

HERBAL OILS IN COSMETIC AND THERAPEUTICS: A RAPID REVIEW

Sharique Ahmad^{1*}, Subuhi Anwar², Tanish Baqar³, Pushpendra D. Pratap⁴, Sudarshana Gogoi⁵ and Saba Naziya⁶

¹Professor, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India-226003.

²Research Assistant, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India-226003.

³Undergraduate Student, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India-226003.

⁴Research Scholar, Department Biochemistry, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India -226003.

⁵Senior Resident, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India-226003.

⁶Junior Resident, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India-226003.

***Corresponding Author: Dr. Sharique Ahmad**

Professor, Department of Pathology, Era's Lucknow Medical College and Hospital, Era University, Lucknow, Uttar Pradesh, India-226003.

Article Received on 12/07/2022

Article Revised on 02/08/2022

Article Accepted on 22/08/2022

ABSTRACT

In the last few years, more and more studies on the biological properties of essential oils (EOs) especially antimicrobial and antioxidant properties in vitro and food model have been published in all parts of the world. Herbal oils have been utilized for therapeutic and cosmetic purposes for over 2,500 years, according to historical records. It is inherited knowledge that has been passed down from generation to generation that provides a mostly untapped source for cosmetic formulation development. Recently, consumers have developed an ever-increasing interest in natural products as alternatives for artificial additives or pharmacologically relevant agents. Among them, EOs have gained great popularity in the food, cosmetic as well as pharmaceutical industries. Despite the reportedly strong antimicrobial activity of EOs against food-borne pathogens and spoilage microorganisms, their practical application as preservatives is currently limited owing to the undesirable flavor changes they cause in food products. As a result, the current survey was done to explore cosmetic potential herbal on the topical application of herbal oil for skincare, hair care, foot care, eye care, nail care, lip care, and dental care, data was collected. The collected data was double-checked against authentic Siddha literatures, and the results are evaluated for chemical compositions and other factors and relevant pharmacological activities. Nonetheless, more studies are necessary to the applicability of various EOs on other food models with their utility as therapeutic or cosmetic agent.

KEYWORDS: Essential oils, Herbal, Anti-oxidants, Therapeutic, Cosmetic agents.

INTRODUCTION

Today, due to the adverse effects of chemical preservatives, regarding the carcinogenic potential and toxicity to humans, as well as the high levels of antimicrobial agents present in plants, there is a growing interest in the use of natural preservatives derived from natural sources. Cosmetics are useful products that are used all over the world to protect and enhance the appearance of the skin and other body parts.^[1] Natural beauty is a gift, and cosmetics can help people exhibit and enhance their natural attractiveness and personality attributes. People were used to numerous herbal medicines, including vegetable oils, in the old age, and it was well developed among the people.^[2] People

currently employ chemical poisons, germs, and chemicals in the environment that lead to skin harm to improve skin, hair, nail, foot, and eye care.

Herbal cosmetics, which contain biological and nutraceutical active substances that help renew the skin and other body parts, are a suitable answer to the current situation.^[1] Oily media are better at generating a uniform, long-lasting sunscreen coating on the skin, and their emollient characteristics protect the skin from the drying effects of wind and sun exposure.^[3] The greatest vegetable oil-based cosmetics are created totally from plant seeds, so they have no side effects and are classic synthetic items.^[4] The oils obtained from the plant have

been used for various cosmetic purposes since the beginning of human history for their biological properties such as antioxidants, anti-tyrosinase, anticancer, anti-inflammatory, antimicrobial, fungicidal, and bactericidal properties, anti-ulcer and anti-tumor activity.^[5]

As a result, of the consumer's desire to reduce preservative use and produce self-protective cosmetics that use materials obtained from oily plants instead of preservatives, this can result in healthy and beautiful skin.

Table 1: List of herbal oils in cosmetic and therapeutic application with their origin.^[6-35]

