoptosis by methanolic extract of *Rubia cordifolia* Linn in HEp-2 cell line is mediated by reactive oxygen species. *Asian pacific journal of cancer prevention*. 2012;13(6):2753-8.
158. Sharma V, Kansal L. The protective effect of *Rubia cordifolia* against lead nitrate-induced immune response impairment and kidney oxidative damage. *Indian Journal of Pharmacology*. 2011 Jul;43(4):441.
159. Pawar AT, Anap RM, Ghodasara JV, Kuchekar BS. Protective effect of hydroalcoholic root extract of *Rubia cordifolia* in indomethacin-induced enterocolitis in rats. *Indian Journal of Pharmaceutical Sciences*. 2011 Mar;73(2):250.
160. Patil RA, Kasture SB. Protective effect of *Rubia cordifolia* on reserpine- induced orofacial dyskinesia. *Natural Product Research*. 2012 Nov 1;26(22):2159- 61.
161. Deoda RS, Kumar D, Bhujbal SS. Gastroprotective effect of *Rubia cordifolia* Linn. on aspirin plus pylorus-ligated ulcer. *Evidence-Based Complementary and Alternative Medicine*. 2011 Jan 1;2011.
162. Inoue K, Yoshida M, Takahashi M, Fujimoto H, Ohnishi K, Nakashima K, Shibutani M, Hirose M, Nishikawa A. Possible contribution of rubiadin, a metabolite of madder color, to renal carcinogenesis in rats. *Food and chemical toxicology*. 2009 Apr 1;47(4):752-9.
163. Baek JM, Kim JY, Jung Y, Moon SH, Choi MK, Kim SH, Lee MS, Kim I, Oh

164. J. Mollugin from *Rubea cordifolia* suppresses receptor activator of nuclear factor- κ B ligand-induced osteoclastogenesis and bone resorbing activity in vitro and prevents lipopolysaccharide-induced bone loss in vivo. *Phytomedicine*. 2015 Jan 15;22(1):27-35 Charaka Samhita, with Ayurveda Dipika commentary of Chakrapanidatta edited by Vd. JadhavjiTrikamji Acharya, Chaukhamba Surbharati Prakashana, Vanarasi, reprint 2013
165. Sharvari M, Savita N. A research article on a clinical study on effect of red lentil lepa on complexation enhancement. *IAMJ*. 2018; 2320 5091
166. Zia-Ul-Haq M, Ahmad S, Shad MA, Iqbal S, Qayum M, Ahmad A, Luthria DL, Amarowicz R. Compositional studies of lentil (*Lens culinaris* Medik.) cultivars commonly grown in Pakistan. *Pak. J. Bot.* 2011 Jun 1;43(3):1563-7.
167. Harborne JB, Williams CA, Wilson KL. Flavonoids in leaves and inflorescences of Australian *Cyperus* species. *Phytochemistry*. 1982 Jan 1; 21(10):2491-507.
168. Srivastava RK, Singh A, Shukla SV. Chemical investigation and pharmaceutical action of *Cyperus rotundus*-A review. *Journal of Biologically Active Products from Nature*. 2013 Jun 1;3(3):166-72.
169. Kamala A, Middha SK, Karigar CS. Plants in traditional medicine with special reference to *Cyperus rotundus* L.: a review. *3 Biotech*. 2018 Jul; 8(7):1-1.
170. Kamala A, Middha SK, Gopinath C, Sindhura HS, Karigar CS. In vitro antioxidant potentials of *Cyperus rotundus* L. rhizome extracts and their phytochemical analysis. *Pharmacognosy magazine*. 2018 Apr;14(54):261.
171. Puratchikody A, Devi CN, Nagalakshmi G. Wound healing activity of *Cyperus rotundus* linn. *Indian journal of pharmaceutical sciences*. 2006;68(1):97.
172. Chithran A, Ramesh Babu T, Himaja N. Comparative study on anti-inflammatory activity of *Cyperus rotundus* (L.) using different solvent system in carragenan induced paw edema in albino wistar rats. *Int J Phytopharmacol*. 2012;3:130-4.
