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**REVIEW ARTICLE**

## The Role Of Essential Oils In Medicine.

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### ABSTRACT

Despite the significant progress in medicine and pharmacy in recent decades, traditional therapeutic strategies used in the treatment of bacterial and viral diseases are often unsatisfactory and cause many side effects. Therefore, there is now a renewed interest in substances of plant origin as potential, promising therapeutics in the prevention and treatment of many diseases, including infectious diseases. Terpenes and their derivatives are a huge group of natural organic compounds that are part of essential oils and are widespread in the plant kingdom. Essential oils are volatile, aromatic substances that are secondary metabolites of plants. Essential oils have different chemical compositions that affect how it works biological characteristics of a given oil. Essential oils are both used in the food industry for flavoring food, as well as in the cosmetics and perfume industry. Their numerous effects on the human body, including: diuretic, expectorant, anti-inflammatory, antispasmodic, they are used industrially pharmaceutical. The paper discusses the biological and pharmacological properties of plant essential oils

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## INTRODUCTION

Plants, in order to better adapt to the natural environment, were endowed by nature with a huge number of chemical compounds, often with complex structures and properties and multidimensional action. These relationships have been around for a long time and are found in the pharmaceutical and cosmetic field exploration aimed at obtaining new drugs, therapeutic systems and cosmetics, based on the active compounds contained in plant raw material.

There is a herbal medicine or cosmetic product usually milder than the synthetic analog, it has fewer side effects and undesirable effects, and at the same time it is a multi-component product that can work in different directions, showing a wide spectrum therapeutic.

For centuries, man has used plant extracts and essential oils for therapeutic purposes. World Health Organization (WHO) research pointed out that the greater part of the human population still depends on traditional methods to heal and care for your body or lean towards him. Medicinal and aromatic plants are in fact for humans a rich source of active, organic active compounds.

Currently, the pharmaceutical market and following it the cosmetics industry offers a whole range of products used in dentistry and dermatology, based on plant materials. In particular essential oils deserve attention in this aspect, which thanks to their antiseptic properties, antioxidant, antifungal, antibacterial and insecticidal have found a great deal practical use.

Modern science, using specialized research methods, is able to more precisely than ever determine the composition, meaning, structure and function of essential oils of plant origin. They are formed as a result of metabolism, acting a form of plant excretions, i.e. metabolic products formed during life processes of plants. They are neutralized by converting them into inactive compounds and isolating them in appropriate tissues. More than a thousand plants are known producing essential oils that localized

They are found in various plant organs such as flowers, leaves, roots, rhizomes, fruits, bulbs, and seeds. They fulfill various functions as semiochemicals, attracting pollinating insects and protecting plants.

The aim of the work is to indicate the areas of use of essential oils in preventive and anti-aging medicine. Not aspects of any contraindications will remain without comment, side effects and inconclusively proven effectiveness as an independent treatment method. The collected literature on this subject was analyzed, a series of action items and individual essential oils.

## ESSENTIAL OILS - GENERAL PROPERTIES AND CHEMICAL COMPOSITION

Products of natural origin are widely used in cosmetics, perfumery, pharmaceuticals and, more recently, in agriculture. They include essential oils, i.e. volatile mixtures of organic substances, separated from plants or their parts. Essential oils are obtained mainly by steam distillation, less often by extrusion, but also by adsorption, extraction with organic solvents or supercritical carbon dioxide [1,2].

A characteristic feature of essential oils is an intense aroma and varied composition. These oils contain up to several hundred ingredients - chemical compounds, especially from the group of terpenoids. Their most valuable and characteristic components are oxygen connections: esters, aliphatic alcohols or terpene, aldehydes, ketones, oxides (epoxides) and lactones. The action of oils it is multifaceted and determined, to a large extent, by the properties of the dominant ingredient. Oils have many common features, incl. are volatile with steam water, are lipophilic at 18 °C, are liquids and are optically active [3,5]. Essential oils have a very complex chemical composition and in many cases they are a mixture of over 300 different substances. Everyone's type of oil has a slightly different composition, it is caused by changes in such factors as: temperature, sunlight, air humidity, etc. This variability is also a consequence of metabolic processes in plants that are dynamic, because adapt the plant to specific environmental factors.

