



Multivalent Role of Essential Oil in Cosmetics: A Review

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ABSTRACT

Essential oil is generally known for its volatility and fragrance that are extracted by various techniques, from different parts of plant as a source. Their properties are defined by the mixture of chemical constituents present i.e., terpenoids, phenylpropane derivative etc. The extraction process uses to obtain essential oil are deemed on the basis of the part of plant, type of solvent used, location of oil, quantity of oil, nature of constituent. The cosmetic product is being used to promote beauty, for that it contains various chemicals that may harm when applied. The addition of essential oil in the cosmetic enhances the shelf life of the product along with various effects. Now-a-days, the essential oil industry has been growing more spectacularly. Variety of essential oil production are done by prominent industries that's also boost to the industrialization. Their use is confined with the selection and proper steps followed to admix with the cosmetic product. Here, the review highlighting indeed multivalent content of the essential oil that are not much known. These enormous values of volatile oil can be fruitful for the expansion of cosmetic industry more vigorously.

Keywords: Essential oil, cosmetics, extraction, volatile oil.

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INTRODUCTION

A concentrated hydrophobic liquid containing volatile chemical compounds from plants are known as Essential oils other names preferred as volatile oils, ethereal oils, or simply as the oil of the plant from which they were extracted, such as oil of clove. Often used method is distillation by using steam. Further processes include expression, solvent extraction, absolute oil extraction, resin tapping, wax embedding, and cold pressing. They are used in perfumes, cosmetics, soaps and other products, for flavoring food and drink, and for adding scents to incense and household cleaning products.¹

A mixture of chemical compounds derived from either natural or synthetically sources are constituted as "Cosmetics". The cosmetic products have been generally defined as "articles intended to be applied to the human body by being rubbed, poured, sprinkled, or sprayed for cleansing, promoting attractiveness, beautifying, or altering the appearance".²

Essential oils (EO's) are not limited to being used as fragrances only. These potent essences can be used in cosmetics, supplying the body with precious nutrients.³ It

have vast effect when applied on human body through various cosmetic products. Every component of plant has different characteristic with various therapeutic and non-therapeutic effects, which can be used in cosmeceutical formulation. Out of which volatile oil is the secondary metabolite obtained from plants which is used not only for fragrance but also for abundant therapeutic effect.

With a 2018 projected global market value of \$7.47 billion USD and an increase in demand for natural products, the essential oil industry has become increasingly important with a 5.93 % Compound Annual Growth Rate (CAGR) since 2013.^{4,5} Thus, this review aimed to highlight the enormous versatility of essential oils in cosmeceuticals for their embossing impact which will give us the new the perspective about volatile oil also for their various therapeutic effect.

Essential Oil [EO]

Essential oil/volatile oil are aromatic substances present in the specialized cells or glands of certain plants used by them to protect themselves from predators and pests, but also to attract pollinators. In other words, essential oils are part of the plant immune system.^{6,7} But for humans, it has other uses too which they are using it in different ways for their benefit.

EO's are complex mixtures (5000–7000 chemical constituents) in which mono- and sesquiterpene constituents reign, but also contain aromatic compounds, often phenylpropane derivatives, and rarely meet diterpenes. Terpenic compounds are obtained from vegetable origin that enters into the natural composition of molecular mixtures that gives volatile (essential, etheric)



oils. Terpenoids are obtained from mevalonate and mevalonate-independent (deoxy xylulose phosphate) pathway, whereas phenylpropanoids originate through the shikimate pathway. For obtaining aromatic waters and EO's requires raw materials, plant products of great quality. EO's are widespread in the most varied organs of the plant, but are more commonly found in flowers and leaves.^{7,8}

i. Classification of EO: Different classes of essential oil based on functional group.