173. Uddin SJ, Mondal K, Shilpi JA, Rahman MT. Antidiarrhoeal activity of *Cyperus rotundus*. *Fitoterapia*. 2006 Feb 1;77(2):134-6.
174. Raut NA, Gaikwad NJ. Antidiabetic potential of fractions of hydro-ethanol extract of *Cyperus rotundus* L.(Cyperaceae). *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2012;3(4):1014-9.
175. Seo EJ, Lee DU, Kwak JH, Lee SM, Kim YS, Jung YS. Antiplatelet effects of *Cyperus rotundus* and its component (+)-nootkatone. *Journal of ethnopharmacology*. 2011 Apr 26;135(1):48-54.
176. Guldur ME, Ozgonul A, Kilic IH, Sogut O, Ozaslan M, Bitiren M, Yalçın M, Musa D. Gastroprotective effect of *Cyperus rotundus* extract against gastric mucosal injury induced by ischemia and reperfusion in rats. *IJP-International Journal of Pharmacology*. 2010;6(2):104-10.
177. Jin JH, Lee DU, Kim YS, Kim HP. Anti-allergic activity of sesquiterpenes from the rhizomes of *Cyperus rotundus*. *Archives of Pharmacal Research*. 2011 Feb;34(2):223-8.
178. Kumar KH, Khanum F. Hydroalcoholic extract of *Cyperus rotundus* ameliorates H₂O₂-induced human neuronal cell damage via its anti-oxidative and anti-apoptotic machinery. *Cellular and molecular neurobiology*. 2013 Jan;33(1):5- 17.
179. Soltan MM, Zaki AK. Antimicrobial and antiviral activities of some Egyptian

- medicinal plants. *Planta Medica*. 2009 Jul;75(09):PJ199.
180. Chahar MK, DS SK, Geetha L, Lokesh T, Manohara KP. *Mesua ferrea* L.: A review of the medical evidence for its phytochemistry and pharmacological actions. *African Journal of Pharmacy and Pharmacology*. 2013 Feb 15; 7(6):211- 9.
181. Adewale AI, Mirghani ME, Muyibi SA, Daoud JI, Abimbola MM. Disinfection studies of Nahar (*Mesua ferrea*) seed kernel oil using pour plate method. *African Journal of Biotechnology*. 2011;10(81):18749-54.
182. Jayanthi G, Kamalraj S, Karthikeyan K, Muthumary J. Antimicrobial and antioxidant activity of the endophytic fungus *Phomopsis* sp. GJJM07 isolated from *Mesua ferrea*. *Int J Curr Sci*. 2011 Jan;1:85-90.
183. Hassan MT, Ali MS, Alimuzzaman M, Raihan SZ. Analgesic Activity of *Mesua ferrea* Linn. *Dhaka University Journal of Pharmaceutical Sciences*. 2006;5(1):73-5.
184. Prasad DN, Basu SP, Srivastava AK. Antispasmodic activity of the crude and purified oil of *Mesua ferrea* seed. *Ancient Science of Life*. 1999 Jul;19(1-2):74.
185. Manoj KC, Sanjaya KD, Geetha L, Lokesh T, Manohara KP. *Mesua ferrea* L.: A review of the medical evidence for its phytochemistry and pharmacological actions. *African Journal of Pharmacy and Pharmacology*. 2013 Feb 15;7(6):211-9.
186. Tiwari PK, Irchhaiya R, Jain SK. Evaluation of anticonvulsant activity of *Mesua ferrea* Linn. ethanolic flower extract. *Int J Pharm Life Sci*. 2012 Mar;23:1507-9.
187. Gopalakrishnan C, Shankaranarayanan D, Nazimudeen SK, Viswanathan S, Kameswaran L. Anti-inflammatory and CNS depressant activities of xanthenes from *Calophyllum inophyllum* and *Mesua ferrea*. *Indian Journal of Pharmacology*. 1980 Jul 1;12(3):181.
188. Mazumder R, Dastidar SG, Basu SP, Mazumder A, Singh SK. Antibacterial potentiality of *Mesua ferrea* Linn. flowers. *Phytotherapy Research: An International Journal Devoted to Pharmacological and Toxicological Evaluation of Natural Product Derivatives*. 2004 Oct;18(10):824-6.