Herbal Oils	Botanical name	Family name	Plant part
Coconut oil	Cocos nucifera	Arecaceae	Fruit
Sesame oil	Sesamum indicum	Pedaliaceae	Seed
Castor oil	Ricinus communis	Euphorbiaceae	Seed
Neem oil	Azadirachta indica	Meliaceae	Seed
Mustard oil	Brassica nigra	Brassicaceae	Seed
Honge oil	Millettia pinnata	Fabaceae	Seed
Peanut oil	Arachis hypogaea	Fabaceae	Seed
Mahua oil	Madhuca indica	Sapotaceae	Seed
Sunflower oil	Helianthus annuus L.	Asteraceae (Compositae)	Seed
Kalonji Oil	(Nigella sativa Linn.	Ranunculaceae	Seed
Rose Oil	Rosa	Rosaceae	Petals
Almond, sweet	Prunes duleis	Rosaceae	Seed
Amyris	Amyris balsamifera	Rutaceae	Flower
Angelica root	Angelica archangelica	Apiaceae	Root
Anise, star	Illiciunt verum	Illiciaceae	Seed
Aniseed	Pimpinella anew	Apiaceae	Seed
Armoire (mugwort)	Artemisia vulgaris	Asteraceae	Root
Basil	Ochnum basilicum	Lamiaceae	Leaves
Bay	Pimenta racemosa	Lauraceae,	Leaves
Bergamot	Citrus bergamia	Rutaceae	Fruit
Bider(bitter) orange	Citrus auranthium	Rutaceae	Fruit
Garlic Chives	Allium tuberosum	Amaryllidaceae	All Part of the Plant is Used
Buchu leaf	Agathosma betulina	Rutaceae	Leaf
Cade	Juniperus oxycedrus	Cupressaceae	Wood
Calamus	Corus calamusvar. angustatus	Acoraceae	Leaves, Roots and Stem
Cananga	Cananga odorata	Annonaceae,	Flower
Caraway seed	Carom carvi	Apiaceae, or Umbelliferae	Fruit and Seed
Cardamon	Elettaria cardamomum	Zingiberaceae	Seed
Carrot seed	Daucus carota	Apiaceae	Seed
Cascatilla bark	Croton eluteria	Euphorbiaceae	Bark
Cassia oil tree	Cionamomum cassia	Lauraceae	Bark
Cedar leaf	Thuja occidentalis	Pinaceae	Leaf
Japanese Cedar seed	Cryptomeria japonica	Cupressaceae	Seed
Cedarwood, Chinese weeping cypress	Cupressus funebris	Cupressaceae	Leaf, Wood
Cedarwood, Texas	Juniperus mexicana	Juniper	Wood
Cedarwood, Virginian	Juniperus virginiana	Cupressace	Wood
Celery seed	Apium graveolens var. duke	Apiaceae	Seed
German	Matricaria recutita	Asteraceae	Flower

Chamomile, blue			
Chamomile, Roman	<i>Chamaemelum nobile</i>	Asteraceae	Flower
Cinnamon bark	<i>Cinnamomum zeylanicum</i>	Lauraceae	Leaf and Bark
Cinnamon #500	<i>Cinnamomum zeylanicum</i>	Lauraceae	
Citronella	<i>Cymbopogon nardus</i>	Cardiophyllaceae	leaves and stems
Citronella, Java	<i>Cymbopogon winterianus</i>	Poaceae	Grass Leaves
Clary sage	<i>Salvia sclarea</i>	Lamiaceae	Flower Tops and Leaves
Clove bud	<i>Syzygium aromaticum</i>	Myrtaceae	Buds
Clove leaf	<i>Syzygium aromaticum</i>	Myrtaceae	Leaves
Clove stem, Indo	<i>Syzygium aromaticum</i>	Myrtaceae	Stem
Coriander	<i>Coriandrum sativum</i>	Apiaceae	Dried Seeds or Leaves
Cypress	<i>Cupressus sempervirens</i>	Cupressaceae	Aromatic and Resinous Leaves
Davana	<i>Artemisia pallens</i>	Crambidae	Leaves and Flowers
Dill weed	<i>Anethum graveolens</i>	Apiaceae	Leaves, Stems, and Seeds
Grapefruit	<i>Citrus paradisi</i>	Rutaceae	Peel of the Grapefruit.(Fruit)
Guaiac wood	<i>Guaiacum sanctum</i>	Zygophyllaceae	Wood
Helichrysum	<i>Helichrysum angustifolium</i>	Asteraceae	Stems and Leaves
Hiba	<i>Thujopsis dolabrata</i>	Cupressaceae	Wood
Hometaddish	<i>Wasabia japonica</i>	Brassicaceae	Flower, Seeds, Bark, Root, Leaves, Resin, or Wood
Ho wood	<i>Cinnamomum camphora</i>	Lauraceae	Wood and Bark
Hyssop	<i>Hyssopus officinalis</i>	Lamiaceae	Flowers and Leaves
Juniperheny	<i>Juniperus communis</i>	Cupressaceae	Fruit
Lavender	<i>Lavandula angustifolia</i>	Lamiaceae	Flower
Lavender, bulgarian	<i>Lavandula angustifolia</i> Mill	Lamiaceae	Flower
Lemon	<i>Citrus limon</i>	Rutaceae	Fruit
Lemon eucalyptus	<i>Corymbia citriodora</i>	Myrtaceae	Leaves
Lemon IOF	<i>Citrus limon</i>		
Lemongrass	<i>Cymbopogon Citratus</i>	Poaceae	Leaves
Lime dis 5 fold (oil tahiti lime)	<i>Citrus latifolia</i>	Rutaceae	Fruit, Flowers or Leaves
Litsea cubeba (May Chang)	<i>Litsea cupeba</i>	Lauraceae	Bark, Leaf, Root, and Fruits
Lovage root	<i>Levisticum officinale</i>	Apiaceae	Roots
Mace	<i>Myristica fragrans</i>	Myristicaceae	Fruit, Mace Seed Covering
Mandarin	<i>Citrus reticulata</i>	Rutaceae	Fruit
Marjoram	<i>Origanum majorana</i>	Lamiaceae	Leaves
Marjoram, sweet	<i>Origanum majorana</i>	Lamiaceae	Leaves
Melissa	<i>Melissa officinalis</i>	Lamiaceae	Leaves
Mustard	<i>Brassica nigra</i>	Brassicaceae	Seeds
Myrrh	<i>Commiphora myrrha</i>	Burseraceae	Gum
Myrtle	<i>Myrtus communis</i>	Myrtaceae	Berries, Leaves, Seeds
Neroli	<i>Citrus aurantium</i>	Rutaceae	Leaves