## EXAMPLES OF ESSENTIAL OILS USED IN MEDICINE ANTI-AGING

Chemically, oils are a mixture of terpenes (mono-, di-, sesquiterpenes) and other compounds, e.g. phenylpropane derivatives (including cinnamic acid). The ingredients of the oils can be of the following

nature: aldehydes, alcohols, esters, ethers, ketones or hydrocarbons. Rarely oils contain sulfur and nitrogen compounds. Composed of one essential oil of a given plant can fall into dozens of different compounds, but their mixture is responsible for the characteristic smell. Often dominant the component of the mixture gives the fragrance to the whole oil. Participation the individual ingredients in an essential oil are variable. It may depend on many factors, including: the plant variety, stage of vegetation, geographic origin, genus and growing conditions and the time of harvest. Various bodies of this the plant itself may have a different composition essential oils [3-5]. Selected essential oils and their use in medicine and cosmetology are presented below.

### Hemp oil

Hemp oil as a substance biologically active in cosmetics *Cannabis sativa* L., cannabis from Asia Central, they were a well-known and valued cultivated plant from a very long time ago. They were commonly used to treat various ailments. Currently, with the prevailing trend in natural medicine, using compounds of plant origin, cannabis is gaining in importance. More and more the pharmaceutical industry has an interest in hemp and the cosmetics industry. Currently, you can find a whole range of cosmetic products on the market, in which the beneficial properties are hemp oil.

It is an indispensable ingredient in:

- cosmetics for sensitive skin (soaps, shampoos, hair conditioners, creams),
- cosmeceuticals that facilitate wound healing, reducing swelling and treating acne,
- products used for aromatherapy and massage,
- insect repellants.

Hemp oil is a clear liquid with a light yellow to light green color and a relative density 0.840 g / cm<sup>3</sup> (at 20 °C). The composition of hemp oil includes about 58 monoterpenes and about 38 sesquiterpenes, which give this product its characteristic properties and scent note.

Hemp essential oil, containing the volatile compounds of this plant, deserves special attention for its antibacterial and anti-inflammatory properties [6-7]. It shows considerable activity especially against *Staphylococcus aureus* and *Streptococcus haemolyticus* [7].

Important issues with the use of hemp oil in the production of cosmetics are its low toxicity and the legal aspects associated with it. Product cosmetics must contain less than 10 parts per million (ppm) THC (tetrahydrocannabinol). That due to the very low concentration of THC entering the oil during steam distillation water and the fact that the penetration of lipophilic THC through the skin into the bloodstream is slow and practical irrelevant, no risk was identified for health and no cases of toxicity after using cosmetics containing the oil have been reported hemp.

However, it should be mentioned that even trace amounts THC gives cannabis a high resistance to infection pathogenic microorganisms for plants, due to their characteristic antibacterial and fungicidal properties. Therefore, hemp does not require when growing the use of pesticides, herbicides or special care and protection treatments. This gives hemp products a great marketing potential, especially when selling cosmetics based on plant extracts [5-7].

### Lavender

Lavender oil is obtained from fresh flowers of broadleaf lavender (*Lavandula angustifolia*), a plant popular in Mediterranean countries. It has a lot widely used in aromatherapy, it is one of the few oils that can be applied directly to the skin. In the form of compresses, it accelerates the healing of wounds, burns, insect bites, has antiseptic and anti-inflammatory properties. In preventive medicine, it is used primarily all of its sedative, hypnotic and antidepressant effects. Baths or massages with the use of lavender oil can be used as an auxiliary in the treatment of depression, anxiety disorders, insomnia, they also reduce the tension and nervousness of the patient. In addition, by relaxing and analgesic effects, treatments with lavender oil relieve menstrual discomfort, rheumatic and muscular pains and migraines. Rubbing it into the skin causes the capillaries to widen blood vessels and skin blushing, which results in better blood supply and warming up a given place [2, 5, 8-10].