189. Kumar PS, Debasis M, Goutam G, Panda CS. Biological action and medicinal properties of various constituent of *Azadirachta indica* (Meliaceae): an overview. *Annals of Biological research*. 2010;1(3):24-34
190. Nishan M, Subramanian P. Pharmacological and non-pharmacological activity of *Azadirachta indica* (Neem)-A review. *Int J Biosci*. 2014; 5(6):104-12.
191. Kumar S, Agrawal D, Patnaik J, Patnaik S. Analgesic effect of neem (*Azadirachta indica*) seed oil on albino rats. *Pain*. 1946;7:58-60.
192. Mondall NK, Mojumdar A, Chatterje SK, Banerjee A, Datta JK, Gupta S. Antifungal activities and chemical characterization of Neem leaf extracts on the growth of some selected fungal species in vitro culture medium 2009.
193. Grover A, Bhandari BS, Rai N. Antimicrobial activity of medicinal plants- *Azadirachta indica* A. Juss, *Allium cepa* L. and *Aloe vera* L. *Int J Pharm Tech Res*. 2011 Jun;3(2):1059-65.
194. Tiwari V, Darmani NA, Yue BY, Shukla D. In vitro antiviral activity of neem (*Azadirachta indica* L.) bark extract against herpes simplex virus type-1 infection. *Phytotherapy Research*. 2010 Aug;24(8):1132-40.
195. Manisha SY, Sachin AN, Amrita KA. Review on neem plant. *World J Pharmacy and Pharmaceutical Sci*. 2014;3:590-8.

196. Patil P, Patil S, Mane A, Verma S. Antidiabetic activity of alcoholic extract of Neem (*Azadirachta indica*) root bark. *National Journal of Physiology, Pharmacy and Pharmacology*. 1970 Jan 1;3(2):142
197. Hanneguelle S, Thibault JN, Naulet N, Martin GJ. Authentication of essential oils containing linalool and linalyl acetate by isotopic methods. *Journal of Agricultural and Food Chemistry*. 1992 Jan;40(1):81-7.
198. Maurer B, Hauser A. New pyridine derivatives from essential oils. *Chimia*. 1992 Apr 29;46(4):93-93
199. Karthikeyan V, Karthikeyan J. Citrus aurantium (bitter orange): A review of its traditional uses, phytochemistry and pharmacology. *International journal of drug discovery and herbal research*. 2014; 4(4):766-72.
200. Hyun JE, Kang MH, Kim HP, Park JM, Lee SY, Jeong CS. Antigastric and Anti-ulcerative effect of P020701. *Korean Journal of Pharmacognosy*. 2002;33(4):389-94.
201. Ross SA, El-Keltawi NE, Megalla SE. Antimicrobial activity of some Egyptian aromatic plants. *Fitoterapia*. 1980;51(4):201-5.
202. Hammer KA, Carson CF, Riley TV. In-vitro activity of essential oils, in particular *Melaleuca alternifolia* (tea tree) oil and tea tree oil products, against *Candida* spp. *The Journal of antimicrobial chemotherapy*. 1998 Nov 1;42(5):591-5.
203. Lam LK, Zheng BL. Effects of essential oils on glutathione S-transferase activity in mice. *Journal of agricultural and food chemistry*. 1991 Apr;39(4):660-2.
204. Eun JS, Yum JY. Effect of *Aurantii nobilis* Pericarpium and *Aurantii immaturi* Pericarpium on Immunocytes in Mice. *Korean Journal of Pharmacognosy*. 1998;29(3):173-8.
205. Naqvi S, Khan MS, Vohora SB. Anti-bacterial, anti-fungal and anthelmintic investigations on Indian medicinal plants. *Fitoterapia*. 1991;62(3):221-8.
206. Dzubak P, Hajduch M, Vydra D, Hustova A, Kvasnica M, Biedermann D, Markova L, Urban M, Sarek J. Pharmacological activities of natural triterpenoids and their therapeutic implications. *Natural product reports*. 2006; 23(3):394-411.
207. Telichowska A, Kobus-Cisowska J, Szulc P. Phytopharmacological possibilities of bird cherry *Prunus padus* L. and *Prunus serotina* L. species and their bioactive phytochemicals. *Nutrients*. 2020 Jul; 12(7):1966.