Niaouli	Melaleuca viridiflora	Myrtaceae	Leaves
Nutmeg	Myristica fragrans	Myristicaceae	Seed Covering
Orange	Citrus sinensis	Rutaceae	Fruit
Origanum	Origanum vulgare	Lamiaceae	Leaves and Shoots of the Plant
Palmarosa	Cymbopogon martinii	Poaceae	Stem of the Grass (Dried Leaves)
Parsley seed	Paroselinum crispum	Apiaceae	Leaves, Dark Seeds
Patchouli	Pogostemon cablin	Lamiaceae	Leaves
Patchouli, Indonesian	Pogostemon heyneanus	Lamiaceae	Leaves
Pennyroyal	Mentha pulegium	Lamiaceae	Fresh Plant or Dried Aerial Parts.
Pepper, black	Piper nigrum	Piperaceae	Flower
Peppermint	Mentha piperita	Lamiaceae	Leaves
Peppermint, terpenes	Mentha arvensis	Lamiaceae	Leaves
Pentgrain	Citrus aurantium	Rutaceae	Leaves and Flower
Pimento beny	Pimentha dioica	Myrtaceae	Leaf
Pine needle	Pinus sylvestris	Pinaceae	Needles of the Tree
Rose, Damask	Rosa damascena	Rosaceae	Petals of Flowers
Rosemary	Rosmarinus officinalis	Lamiaceae	Leaves and Tender Shoots
Rosewood	Aniba rosaeodora	Lauraceae	Bark
Sage, Spanish	Salvia lavandulifolia	Lamiaceae	All Aerial Parts of the Plant
Sandalwood	Santalum album	Santalaceae	Heartwood

Table 2: Herbal oils and their pharmacological actions.

Oil name	Cosmetic purpose	Remedy	Chemical composition	Pharmacological action	References
Sesame oil	Skincare	Apply to the face and body and rinse with gram flour for pigmentation. Sesame oil-soaked turmeric applied to the face for acne.	lanolin oil and its derivatives, fatty material Lecithin and lignans	Anti-bacterial Anti-fungal Emollient Demulcent Anti-tyrosinase	[6, 16]
	Scalp care	Warm sesame oil is applied to the head.	Chlorosesamone, hydroxyresamone and 2,3-epoxyresamone, lecithin	Anti-dandruff Moisturizer	[34]
	Haircare	Curry leaves, kus kus grass, and fenugreek soaked oil has been applied for long hair	Sesamin, Sesaminol linoleate triglyceride	Moisturizer Demulcent	[34]
	Dental care	Use as oil pulling for 15 minutes.	Sesamin and sesaminol linoleate in triglyceride	Anti- Cancer	[7]
Coconut oil	Skincare	Coconut oil is applied with honey for glowing. Coarse sugar is applied with coconut oil for soft skin. Applied warm oil at night for wrinkles and dark skin.	saturated fat Lauric, myristic, caprylic, capric, palmitic acid	Moisturizer Emollient Anti- aging Hypo pigmentative Anti-wrinkles	[4, 18, 21, 29], 31]
	Haircare	Boiled with curry leaves and false daisies for long hair. Applied fenugreek soaked coconut oil for dandruff.	Triglyceride, lauric acid, and protein Lauric acid	Promote hair growth Anti-Dandruff Cleanser	[1, 4, 18, 21, 31]

