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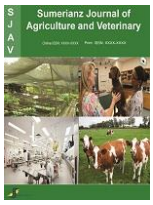

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Pharmacological Effects of Sacred Oils Belonging to Ancient Civilizations

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Abstract

Over the centuries, humanity has known and utilized some sacred oils extracted from their medicinal plants for therapeutic purpose. They are considered as good source of bioactive compounds having a wide range of vital biological activities. Aromatic oils have been a part of human history for more than 3,500 years BC and appeared with regularity throughout all major civilizations down the ages, with uses ranging from religious ritual, food flavoring, medicines, perfumery and the masking of bad odors. It is impossible to date exactly when plants were first used medicinally, since such a development would have taken place over thousands of years. During recent decades, many researchers have investigated the mechanisms of action and the therapeutic use of essential oils as physical, emotional, and spiritual well-being. This review, highlights on some sacred essential oils extracted from important traditional medicinal plants that possesses several pharmacological properties, considering that the safety and versatility of this these supplement should allow for its use in numerous pathological conditions.

Keywords: Sacred oils; Pharmacological properties; Medicinal plants; Therapeutic purpose.

1. Introduction

Awareness of medicinal plants usage is a result of the man search for drugs against illnesses , so the connection between man and nature dates back to prehistoric times, of which there is evidence from many sources as written documents and holy books [1]. Decreasing efficacy of synthetic drug against newly pandemics, draw attention to complementary medical approach involves the therapeutic use of medicinal plants and their essential oils which have been used in ancient history named as sacred oils. WHO has also estimated that 80% of the world population meets their primary health care needs through traditional medicine only [2].

One of these complementarily approaches is "Aromatherapy", that involves the therapeutic use of natural fragrance or aromatic essential oils derived from a wide variety of plant species [3] to improve physical, emotional, and spiritual wellbeing [4]. Many ancient civilizations like Egypt, China and India have practiced this complementary and alternative therapy using essential oils from at least 6000 years [5], to treat and prevent diseases via several routes of administration: Usually topical, massage, inhalation, or oral [6].

The field of aromatherapy activity is quite wide, ranging from the deep and penetrating therapeutic actions of essential oils to the extreme subtlety of fragrance on the psyche. Uses of aromatherapy could strengthen the self-healing processes by preventative methods and indirect stimulation of the immune system. Hiroko, *et al.* [7], identified the immunological benefits of it.

In light of the novel coronavirus outbreak which has affected millions of peoples worldwide till date [8]. Many points of view raised and encouraged to learn the traditional medicinal knowledge to preserve it, and may be to find answers from ethno- botanical. The medical experts suggested that the immune system of human beings plays a major role in the fight against this virus and it is known that certain essential oils possess immunomodulatory properties exerting effects on various parts of the immune system on both cellular and molecular levels: T cells and other immune effector cells, cytokine, and antibody production [9].

Going back, many ancient cultures recognized the physical and psychological benefits of scented oils. This review explores the information about six of sacred essential oils that have been mentioned in holy books or in written documents belonging to ancient civilizations, and had been used for their therapeutic purposes.