## Rose

The real rose essential oil is made from only from the petals of several varieties of one species of rose *Rosa damascena*. Although it is bred in many places around the world (Mediterranean basin, India, China, Georgia), the best-quality oil comes from Bulgaria. On average, 1 kg of oil is produced from 4-5 tons of petals. This justifies its very high price. It is also the cause of many scams related to the composition of the oil. Only pure original rose oil has aromatherapeutic properties [1, 2, 5]. Due to its very wide application, it is extremely valued and often used despite its high prices. It is suitable for use in massage, baths, compresses or inhalations. Its psychomodulating effect (harmonizing, aphrodisiac, calming) is used in various mental illnesses and disorders or depressed mood. It shows antiseptic activity in the therapy of infections resistant to treatment with antibiotics bacterial or fungal, especially in diseases of the skin. Its action of relaxing and stimulating menstruation is used in the case of painful or heavy menstruation and spastic states of the organs of the cavity ventral [2, 5, 13-16].

## Eucalyptus

The tree originating in Australia can now be found on all continents except Antarctica. For the production of essential oils it uses. There are only 3 out of over several hundred tree species: *Eucalyptus globulus*, *E. citriodora*, *E. radiata*. They differ in the strength and nature of the fragrance and its use, although it overlaps to a large extent. *E. globulus* has the sharpest smell, while in the case of *E. citriodora* citrus is noticeable, and *E. radiata* has herbal accents [2]. The soothing, fresh and cool scent of eucalyptus is used in many cosmetic products such as toothpaste, mouthwashes, shampoos hair and others. In maintaining oral hygiene, treatment inflammation of the upper respiratory tract and other diseases.

This system, herpetic and fungal infections are favored by its anti-inflammatory, antiseptic, antifungal and stimulating wound healing properties. The diastolic effect is used in gastric spastic states and digestive problems. The analgesic and blood circulation-supporting properties are used in rheumatic diseases, nerve inflammation and muscle pains, e.g. after considerable effort. It has been shown to have analgesic and antihypertensive effects after major surgical procedures, e.g. knee joint implantation. In the case of apathy and reduced motivation, its motivating and stimulating effects are appreciated [2, 5, 7].

## Lemon balm

Lemon balm (*Melissa officinalis*) has been known for centuries as a spice, honey, cosmetic and medicinal herb. Lemon balm leaf infusion is commonly used as a sedative and hypnotic. Essential oil from lemon balm is obtained by the distillation of leaves with steam or lemon oil with a synergistic effect. In aromatherapy, its calming and relaxing effects are of the greatest importance. It soothes states of shock, severe nervousness and anxiety, helps with insomnia, lowers blood pressure and has a negative chronotropic effect - it can be used in arrhythmias. Spasmolytic properties have found application in gastric disorders and painful menstruation. Antioxidant and antiseptic action - antiviral (especially strong against the virus HSV), antifungal [2, 5, 17].

## ESSENTIAL OILS AS NATURAL MAINTENANCE SYSTEMS

Currently, there is considerable interest in the production of cosmetics without synthetic preservatives. Growing consumer skepticism in relation to the safe use of chemical preservatives cosmetic industry to look for alternative preservatives. The trend of using products of natural origin over the last few years, is developing very intensively. Natural preservatives are substances of origin vegetable that prevent the decomposition of the finished cosmetic product. Mode the action of natural substances with a preservative effect is associated with the inhibition of the growth of microorganisms, oxidation and certain enzymatic reactions occurring in cosmetic products [18-20]. Growing awareness among consumers, concerning health aspects and safety of use of chemicals, increased interest in natural products, as alternatives in the microbiological preservation of various products [21]. Therefore, natural preservatives are sought. This trend accelerated after reports of parabens in breast tissue women suffering from cancer, as well as proving the estrogenic effect of butylparaben [23]. Almost ten years ago, the work he presented was published on the relationship between the occurrence of breast cancer in women using antiperspirants containing parabens. In 2004, the Darbre team examined samples of breast cancer collected from 20 patients. Parabens were detected in all samples, in average a concentration of 20.6 ng / g tissue. These compounds were detected unchanged (i.e., in esters), which means that they got into them through the skin,