- Hydrocarbons- e.g.: Turpentine oil
- Alcohols- e.g.: Peppermint oil, Sandal wood oil, etc.
- Aldehydes- e.g.: Lemongrass oil, Cinnamon oil, Cassia, etc.
- Ketones- e.g.: Caraway, Camphor, Dill, Fennel, etc.
- Phenols- e.g.: Tulsi, Ajowan, Clove oil, etc.
- Phenolic ether- e.g.: Nutmeg, Calamus, etc.
- Oxides- e.g.: Eucalyptus, Cardamom and Chenopodium oil.
- Esters- e.g.: Rosemary oil, Valerian, Garlic, etc.⁹

ii. Extraction process: Techniques commonly employed for extracting volatile oils include hydro- distillation process, steam distillation, solvent extraction, head space analysis, and liquid CO₂ extraction. The composition of the extracted oil may vary from one from one another by their varied method of processing and also by the solvent system used for extraction. Essential oil was mostly extracted from each of the plant parts by three extraction methods also refer figure1 given below:

- a. Hydro-distillation: Placed plant material in a 2-liter round -bottomed flask with distilled, deionized fresh water (1000 ml for 75 g dry material and 400 ml for 200 g fresh material) and extract essential oil by water distillation using a modified clewenger trap. Adjust water proportionally (1 g dry material: 13.3 ml water), for smaller plant. The distillation period for fresh samples and dried samples about 1 hr. and 1 hr. 15 min respectively. Lastly, determination of essential oil content on the basis of oil volume to tissue weight (fresh/dry) ratio.¹⁰
- b. Steam distillation: In 3-liter round-bottomed flask with dried or fresh plant material by pass steam for 90 min and collect condensate (water and oil) in a round-bottomed flask. Extract condensate for 3 times with ethyl ether to completely extract the volatile oil. Add sodium sulfate to the ethyl ether to remove moisture then removed by rotary evaporation and content determined on volume tissue weight to (fresh/ dry) basis.¹⁰
- c. Solvent extraction: Ground material in a mortar containing hexane and anhydrous Na₂SO₄ extracted four times with hexane to give a total volume of 10 ml of yellow extract. To each extract add small amount of charcoal (to remove the yellow pigment) which removed by centrifugation at low speed. This is done to remove the impurity. In the air stream at room temperature concentrate the clear solutions. Essential oil samples were stored in silica vials with teflon sealed caps at 2C++ in the dark. The essential oil contents reported are means of triplicate extractions.^{7,10}

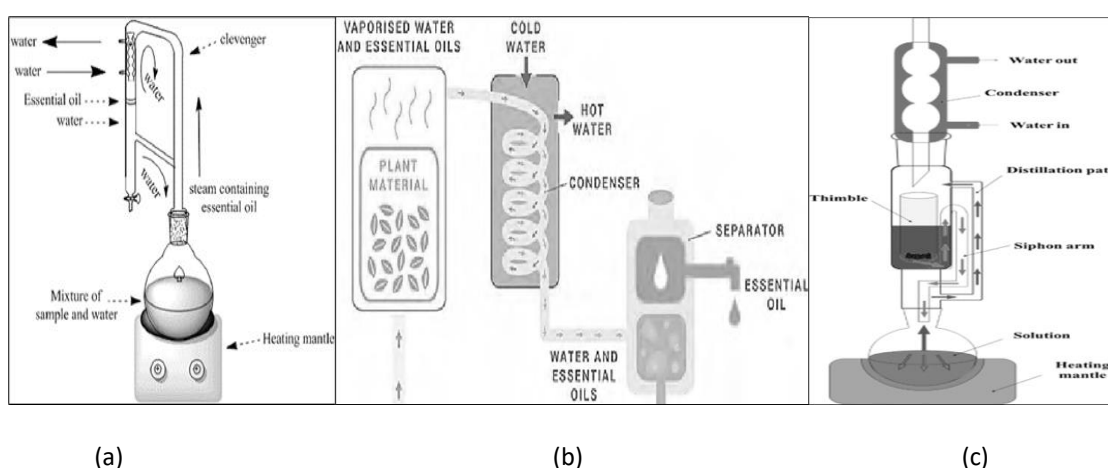


Figure 1: (a) Hydrodistillation process by clewenger apparatus; (b) steam distillation process of extraction; (c) solvent extraction by Soxhlet apparatus.^{9,10}