208. Hyun TK, Kim HC, Kim JS. In vitro screening for antioxidant, antimicrobial, and antidiabetic properties of some Korean native plants on Mt. Halla, Jeju Island. *Indian journal of pharmaceutical sciences*. 2015 Nov;77(6):668.
209. Kumarasamy Y, Cox PJ, Jaspars M, Nahar L, Sarker SD. Comparative studies on biological activities of *Prunus padus* and *P. spinosa*. *Fitoterapia*. 2004 Jan 1;75(1):77-80.
210. Dahanukar SA, Kulkarni RA, Rege NN. Pharmacology of medicinal plants and natural products. *Indian journal of pharmacology*. 2000 Jul 1;32(4):S81-118.
211. Go AS, Bauman MA, Coleman King SM, Fonarow GC, Lawrence W, Williams KA, Sanchez E. An effective approach to high blood pressure control: a science advisory from the American Heart Association, the American College of Cardiology, and the Centers for Disease Control and Prevention. *Hypertension*. 2014 Apr;63(4):878-85.
212. Serafini M, Peluso I, Raguzzini A. Flavonoids as anti-inflammatory agents. *Proceedings of the Nutrition Society*. 2010 Aug;69(3):273-8.

213. Sethi A, Srivastav SS, Srivastav S. Pregnane glycoside from *Hemidesmus indicus* R. Br. Indian Journal of Heterocyclic Chemistry. 2006 Oct 1; 16(2):191-2.
214. Austin A. A review on Indian Sarsaparilla, *Hemidesmus indicus* (L.) R. Br. J Biol Sci. 2008; 8(1):1-12. Kawlni L, Bora M, Upadhyay SN, Mukherjee K, Hazra J. Pharmacological and therapeutic profile of anantamula (*Hemidesmus indicus* (L.) R. Br.): A comprehensive review. International Journal of Ayurveda and Pharma Research. 2017 Dec 8.
215. Gayathri M, Kannabiran K. Antimicrobial activity of *Hemidesmus indicus*, *Ficus bengalensis* and *Pterocarpus marsupium* roxb. Indian journal of pharmaceutical sciences. 2009 Sep;71(5):578.
216. Sasidhar P, Murali KC, Chellu SC, Suresh C. Screening of phytochemical compounds in selected medicinal plants of Deccan Plateau and their viability effects on Caco-2 cells. Journal of Medicinal Plants Research. 2011 Dec 30;5(32):6955-62.
217. Mary NK, Babu BH, Padikkala J. Antiatherogenic effect of Caps HT2, a herbal Ayurvedic medicine formulation. Phytomedicine. 2003 Jan 1;10(6-7):474- 82.
218. Chatterjee I, Chakravarty AK, Gomes A. Daboia russellii and Naja kaouthia venom neutralization by lupeol acetate isolated from the root extract of Indian sarsaparilla *Hemidesmus indicus* R. Br. Journal of ethnopharmacology. 2006 Jun 15;106(1):38-43.
219. Vishali K, Kavitha KN, Rajesh V, Perumal P. Anti-ulcer activity of *Hemidesmus indicus* root extract on Indomethacin induced gastric ulcer in albino wistar rats. Journal of Pharmacy Research. 2011 Feb;4(2):391-2.
220. Khanna VG, Kannabiran K. Larvicidal effect of *Hemidesmus indicus*, *Gymnema sylvestre*, and *Eclipta prostrata*, against *Culex quinquefasciatus* mosquito larvae. African Journal of Biotechnology. 2007;6(3).
221. Madhu A, Keerthi PH, Singh J, Shivalinge GK. To evaluate the anti-epileptic activity of aqueous root extract of *Hemidesmus indicus* in rats. Arch Pharm Sci Res. 2009;1(1):43-7.
222. Wang YJ, Pan MH, Cheng AL, Lin LI, Ho YS, Hsieh CY, Lin JK. Stability of curcumin in buffer solutions and characterization of its degradation products. Journal of pharmaceutical and biomedical analysis. 1997 Aug 1; 15(12):1867-76.