2. *Zingiber officinale*

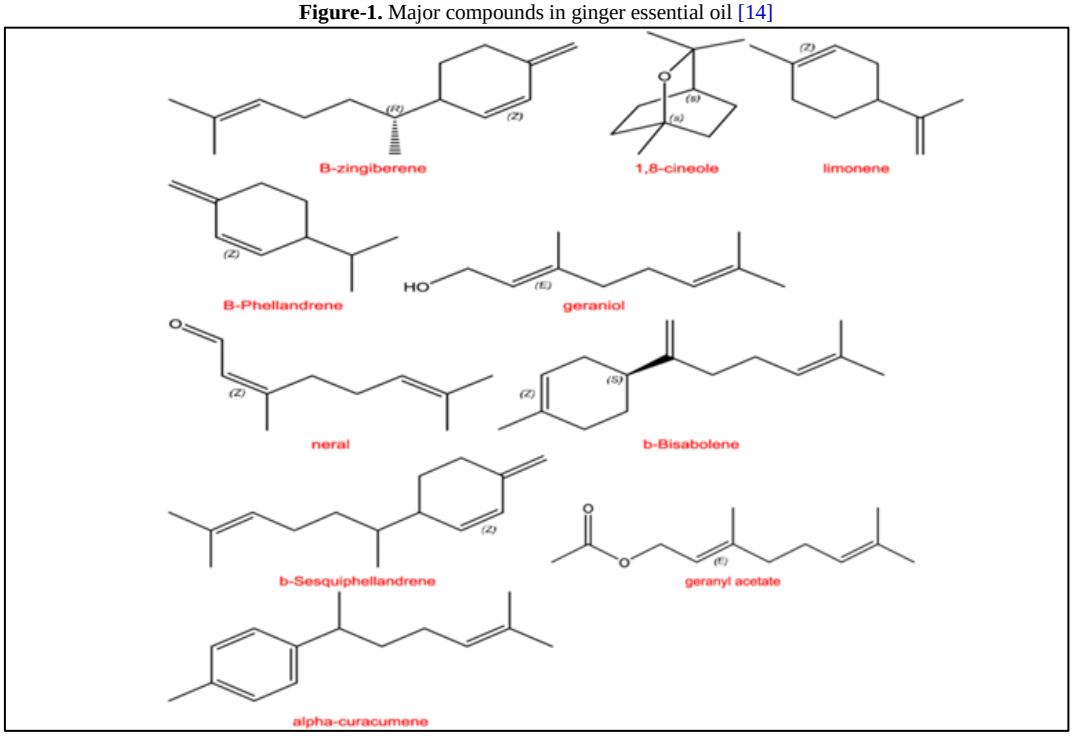
Zingiber officinale commonly known as ginger, a member of *Zingiberaceae* family is a spice widely used for culinary and traditional medicines since thousands of years ago [10]. Its medical use is well described in Chinese remedies from 400 BC. Ginger oil has valuable therapeutic applications , it is considered as sacred oil , in holy Quran refers to ginger as one of the drinks of Paradise in the chapter Al-Insan (Quran 76:17).

The genus zingiber comprises some 80–90 species they are perennial aromatic herbs with fleshy rhizomes and tuberous roots with particular aroma, it possess different medicinal properties [11]. The chief commercial varieties of

ginger are Chinese, Nigerian, Cochin and Jamaican, reflecting the fact that the plant is grown in areas as diverse as China, India [Cochin], Nigeria, Sierra Leone, Sri Lanka, Vietnam, Australia and Jamaica [12].

Ginger oils are produced from fresh or dry *Z. officinale* rhizome [13] the yield is varying from 1.0 to 3%, depending upon the source of rhizomes. While, the pharmacological effect of ginger oil is due to its chemical compositions Zingiberol, zingiberene, phellandrene and linalool that differ with the source of rhizome, freshness or dryness and extraction methods [14]. The essential oil of fresh ginger has a high content of geranial and neral which gives a lemony aroma [15] Some ginger oils have a camphoraceous smell attributed to the presence of cineole [16] Figure.1, shows the chemical structure of the most important compounds found in ginger oil.

Figure-1. Major compounds in ginger essential oil [14]



Ginger oil has long been used in traditional medicine, with its distinct aroma that can be described as a spicy, generally considered as a safe herbal medicine [17]. In the following some of the pharmacological effects of it:

2.1. Boosting Immunity System

Extreme use of antibiotics in controlling disease has become serious health problems. Consequently, the need of safe and effective alternatives to antibiotics is required. So, the immune stimulants draw an attention [18]. Ginger essential oil showed improvement in humoral and cell mediated immune response in immune suppressed mice [19].Hua, *et al.* [20], suggested that the volatile oil of ginger influences both cell-mediated immune response and nonspecific proliferation of T lymphocyte, and may exert beneficial effects in a number of clinical conditions, such as chronic inflammation and autoimmune diseases.

2.2. Controlling Respiratory Problems

Ginger oil could be used as herbal treatments of asthma, and gingerol is the active components of this phyto-therapeutic responsible for Broncho relaxation [21], also according to Mangprayool, *et al.* [22] the other constitutes of oil such as citral, eucalyptol and camphor had relaxing effect airway.

2.3. Anti-inflammatory Effects

Ginger oil contains a specific substance called α-zingiberene that has anti-inflammatory effects related to inhibition of prostaglandin release [23], Also, Grzannar, *et al.* [24] indicated that ginger extract inhibits the induction of several genes involved in the inflammatory response. These include genes encoding cytokines, chemokines, and the inducible enzyme cyclooxygenase-2.