Majority of essential oil is obtained by means of steam distillation like peppermint (*Mentha piperita*) its oil is extracted from the leaves; rosemary (*Rosmarinus Officinalis*) through leaves and flowers; extract volatile oil of cedarwood (*Cedrus atlantica*) from its wood; sandalwood (*Santalum album L*) its oil is extracted from root and heartwood; tea tree oil (*Melaleuca alternifolia*) obtained

from leaf; Lavender essential oil (*Lavandula vera*) from leading flower.¹¹

Why to Use Essential Oil in Cosmetics

The essential oils are generally known for their fragrance, besides this they have much more therapeutic properties, which is the boon for cosmetic industry when they are

incorporated in their cosmetic preparation. The mechanisms of action of EOs are dependent on their chemical composition and the location of one or more functional groups present in the compound. They are as follows:

i. Antimicrobial effect: The solubility in water of essential oil constituents is directly related to their ability to penetrate in the cell walls of a bacteria or fungus. The antimicrobial activity of EO's is due to their solubility in the phospholipid bilayer of cell membranes. Terpenoids which are characterized by their ability have found to interfere with the enzymatic reactions of energy metabolism. The in vitro activity of oils carried out by an impedimetric method was also compared with their activity in cosmetic preparations. For example:

- Lavender oil: It is extracted from *Lavandula stoechas* L which contains camphor, terpinen-4-ol, linalool, linalyl acetate, beta-ocimene and 1, 8-cineole. It shows good anti-microbial activities against most of the bacteria, filamentous fungi, and yeasts causing itching, redness (refer figure 2). The minimum inhibitory concentrations were found to be ranging from 0.16 to 11.90 mg/ml. It also soothes eczema, skin lightening, treat psoriasis, unclog pores and various hair care skin care property like kill head lice, scalp inflammation, prevent dryness promote new cell growth. This oil has been used in lotion, face creams, hair oil, body wash etc.^{12,13,14}.



Figure 2: *Lavandula stoechas*¹⁵

- Lemongrass EO (LGEO): Their extracted is done by steam distillation from the dried or fresh leaves of the plant *Cymbopogon citratus* belonging to the family of *Poaceae*. It mainly contains Citral α , Citral β , Nerol Geraniol (shows antimicrobial property) Citronellal, Terpinolene, Geranyl acetate, Myrcene and Terpinol. Additionally, this extraction of EO along with hydrosols or aromatic waters, which are used against inflammatory diseases, microbial infectious and also has natural astringent properties. These can help fight pimples and heal acne by acting as anti-microbial while also removing excess dead skin cells like black heads and white -heads. This is used in various face wash, scrubs and face mask etc.¹⁶

ii. Anti-inflammatory effect: Skin inflammation is generally due to immune response, allergic reaction, and infection. This causes redness, rash, blistering, skin irritation, eczema, dermatitis, boils etc. They inhibit the release of inflammatory mediator's such as prostaglandin mostly PGE2 cause pain, leukotriene involves muscle contraction, histamine shows allergic reaction etc. For example:

- Rosemary oil is obtained from Rosemary (*Rosmarinus officinalis* Linn.) belonging to the family of Lamiaceae is noted for its anti-inflammatory, stimulating, and analgesic properties. Its main ingredients, such as esters may help keep excess sebum at bay.

In fact, researchers noted that it can help with both greasy hair, dandruff, and may even stimulate hair growth. It is additive in skin care products meant to hydrate and balance dry or oily skin, eczema, reduce stretch mark and acne.^{15,16}

- German chamomile oil: One of the most used EO in cosmetics. The blue chamomile essential oil is steam distilled from the flowers and flower heads of *Matricaria chamomilla* L. (Syn. *Chamomilla recutita*, *Matricaria recutita*) shown in figure3. It contains a high percentage of sesquiterpene with a low number of monoterpenes. Important components are β -farnesene, farnesol, α -bisabolol oxides A and B that are responsible for the anti-inflammatory, spasmolytic and antiseptic properties of the oil.¹⁶ The oil is also used external in skin-creams, skin oils and as bath additives as it is known to be beneficial in the treatment of skin inflammation. It is also found in mouthwashes, toothpastes, decorative cosmetics and shampoos etc.¹⁷



Figure 3: *Matricaria chamomilla*¹⁸

iii. Anti-aging: When a person begins to age, the collagen component and elastin fibers present in the skin deeper layer dermis start to break down, which results in the skin losing some of its elasticity. Ultraviolet [UV] radiation, which speeds the natural aging process, is the primary cause of early wrinkling. The intrinsic and extrinsic factors are responsible for aging of skin which implies to wrinkles, pigmentation, patchy, skin thinning etc. Intrinsic factor caused due to genetic mutation during metabolic processes by producing free radicals,

whereas extrinsic factors involve sun exposure, air pollution, smoking, alcohol consumption, and poor nutrition.^{19,20} For example:

- **Sandalwood oil:** The volatile oil extracted by steam distillation from *Santalum album* L derived from the roots and heartwood which is colorless to yellowish, the chief constituents of the oil is santalol (90% or more) a mixture of two primary sesquiterpene alcohols i.e., α -santalol dominant and β -santalol. The various studies have been carried out which demonstrate the presence of nitrous oxide scavenging activity and DPPH antioxidant activity. Anthocyanic pigment cyanidin-3-glucoside is found in *S. album* majorly show antioxidant and its nutritional importance. It also explains astringent properties for promoting the skin cycle shows that dead skin cells will be removed instead of building up.²¹ According to various researches, along with skin enhancement it also helps prolong hair growth. Thus, used in the production of various face cream, face masks, and other body lotions that may help to reduce blemishes on the skin. In hair products this volatile oil is added in hair oil, serums, and conditioners. They show very promising effect to treat various dermatological problems like acne, psoriasis, eczema, common warts.^{21,22}
- **Lemon oil:** Lemon volatile oil belongs to [Citrus limon Linn. (*C. limon*)], family of Rutaceae includes terpenes, D-limonene, L-limonene [both mixture 90 %], 10 % of oxygenated bodies mainly the aldehyde citral, and traces of phellandrene, pinene, sesquiterpene are present. Their mechanism involves inhibitory activity of tyrosinase (melanin production) and the inhibition of L-dihydroxyphenylalanine (L-DOPA) oxidation for its depigmenting effect. The antioxidant activity of the flavonoids from *C. limon* dominantly contains vitamin C which prevents formation of free radicals and protects DNA from mutations, specialized in dermo-cosmetics.^{23,24} Its constituents have antiseptic, astringent, antimicrobial, rejuvenates dull skin and detoxifying properties. Apart from this, anti-inflammatory, antiviral, anti-bacterial, anti-obesity, anti-fungal, anti-allergic, flavoring properties also taken into its various effect. For all of these reasons it is used in formulations of shampoos, toothpaste, topical ointments, face mask, face wash, face scrub, body wash, bath soap etc.^{23,25,26}
- iv. **Aromatherapy:** EO's oils are potent and concentrated they shows their action on pressure points and rejuvenate. Cosmetics aromatherapy uses these essential oils for skin, body, face and hair cosmetic products. There are administered through different methods with small quantity like inhalation, massage or simple applications on the skin surface and hardly given internally, to relieve the stress, rejuvenate and regenerate the individual for a next day's work.^{27,28}

When the EO's are directly utilized as a cosmetic, their mechanism of action involves integration of essential oils through inhalation into a biological signal of the receptor cells in the nasal mucosa. These signals are transmitted from the nasal mucosa through olfactory nerve [CN1] to the limbic and hypothalamus parts of the brain via olfactory bulb located in forebrain. These signals cause brain to release neurotransmitter like serotonin, dopamine noradrenalin, etc. These monoamines release helps to relief stress, anxiety during labor pain, depression, cause mood elevating and refreshing. When it is loaded in cosmetic products offers various effects like cleansing, moisturizing, drying and toning.^{23,29} For example:

- **Geranium EO:** Geranium (*Pelargonium graveolens* L' Herit) belongs to the family of Geraniaceae contains eugenol, geranic, citronellol, geraniol, linalol (linalool), citronellyl formate, citral, myrtenol, terpineol, methone and sabinene.¹⁵ (refer figure 4) Along with its use in aromatherapy, it is the best natural perfume, mostly used in soaps and detergents because of unique feature, doesn't affect with alkalinity of soaps. It is used in rash, dermatitis, eczema, aging skin, some fungal infections, anti-bacterial along with anxiety, sedative, nervine tonic.²⁴



Figure 4: *Pelargonium graveolens* L¹⁵

- **Clary sage (*Salvia sclarea* Linn.)** belongs to the family of Lamiaceae which contains chemical constituents mainly linalool, linalyl acetate, alpha-terpineol, germacrene D, and geranyl. Purple tinted large hairy green leaves are the key source of essential oil in clary sage used frequently. It helps in controlling the sebum production, hence can be used for both dry and oily skin, along with acne, wrinkles and for controlling cellulite.²⁴ It have balancing property which stabilizes the production of natural oil in the body where as it is rich in antioxidant content tones, tightens, and strengthens the skin and muscles while fortifying hair to reduce hair loss.³⁰
- v. **Anti-hair fall:** Hair loss is a distressing condition as a thinning of the scalp that is associated with a multitude of natural, medical, or nutritional conditions. The key mechanism is the stimulation of epidermal stem cells in the hair follicle bulge and shifting the follicles into another phase which promotes hair growth as well as prevents hair loss. By using essential oil, the scalp thickness is increased along with number of hair

follicles. It promotes rapid growth stage of hair in body. Sometimes they show effect by dilating the vessels beneath the skin which improves the blood circulation.³¹ For example:

- **Peppermint oil [PEO]:** The leaves of *Mentha piperita* is used to extract peppermint oil belonging to family Lamiaceae. Its oil constituents include carvacrol, menthol, carvone, methyl acetate, limonene and menthone.²⁴ A systemic study shows that a peppermint oil solution promotes hair growth. A study in *Microvascular Research* found that a 4% menthol solution caused blood vessels to widen, which increases blood flow, this indirectly govern prevention of hair loss.³² It acts as a moisturizer keep the scalp hydrated, heal itchy scalp, tame fizzy hair. PEO is used in shampoos, conditioner, hair oil, hair serum, cleansers, bath products, makeup, and lotions.
- **Cedarwood oil:** Cedarwood essential oil is obtained from the wood of cedar tree (*Cedrus atlantica*) shown in figure 5. They mainly contain cedrol and β -cedrene compounds found in cedar wood oil. It possesses antiseptic property that promote a clean healthy scalp. They are greatly used in eczema as there is evidence that relieves such irritated skin conditions. Oil promotes hair growth even in patients with various forms of alopecia. It boosts microcirculation in the scalp as well as the hair. Hence, it is the best essential oil for scalp problems like, scalp itching, scalp infections dandruff, hair fall and other hair problems.^{34,35,36}



Figure 5: *Cedrus atlantica*³³

How to Select Right Essential Oil

Tremendous essential oil available in the market, but to make a right choice some of the important aspects should be kept in mind. As per its use in cosmetic preparation their therapeutic properties can be utilized. The EO quality can be determined from:

- a. **Plant source:** Plant species can vary depending on several factors like the time of harvest, the location of the crop grown, the part of the plant (such as leaves, flowers, seeds etc.), production and processing or extraction method like cold pressing, distillation, critical CO₂ extraction along with different solvent used. As essential oil is good source of several bio active compounds so the raw plant condition should be known to get high quality of volatile oil.

- b. **Purity of oil:** The concentration of the oil defines the purity. On the label it should be written with 100% purity. This ensures the absence of adulteration. Only the pure essential oil without any adulteration shows the required effect. The storage condition affects the purity of the volatile oil. It can be identified by various qualitative and quantitative test.
- c. **Storage condition:** EO's should be stored in dark color, tightly closed container. Should be kept away from sunlight in cool place. This prevents volatilization and oxidation of EO. The shelf life of volatile oil is 2-3 years. Due to various environmental condition the chemical constituent of EO can be changed. Thus, special emphasis is given on the storage condition. The ideal storage condition is about 30-40 degree Celsius. Refrigeration is ideal for its storage with proper care.
- d. **Packaging and handling:** The improper handling may cause breakage or cracks results in evaporation of essential oil. The degradation of volatile oil by physical or chemical means like heat, light or oxygen may reduce its efficacy and results into impurity. Thus, the packaging should be done accordingly. The glass or aluminum container should be used for pure essential oil. As pure volatile oil is very potent, they should be handled with care. While using to inhale the diffuser or humidifier should be used.⁷

How to Use Essential Oil

Before using any essential oil on the body, skin test or patch test should be carried out by applying small amount (2-3 drops) of essential oil on skin and observe if any redness or any changes in the applied area appear.³⁷

- a. **For skin care:** While applying the EO directly on the skin for its various effect like toning, cleansing, skin brightening, healing etc., the patch test should be done first and the directions given on the label for dilutions should be followed. There are some EO that may show the allergy and phototoxicity. The phototoxic essential oil like citrus that can cause any skin reaction or chemical burns. Thus, they should be used in concentration not more than 0.5% on skin exposed to sunlight. It also depends on the type of extraction process incorporated.⁷
- b. **For hair care:** To use essential oil on the scalp or hairs few drops are added as they are highly absorbed on the surface and may cause irritation because, they are concentrated. Due to this reason the concentrated essential oil are mixed with the carrier oil. The carrier oil is the oil which is use at greater extent than the essential oil to dilute the potent EO. This dilution quantities are given in the below table no 1. Few drops of essential oil added in the carrier oil. Apply it on the scalp or take a massage. Leave it for atleast 12 hrs and then wash. The carrier oil include coconut oil, olive oil, shea oil, almond oil etc. also use to moisturize the dry skin.^{7,34}