bypassing the system alimentary [24]. Another effect of substances that mimic estrogens is their impact on lowering male fertility. Regardless of the subsequent results of research on the estrogenic effects of parabens, manufacturers should consider limiting the use of these compounds in cosmetics. To this day, science does not confirm this dependence is not unquestionably rejected, therefore parabens are quite controversial preservatives [24, 25]. It has been suggested that different chemical classes of preservatives can be harmful to the human body. However, there are no studies that would clearly indicate harmfulness of the mentioned compounds. Increasing discussions and criticism about preservatives. As a result of these chemicals, the cosmetics industry strives to obtain safe and durable products, and at the same time devoid of petrochemical and synthetic raw materials. Nature offers an extensive group of natural preservatives that exhibit a spectrum of anti-defense mechanisms microbial contamination.

## **THERAPEUTIC AND COSMETIC USE OF ESSENTIAL OILS**

Essential oil therapy is a combination of natural medicine and herbal medicine. It treats the patient as an integral whole. Her treatments are aimed at improving the overall condition of the human body by restoring its balance (homeostasis) and stimulating its natural immune forces. The elimination of immediate local ailments is a product side effect of the treatment. The therapy concerns the removal of body and "soul" ailments and beauty care using essential oils obtained from specific parts of the plant [24,26].

It is commonly used to describe the therapeutic effect of essential oils is the term aromatherapy introduced by Gatefosse. It seems inappropriate because it suggests that the therapeutic effect occurs through smell. Therapeutic action shows chemical components that penetrate the skin or mucous membranes and then reach the different places in the body. The doctor selects the appropriate dose for internal use or a therapist individually. This is the main and most important feature that distinguishes natural oils ethereal from fragrances. Oils (their chemical components) that penetrate the skin, mucous membranes, and then reach different places in the body showing a therapeutic effect. This method of preventing and treating diseases, however, cannot replace classical medicine and pharmacology. The use of oils while maintaining the appropriate doses does not cause negative side effects on the body [27].

Oils are not addictive and do not lose their effectiveness and do not disturb physiological processes of the body. They can be used in the form of massage, bathing, inhalation with strict adherence dosage, rules of use, taking into account contraindications. It is essential for a child performing allergy tests for a given oil. Oils are recommended for babies up to 12 months of age safe, e.g. lavender, tea tree. For children 6 to 12 years old you can use the same essential oils as in adults, but in twice the concentration. Some oils that are ethereal can be used internally. They easily penetrate from the intestines into the blood. They are excreted through lungs with exhaled air. Through the kidneys with urine, liver with bile and through the skin along with sweat [1-10].

## **SUMMARY**

Essential oils exhibit a broad spectrum of biological properties including pharmacological, antibacterial, antifungal, repellent, biopesticide and antioxidant. The main components of essential oils - terpenes are promising substances to be used as promoters of transepidermal transition in cosmetic preparations due to their relatively safe potential of their use. Thanks to the different directions of the biological action of the oil, ethereal can be desirable ingredients in cosmetic preparations as well as biopesticides. It should be emphasized that the use of mixtures of essential oils or the isolated terpenoid compounds may act synergistically. Oils the ethereal have a high potential providing an effective and safe repellent effect. Mixtures of essential oils systems can be used to support the preservation of the cosmetic preparation, additionally when properly selected, they can act as a fragrance. The disadvantage of such systems is an increase in production costs and frequent non-compliance with the cosmetic recipe.

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