		Lemon juice is applied with coconut oil for dandruff.	Ammonium coco monoglyceride		
	Nail care	Apply warm oil	Vitamin E	Nourishment	[21]
	Foot care	Applied coconut oil with turmeric and henna leaves	Triglyceride, lauric acid and protein	Emollient	[18, 31]
	Lip care	Applied warm oil	Vitamin E	Nourishment moisturizer	[18]
Castor oil	Skin hair	Applied with coconut oil for dry skin. Warm castor oil mix with turmeric powder applied for fairness. Warm oil applied and wash with warm water for wrinkles.	Ricinoleic acid Sodium Ricinoleate Cetyl Ricinoleate	Fragrant Skin conditioner Skin whitener Emollient Anti-acne	[26, 35]
	Haircare	Mix with fenugreek powder and applied for hair growth.	Ricinoleic acid	Hair growth Cleanser Hair thickener	[20]
	Lip care	A drop applied at night.	Ricinolic and salt esters	Moisturizer	[35]
	Eyecare	Apply drop cotton soaked oil at night for dark circles.	Glyceryl Ricinoleate Zinc Ricinoleate	Hypo-pigmentation Anti-inflammatory	[26, 35]
	Nail care	Warm water-soaked toes applied with lemon drop mixed a drop of castor oil.	Cetyl Ricinoleate Zinc Ricinoleate	Anti-inflammatory	[26, 35]
Neem oil	Skincare	Turmeric powder and neem leave powder mixed warm neem oil applied for acne.	Terpenes, oleic acid palmitic acid	Anti-inflammatory, Anti-septic Anti-bacterial	[10, 17, 32]
	Haircare	Neem oil mixed with lemon juice and sesame oil for dandruff. Warm neem oil is applied to the scalp for hair dryness.	Linoleic Acid, Lower Fatty Acids, Palmitic Acid, Stearic Acid, Oleic Acid	Anti-bacterial Anti-Dandruff Hair tonic	[5, 10, 42,43]
Mustard oil	Skincare	Applied with gram flour for dark pigmentation and dry skin.	Tannins, Flavonoids, Carotenoids, Alkaloids,	Antibiotic, Fungicidal Anti-oxidant activity Anti-aging	[2, 13, 19]
	Haircare	Warm oil applied with coconut oil for grey hair.	Glucosinolate	Hair growth Stimulant fungicidal	[13, 19, 24]
Peanut oil	Skincare	Apply a drop on the face for glowing.	hydrogenated peanut oil, peanut acid glyceride linoleic	Skin cleanser Emollient	[27, 33]
Honge oil/ karanje oil/Pongamia oil	Skincare	Warm oil applied to face	Oleic acid Linoleic acid	Anti-inflammatory and Antioxidant properties Anti- ulcerative	[22, 25]
	Haircare	Warm oil is applied to the scalp and does massage	Myristic acid Capric acid Pongamol	Hair tonics Antioxidant property	[28]
Mahuva oil (Butter Tree Essential Oil)	Skincare	Apply a drop with a cotton ball	Phytosterols Linoleic acid Amino acids, enzymes, organic acids, sugars, vitamins,	Emulsifier Hyperpigmentation Skin lightening Skin softener	[11, 15, 30]