For example, using 30ml of coconut oil as base carrier oil for an adult the dilution rate can be 2 to 2.5%. At the intersection the number 15 displayed as # of essential oil drops required to obtain 2.5% dilution.

Table 1: Dilution of essential oil with carrier oil.³⁸

Carrier	1%	2%	2.5%	5%	10%	20%
	# drops	# drops	# drops	# drops	mL	mL
5mL	1	2	3	5	5	1
10mL	2	4	5	10	1	2
30mL	6	12	15	30	3	6
50mL	10	20	25	50	5	10
100mL	20	40	50	100	10	20

C. For aromatherapy: There are various method to make use of essential oil in this therapy- massage, inhalation, direct application on the skin and rarely ingest internally with some changes in their dilution range shown in table no.2. The inhalation therapy, it is best use to reduce anxiety, depression symptoms, menstrual pain etc. For the massage therapy, it is mixed with the carrier oil and at some instance, it can be directly incorporate with the lotion, cream, shampoo and in the bathtub with in aromatherapy.³⁹

Table 2: Dilution range of essential oil use water.²⁷

Use	Dilution Range %
Facial Cosmetics	0.2-5
Body Massage	1.5-3
Bath& body products	1-4
Specific Problems	4-10
Pain, Wounds	5-20

Safety Profile of Essential Oil

Usually EO's are safe, but sometimes it shows minimum adverse effect. The vast majority of common essential oils have been well tried, tested and safety issues have been determined. Some essential oils likely to cause adverse reactions are very few than others.⁴ When the EO's are used in aromatherapy, massage, direct contact with the skin or mucous membrane causes dermatological problems like redness, irritation, itching, allergy, sensitization etc. Factors that cause adverse reaction are as follows: Adulteration of essential oil, error in dilution with carrier oil, presence of allergen, environmental factors (sunlight, oxygen), default in packaging, skin integrity, anatomical site of exposure, method of application, presence of aldehyde or ketone, age of subject. The most dermatological adverse reaction that occur are irritation, skin sensitization and photosensitization.

i. Skin irritation: The general pathology of irritancy includes skin barrier disruption, induction of a cytokine cascade and also the involvement of oxidative stress network. When the first time an essential oil is used, skin barrier disruption is the primary irritation (contact dermatitis) occurs rapidly cause red wheal or burn. It likely to occur when essential oils contain large amounts of compounds like phenol, phenolic ether, aromatic aldehyde, carvacrol and thymol (oregano, savory or thyme).^{40,41}

ii. Skin sensitization: It occurs on first exposure to an essential oil shows slight (or absent) effect on the skin like big red rash or pigmentation. Because of adaptive immune system to certain chemical substances called sensitizers or haptens.

This subsequent exposure of the same compound /compounds will produce a severe inflammatory reaction caused by T-lymphocyte. It is caused due to presence of certain functional groups present in the compound such as benzyl alcohol, cinnamyl alcohol, citral, eugenol, hydroxycitronellal, isoeugenol, benzyl salicylate, cinnamaldehyde, coumarin, geraniol, anisyl alcohol, benzyl cinnamate, farnesol, linalool, benzyl benzoate, citronellol, or limonene.⁴¹

iii. Photosensitization: When an essential oil is applied to the skin in the presence of sunlight or ultraviolet A (UVA) light there occur a reaction with phototoxin present in EO. The interaction with the light may be either phototoxic (lead to photo carcinogenesis) or photoallergic (immune-mediated skin reaction) can cause pigmentation, blistering, to severe full-thickness burns.^{24,41} It mainly occurs due to furanocoumarins found in citrus peel oils (*C.bergamia*, *C.aurantium*, *C.limon*, *C.aurantifolia*) although in cumin (*Cuminum cyminum*) parsley leaf (*Petroselinum crispum*), and marigold (*Tagetes minuta*) essential oils.^{40,42}