223. Labban L. Medicinal and pharmacological properties of Turmeric (*Curcuma longa*): A review. Int J Pharm Biomed Sci. 2014; 5(1):17-23.
224. Cronin JR. Curcumin: Old spice is a new medicine. Alternative & complementary therapies. 2003 Feb 1;9(1):34-8.
225. Dikshit M, Rastogi L, Shukla R, Srimal RC. Prevention of ischaemia-induced biochemical changes by curcumin & quinidine in the cat heart. The Indian journal of medical research. 1995 Jan 1;101:31-5.
226. Ruby AJ, Kuttan G, Babu KD, Rajasekharan KN, Kuttan R. Anti-tumour and antioxidant activity of natural curcuminoids. Cancer letters. 1995 Jul 20;94(1):79- 83.
227. Garg R, Gupta S, Maru GB. Dietary curcumin modulates transcriptional regulators of phase I and phase II enzymes in benzo [a] pyrene-treated mice: mechanism of its anti-initiating action. Carcinogenesis. 2008 May 1;29(5):1022- 32.
228. Wickenberg J, Ingemansson SL, Hlebowicz J. Effects of *Curcuma longa* (turmeric) on postprandial plasma glucose and insulin in healthy subjects. Nutrition journal. 2010 Dec;9(1):1-5.
229. Rasmussen HB, Christensen SB, Kvist LP, Karazmi A. A simple and efficient separation

- of the curcumins, the antiprotozoal constituents of *Curcuma longa*. *Planta medica*. 2000 May;66(04):396-8.
230. Xia X, Cheng G, Pan Y, Xia ZH, Kong LD. Behavioral, neurochemical and neuroendocrine effects of the ethanolic extract from *Curcuma longa* L. in the mouse forced swimming test. *Journal of ethnopharmacology*. 2007 Mar 21;110(2):356-63.
231. Srivastava R. Inhibition of neutrophil response by curcumin. *Agents and Actions*. 1989 Nov;28(3):298-303.
232. Ringman JM, Frautschy SA, Cole GM, Masterman DL, Cummings JL. A potential role of the curry spice curcumin in Alzheimer's disease. *Current Alzheimer Research*. 2005 Apr 1;2(2):131-6.
233. Vergheze J, Sunny TP, Balakrishnan KV. (+)- α -santalol and (-) - β -santalol (Z) concentration, a new quality determinant of East Indian sandalwood oil. *Flavour and Fragrance Journal*. 1990 Dec; 5(4):223-6.
235. Angadi VG, Jain SH, Shankaranarayana KH, Ravikumar G, Genetic diversity between Sandal populations of different provenances in India. *Sandalwood News Letter of Australia*, 2003; 17: 4-5.
236. Enfleurage Aromatics from the Natural World: [http:// www.enfleurage.com](http://www.enfleurage.com) accessed on 03/07/2007
237. Matsuo Y, Mimaki Y. Lignans from *Santalum album* and their cytotoxic activities. *Chemical and Pharmaceutical Bulletin*. 2010 Apr 1;58(4):587-90.
238. Chatterjee S, Pramanick N, Chattopadhyay S, Munian K, Kolhapure SA. Evaluation of the efficacy and safety of "Baby Powder" in infantile hyperhidrosis, miliaria rubra and bad body odor. *The Antiseptic*. 2005;102(3):126-8.
239. Rawat S , Nijwante S , Jaiswal L , Fateme L. Preparation and Evaluation of Facial Scrub as Skin Cosmetics , *Journal of Natural Products* , published by Indian Society of Pharmacognosy , 2005 , Vol : 27 (4) , p.p. 411.
240. Helath Library Epnet- EBSCO Publishing: <http://healthlibrary.epnet.com> accessed on 25/08/2007
241. ACS Publication Home: <http://pubs.acs.org> accessed on 25/08/2007
242. Alternative Medicine: <http://holisticonline.com> accessed on 03/07/2007

HOW TO CITE: Dipali V. Mane, Rashmi R. Balkate , Vanita H. Shinde, New Therapeutic approaches for Migraine: A brief overview, *Int. J. of Pharm. Sci.*, 2024, Vol 2, Issue 1, 562-586. <https://doi.org/10.5281/zenodo.10562930>