	Hair care	Normally apply and massage scalp	Palmitic acid, β -carotenes, Glycine	hair fixer, Promote hair growth, Smoothen hair, protect against dry and dull hair.	[44,45]
Sunflower Oil	Skin care	Use as a Toner mix with rose water, Use it with your moisturizer,	Lipids, vitamin E, n-6-fatty acids, n-3 fatty acids	Enhances skin barrier function, and prevents invasive bacterial infections, Retain moisture in skin, Protect from solar UV radiation, Treatment in mild to moderate severe psoriasis and skin scaling, Protect from anti-wrinkling and anti-ageing,	[46,47,48,49]
	Hair care	Take few drop of oil and massage scalp and wrap your hair in a warm towel and leave it on for at least 30 minutes, then wash	oleic acid, linoleic acid, flavonoids, proteins, fats, vitamins, and minerals	Stop hair breakage , Faster hair growth, Prevent itchy scalp and dandruff, smoothen hair, It has anti inflammatory properties	[50,51,52]
Kalonji Oil	Skin care	Use as a supplement, Directly apply and massage to your skin, as a cream,	Thymoquinone, thymohydroquinone, thymol, nigellidine, carvacrol, nigellimine, and alpha-hederin, Iron and calcium, Tannins, Flavonoids, Essential fatty acids, Essential amino acids,	antibacterial, antiviral, anti-inflammatory properties, use for pigmentation, uses in dermatological disorder, and in cosmeceutical formulations	[53,54,55]
	Hair Care	You can use as a hair cream, hair lotion, hair oil, hair gel, ,apply hair oil in scalp massage leave overnight wash it,	unsaturated fatty acids, Thymoquinone	It prevent hair loss, Protect from thinning or shedding of hair	[56]
Rose Oil	Skin care	Applying rose oil and massage skin leave for night for skin glowing and brightening,	Terpenes, Glycosides, Flavonoids, and Anthocyanins	anti-inflammatory, anti-infective Properties, Decrease under-eye dark circles, Brighten skin, treat stress-associated skin disorders	[57]
	Hair care	Mix with olive oil and massage scalp , for silky shiny hair	Vitamin C, Gallotannis, Amino acid,	Good for hair growth. Protect Hair, loss problem, Prevent from dandruff & falling of hair,	[58]

DISCUSSION

Essential oils are composed of lipophilic and highly volatile secondary plant metabolites.^[3] As defined by the International Organization for Standardizations (ISO), the term “EOs” is reserved for a product obtained from vegetable raw material, either by distillation with water or steam, or from the epicarp of citrus fruits by a mechanical process, or by dry distillation, that is, by physical means only. EOs have been proposed as natural preservatives and are used as alternatives for the control of pathogenic microorganisms. Herbal EOs are aromatic oil liquids, extracted from various parts of plants, and are used as flavoring agents in foods; thus the importance of the use of medicinal plants in food products can be multiple times.^[36] Preservatives are used to limit the growth and microbial activity in pharmaceutical products, food and cosmetics, and by interfering with cell membranes, enzymes and genetic structure of microorganisms have a preventive effect. To apply the essential oils as chemical preservatives in food, investigating their antibacterial activities alone and in combination with other factors affecting the growth of microorganisms in food and nutrition is essential in laboratory models.^[36] The use of natural antimicrobial compounds such as essential oils, herbal extracts and spices for the protection of food against microbial spoilage has led to the identification of some of their unique features such as taste effects and antioxidant activity.^[37] Essential oils and plant extracts with various biological compounds have very high potential for using as new drug combinations, healthcare and human and animal diseases as well due to the presence of antimicrobial compounds especially against Gram-Positive and Gram-Negative pathogens, Anticancer, Antioxidant and Free Radical Removal Factors as one of the most important natural sources for the using of them in medicines and foods.^[38] Essential oils and extracts from medicinal herbs with antimicrobial, anticancer and antioxidant compounds (due to the presence of free radicals eliminating agents) have importance as new and natural drug combinations, both in the field of health and disease management and in the protection of raw and processed foods.^[39] Traditional medicine has brought the foundation of health care around the world from the earliest days of human beings. Medicinal plants have been known for many years as a rich source of well-known therapeutic agents for the treatment and prevention of various diseases, the most important of which is the social, cultural, spiritual and medicinal fields. Over the past centuries, severe changes in human lifestyle and dietary habits have led to the emergence of various chronic pathologies. Recently, “herbal renaissance” is a visible phenomenon worldwide, and two-thirds of the plant species in the world may have medicinal value. The World Health Organization believes that 80% of the population in Africa and Asia uses traditional medicine as the first source for their health-care needs. Also, in the United States, more than 40% of the population has recently been identified with

complementary and alternative supplements, including herbal supplements.^[41]

CONCLUSION

Herbal oils appear to be relatively safe, but human research or prospective data on adverse effects and plant and drug interactions are limited. On the other hand, due to the harmful effects of chemical preservatives and also the increase of drug resistance, the use of plants and their essential oils is very important. Essences and their effective compounds can be used to prevent poisoning and disease and to prevent the transmission of microbes which are the etiological factors for numerous types of infective pathology.

Conflict of interest

None.