Most essential oils testing can be achieved safely by the formulation of 2% to 5% oil concentrations in petrolatum. To increase the safety level of EO ISO/TC 54 emphasizes global trade in essential oils, thus focusing on improving the quality and protecting the health of consumers who buy products containing essential oils.⁴

Market Value of Essential Oil in Cosmetic Formulation

It is difficult to determine the demand of essential oil due to lack of data and information. The essential oil used in various industries like food and beverages 35%, fragrances, cosmetics and aromatherapy 29 %, household 16 % and pharmaceutical 15%. There is tremendous demand of natural and organic products, in order to keep an eye among the various health issues and volatile oil is gaining more interest. The use of cosmetic by humans are reaching their heights in which the essential oil is key ingredient. Thus, the sale of essential oil is an indication of developments in the market as it is at very high rate. The data shows that between 2012 and 2016, global sales of

essential oil manufacturers increased by 7% to €25B. The sales of essential oils depend on consumer education—the more understanding on how and why to use essential oils, the greater its demand and sales grow. Aromatherapy is a prime example of rising market sales.⁴³

- **World trade of essential oil:** Today, the key market players of essential oils are: Young Living (U.S.), Sydney Essential Oils (Australia), Biolandes (France), dōTERRA (U.S.) and Farotti SRL (Italy). Their market size was valued at \$8,008.6 million in 2018 and is much expected to grow at a CAGR of 8.7% to reach more than \$15,618.8 million in 2026 (refer figure 6). EO are extremely popular in Europe. It has maximum market share in the world more than 40% of the market. This is attracting more towards the production of essential oil. For easy availability of raw material and cheap labor force, the Asian pacific India has excellent potential as it has 20 archeological regions capable of growing aromatic plant and produces 7500 - 8000 tonnes of natural essential oil naturally which plays greater role. (in billion)⁴⁵

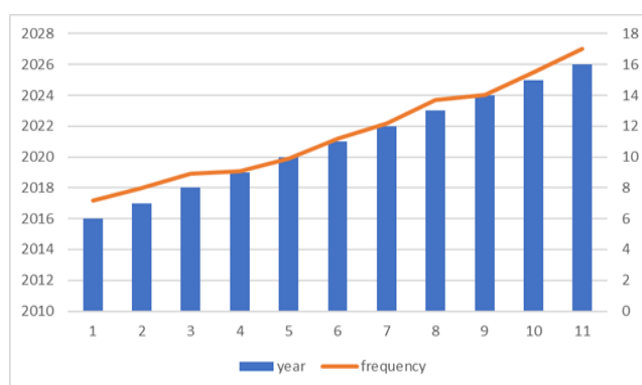


Figure 6: EO's market size through 2017-2021 world market.⁴⁴

- **Market Research Future (MRFR) Analysis and Reports:** It presents information about the Global Essential Oil Market. In report, Market Research Future has focused on the current market scenario which includes market segmentation, market dynamics and competitive landscape along with company profiles. The report reflects clear format of current market scenario which includes past and estimated future market size in terms of value and volume, technological advancement, macro economical and governing factors in the market. Top key players in the industry use this report which provides detail information and strategies. The report also gives a broad study of different market segments and regions.^{46,47}

CONCLUSION

There is various essential oil that human pursue in their daily life but unknown of their distinct qualities. Here, the review article showing the better using aspects of essential oil in cosmetic product. Thus, mystery of its diversity is somehow coming across towards the world. There features define the new approach to redesign the cosmetic formulation. As there is a use of essential oil in various

sector, their demand in global market is increasing day-by-day. Not only for its fragrance but their other abilities also now taken into consideration in cosmetic industry. As above data gives more detailed information about the global market rate of essential oil along with their importance in cosmetic industry and devastating role in other industries. The market size of essential oil is expanding on daily basis, same as that of its various use.

In taking view of researchers, they can find more beneficiary compounds of essential oil and can correlate with their application in different cosmetic product. For the entrepreneur, the increasing market world of essential oil with low risk and more profit have taken their attention. The extraction, production and processing of essential oil is quite easy and doesn't need much more investment as compared to others. There are various essential oil that human pursue in their daily life but unknown of their distinct qualities. Here, the review article showing the better using aspects of essential oil in cosmetic product. Thus, mystery of its diversity are somehow coming across towards the world. There features define the new approach to redesign the cosmetic formulation.

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