REFERENCES

1. S. Aarti, R. Mohile, Effect of mineral oil, sunflower oil, and coconut oil on prevention of hair damage, *J Cosmet Sci*, 2003; 54(2): 175-192.
2. A. Badrul, H. Sarower, H. Akramul, Antioxidant and anti-inflammatory activities of the leaf extract of brassica nigra, *International journal of pharmaceutical sciences and research*, 2021; 12(8): 303-310.
3. D. Chanchal, S. Swarnalata, In vitro sun protection factor determination of herbal oils used in cosmetics, *Pharmacognosy Research*, 2010; 2(1): 22.
4. L.B. Christina, F.B. Wilma, V.B.Donald, D.K. Curtis, G.M. James, C.S. Ronald, J.S. Thomas, W.S. Paul, A. Alan, Final Report on the Safety Assessment of Cocos nucifera (Coconut) Oil and, *International Journal of Toxicology*, 2011; 30(1): 5S-16S.
5. A. Gupta, Indian Medicinal Plants Used in Hair Care: A short review, *PHCOG J.*, 2010; 2(10): 361-364.
6. M. Jiradej, J. Pensak, M. Worapaka, K. Prachya, M. Aranya, 5 α -Reductase inhibition and melanogenesis activity of sesamin from sesame seeds for hair cosmetics, *Chaing mai Journal Of Science*, 2015; 42(3): 669-680.
7. R. Kandhangath, P. Ajai, K. Farhath, S. Amarinder, Nutritional, Medicinal and Industrial Uses of Sesame (*Sesamum indicum* L.) Seeds - An Overview, *Agriculturae Conspectus Scientifi cus*, 2010; 75(4): 159-168.
8. V. Kapoor, Herbal cosmetics for Skin and Hair Care, *Indian Journal of Natural products and Resources*, 2005; 4(4): 306-314.
9. W. Katarzyna, M. Wanda, L. Jacek, G. Malgorzata, C. Anna, S. Antony, Essential oils on antimicrobial agents- myth or real alternative, *Molecules*, 2019; 24(11): 2130.
10. M.K. Khaled, Review on Pharmacological and toxicological effects of Oleum azadirachti oil, *Asian Pacific Journal of Tropical Biomedicine*, 2013; 3(10): 834-840.

11. A. Khaleque, M.M.A. Wahed, M.S. Huq, M.M.A. Khan, Madhuca latifolia I. Constituents of the seeds, *Science.res.*, 1969; 6: 227-228.
12. S.J. Laxmi, A.P. Harshal, Herbal Cosmetics and Cosmeceuticals: An Overview, *Natural Products Chemistry & Research*, 2015; 3(2): 2-8.
13. R. Mahmudur, K. Amina, L. Lei, J.V. Bronwyn, Brassicaceae Mustards: Traditional and Agronomic Uses in Australia and New Zealand, *Molecules*, 2018; 23(1): 231.
14. L. Maria, F. Elena, D. Herminia, Relevance of Natural Phenolics from Grape and Derivative Products in the Formulation of Cosmetics, *Cosmetics*, 2015; 2(3): 259-276.
15. F.R. Mohamed, A.A.M. Adel, M.A.A. Adel, T. Monier, N. Bernd, Profile and levels of fatty acids and bioactive constituents in mahua butter from fruit-seeds of buttercup tree [Madhuca longifolia (Koenig)], *European food research and technology*, 2006; 200: 710-718.
16. S. Mondra, W. Natthida, K. Kwanjai, Inhibition of two stages of melanin synthesis by sesamol, sesamin and sesamol, *Asian pacific Journal of tropical Biomedicine*, 2017; 7(10): 886-895.
17. R. Paolo, C. Gianfranco, B. Marco, D.P. Serena, A. Francesco, F. Caterina, Allergic contact dermatitis caused by neem oil: An underrated, *Dermatitis*, 2019; 81: 133-134.
18. R. Pandiselvam, M.R. Manikantan, B. Shameena, A.C. Mathew, Virgin Coconut oil infused healthy cosmetics, *Indian coconut journal*, 2019; 5: 31-33.
19. S. Rajesh, S. Vikas, Efficacy evaluation of ethanolic extract of Brassica nigra as potential antimicrobial agent against selected microorganisms, *International Journal of Pharmaceutical science and health care*, 2014; 4(3): 117-123.
20. V. Ramya, A. Vedhachalam, S. Kirutika, "Castor Oil" – The Culprit of Acute Hair Felting. *International journal Of Trichology*, 2017; 9(3): 116-118.
21. S. Rashmi, P. Indrashish, G. Narendra, J. Soumya, Use of vegetable oils in dermatology: An overview, *International Journal of Dermatology*, 2017; 56(1): 1-7.
22. M. Rekha, B. Bettadiah, T.K. Sindhu, K. Govindaraju, A feasible method for isolation of pongamol from karanja (Pongamia pinnata) seed and its anti-inflammatory activity, *Industrial crops and products*, 2020; 154: 112720.
23. K.B. Rohit, S. Alok, M. Kumar, D.K. Chanchal, S. Yadav, A Comprehensive review on herbal cosmetics, *International Journal of Pharmaceutical Science and Research*, 2017; 8(12): 4930-4949.
24. K.R. Rupender, Medicinal Qualities of Mustard Oil and Its Role in Human Health against Chronic Diseases: A Review, *Journal of Diarrying, foods, and home sciences*, 2019; 38(2): 98-104.
25. D.S. Savita, A Review on Pongamia Pinnata (L.) Pierre: A Great Versatile, *Natural and Science*, 2010; 8(11): 130-139.
26. A.D. Sodeif, F.A. Bahram, A. Kazeem, A. Abofazl, H. Jawad, E. Shiva, *Physiological and Medicinal Properties of Castor Oil*, 33rd edition, Tabriz, Iran: Stadium Press, 2011; 323-337.
27. T. Lin, L. Zhong, L. Juan, Anti-Inflammatory and Skin Barrier Repair Effects of Topical Application of Some Plant Oils, *International Journal of Molecular Sciences*, 2017; 19(70): 1-21.
28. K. Usharani, N. Dhananjai, R. Manjunath, Pongamia pinnata (L.): Composition and advantages in agriculture: A review, *Journal of Pharmacognosy and Phytochemistry*, 2019; 8(3): 2181-2187.
29. J. Uten, P. Yane, L. Narissara, A. Doungporn, Antioxidant, anti-tyrosinase and anti-collagenase activities of virgin coconut oil and stability of its cream, *Maejo International Journal of Science and Technology*, 2020; 14(2): 166-176.
30. N.M. Ujwala, K.M. Debarshi, M.M. Nilesh, S.K. Fahimuddin, B. Nupoor, Exploring the role of Mahua oil as potent emulsifier in cream formulations. *International Journal of Herbal Medicine*, 2017; 5(3): 93-97.
31. G. Vala, P. Kapadiya, Medicinal Benefits of Coconut Oil, *International Journal of Life Sciences Research*, 2014; 2(4): 124-126.
32. V. Vijayan, A. Shaik, S. Sakthivel, K.R. Ravindra, Formulation and characterization of solid lipid nanoparticles loaded Neem oil for topical treatment of acne, *Journal of Acute Disease*, 2013; 2(4): 282-286.
33. P. Jessica, G. Marilia, S. Patricia, S. Oscar, Assessment of Adulteration of Cosmetics Based on Vegetable Oils by GC-FID and Lipid Profile Using Direct Infusion Electrospray Ionization Mass Spectrometry (ESI-MS), *J. Braz. Chem. Soc*, 2018; 29(12): 2449-2668.
34. A. Warra, Sesame (sesamum indicum l.) seed oil methods of extraction and its prospects in cosmetic industry: a review, *bayero journal of pure and applied sciences*, 2011; 4(2): 164-168.
35. J. Wilbur, Final Report on the Safety Assessment of Ricinus Communis (Castor) Seed Oil, Hydrogenated Castor Oil, Glyceryl Ricinoleate, Glyceryl Ricinoleate SE, Ricinoleic Acid, Potassium Ricinoleate, Sodium Ricinoleate, Zinc Ricinoleate, Cetyl Ricinoleate, etc, *International Journal of Toxicology*, 2007; 26(3): 31-77.
36. Burt S. Essential oils: Their antibacterial properties and potential applications in foods—A review. *International Journal of Food Microbiology*, 2004; 94(3): 223-253.
37. Keykavousi M, Ghiassi Tarzi B, Mahmoudi R, bakhoda H, Kaboudari A, Pir Mahalleh SFR. Study of antibacterial of effects of Teucrium polium oil on Bacillus cereus in cultural laboratory and commercial soup. *Carpathian Journal of Food Science and Technology*, 2016; 8(2): 176-183.

38. Salehi P, Sonboli A, Eftekhari F, Ebrahimi S, Yousefzadeh M. Effect of essential oils from certain *Ziziphora* species on swimming performance in mice. *Phytotherapy Research*, 2005; 9: 225-227.
39. Mahmoudi R, Kazemini M, Kaboudari A. Review on composition and antimicrobial effects of *Teucrium* (*Teucrium polium* L.) grown in Iran and comparison with the around the world. *Journal of Babol University of Medical Sciences*, 2017; 19(2): 54-64.
40. Mahmoudi R, Ehsani A, Zare P. Phytochemical, antibacterial and antioxidant properties of *Cuminum Cyminum* L. essential oil. *Journal of Food Industry Research*, 2012; 22(3): 311-321.
41. Sanghi DK, Tiwle R. Herbal drugs an emerging tool for novel drug delivery systems. *Research Journal of Pharmacy and Technology*, 2013; 6: 962-966.
42. Ahmad S, Maqbool A, Srivastava A, et al. Biological detail and therapeutic effect of *azadirachta indica* (neem tree) products - a review. *J. Evid. Based Med. Healthc*, 2019; 6(22): 1607-1612. DOI: 10.18410/jebmh/2019/324
43. Khan MA, Yaqoob S, Ahmad S. Antimicrobial activity of *azadirachta indica*, against target pathogens and its utility as a disinfectant and floor cleaner. *J Evolution Med Dent Sci*, 2021; 10(25): 1899- 1903, DOI: 10.14260/jemds/2021/392
44. Sunita M, Sarojini P. *Madhuca lonigfolia* (Sapotaceae): A review of its traditional uses and nutritional properties. *International Journal of Humanities and Social Science Invention*, 2013; 2(5): 30-6.
45. Mahajan UN, Mahapatra DK, Mahajan NM, Kazi FS, Baghel N. Mahua Oil, an Ayurvedic product demonstrated permeation enhancing attribute in topical gel formulations. *J. Nat. Prod. Plant Resour*, 2017; 7(3): 8-14.
46. Danby SG, AlEnezi T, Sultan A, Lavender T, Chittock J, Brown K, Cork MJ. Effect of olive and sunflower seed oil on the adult skin barrier: implications for neonatal skin care. *Pediatric dermatology*, 2013; 30(1): 42-50.
47. Darmstadt GL, Badrawi N, Law PA, Ahmed S, Bashir M, Iskander I, Al Said D, El Kholy A, Husein MH, Alam A, Winch PJ. Topically applied sunflower seed oil prevents invasive bacterial infections in preterm infants in Egypt: a randomized, controlled clinical trial. *The Pediatric infectious disease journal*, 2004; 1, 23(8): 719-25.
48. Darmstadt GL, Mao-Qiang M, Chi E, Saha SK, Ziboh VA, Black RE, Santosham M, Elias PM. Impact of topical oils on the skin barrier: possible implications for neonatal health in developing countries. *Acta Paediatrica*, 2002; 91(5): 546-54.
49. Stoia M, Oancea S. Selected evidence-based health benefits of topically applied sunflower oil. *App. Sci. Rep*, 2015; 10: 45-9.
50. <https://www.healthline.com/health/sunflower-oil-for-hair>, Assessed on 7th Aug, 2022.
51. Rele AS, Mohile RB. Effect of mineral oil, sunflower oil, and coconut oil on prevention of hair damage. *Journal of cosmetic science*, 2003; 1, 54(2): 175-92.
52. Anjum FM, Nadeem M, Khan MI, Hussain S. Nutritional and therapeutic potential of sunflower seeds: a review. *British Food Journal*, 2012; 13.
53. de Cássia da Silveira e Sá R, Andrade LN, de Sousa DP. A review on anti-inflammatory activity of monoterpenes. *Molecules*, 2013; 18, 18(1): 1227-54.
54. Sghendo L, Mifsud J. Understanding the molecular pharmacology of the serotonergic system: using fluoxetine as a model. *Journal of Pharmacy and Pharmacology*, 2012; 64(3): 317-25.
55. Eid AM, Elmarzugi NA, Abu Ayyash LM, Sawafta MN, Daana HI. A Review on the Cosmeceutical and External Applications of *Nigella sativa*. *Journal of tropical medicine*, 2017; 2017.
56. Sudhir SP, Deshmukh VO, Verma HN. *Nigella sativa* seed, a novel beauty care ingredient: A review. *International Journal of Pharmaceutical Sciences and Research*, 2016; 1, 7(8): 3185.
57. Mohebitabar S, Shirazi M, Bioos S, Rahimi R, Malekshahi F, Nejatbakhsh F. Therapeutic efficacy of rose oil: A comprehensive review of clinical evidence. *Avicenna journal of phytomedicine*, 2017; 7(3): 206.
58. Jain PK, Das D, Jain P. Evaluating hair growth activity of herbal hair oil. *Int J PharmTech Res*, 2016; 9(3): 321-7.