2.4. Anti-virus Effects

Due to its phenolic compounds, Ginger is thought to be capable of combating common influenza viruses and influenza-like symptoms, that fresh ginger prevents virus adherence and internalization [25].

2.5. Antioxidant Activity

The most important benefit of antioxidants is their ability to fight the accumulation of harmful free radicals in the body. Ginger essential oil protect the cells from these extracellular deleterious radicals, by increasing the liver antioxidant enzyme [26]. All major active ingredients of Ginger, such as zingerone, gingerdiol, zingibrene, gingerols and shogaols, are known to possess anti-oxidant activities [27].

2.6. Mood Booster

Vivo study done by Lim, *et al.* [28] indicated that inhalation of essential oils may induced simulative or sedative effects. Also Qiang, *et al.* [29] suggested that the synergistic antidepressant-like effects of ginger oil might be mediated simultaneously by regulation of the serotonergic and gastro enteric system functions.

3. *Sambucus nigra* L.

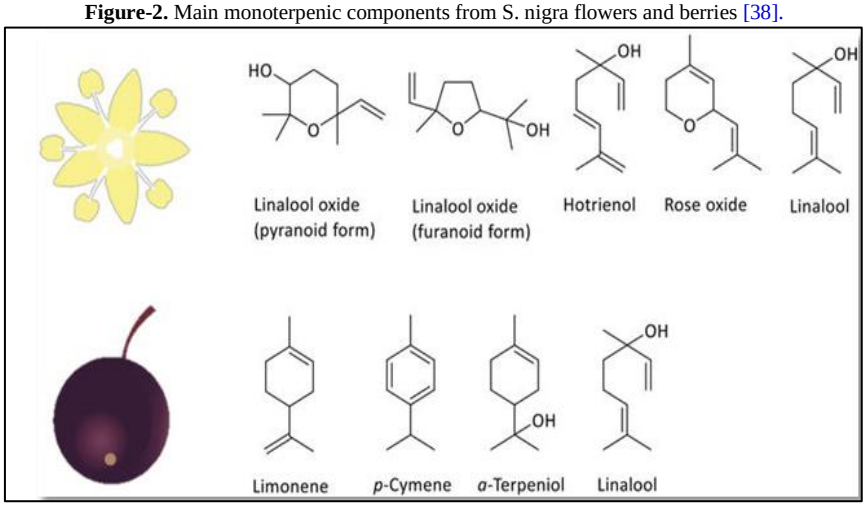
Sambucus nigra L. (*Caprifoliaceae*) known as "elder" belongs to the *Adoxaceae* family, is widely used as both food and medicinal plant. It has been used for centuries for such purposes as to keep the evil spirits away, to prevent or cure numerous ailments and health problems [30]. The elder tree was also considered sacred to Goddess, and the tree's gifts were regarded as her blessings. It was commonly believed that elders were inhabited by a tree dryad who was thought to represent the soul of the tree or sometimes was seen as an aspect of the Goddess herself. If treated well and honored appropriately, the dryad was a most benevolent spirit that blessed and protected the people who cared for it. Thus, elders were often planted around the house and on the farm where they served as a shrine to the Goddess whose protective powers could be invoked by making prayers and offerings to the tree [31]

European black elderberry occurs in temperate to tropical regions in Europe, Western Asia, northern Africa, North America and Central America , also it has been introduced into various parts of the world including E. Asia, N. America, New Zealand and the southern part of Australia [32]. The generic name Sambucus is apparently derived from the Greek world sambuke or Latin world sambuca, which designates either a kind of a flute that was made out of an elderberry twig, or a small harp [33]

Elderberry is a deciduous multi-stemmed shrub with brittle branches that easily bent under the weight of its fruit clusters. Suckering from the roots and branching from the base of the main stems force the plant to form dense thickets. It can reach up to 9 m in height in the southern part of its distribution area. Aging of the shrub is accompanied by the death of old branches, a process preventing the plant from reaching extreme heights. Large (5–15 cm long) opposite pinnately compound leaves contain from 5 to 11 leaflets with sharply serrated margins [34].

In ancient times humans knew that some plants have supernatural forces, containing the low amount of essential oil (0.01) extracted by micro-distillation [35]. It has poly phenolic phytochemicals with important bioactivities components Phenylacetaldehyde, benzaldehyde, ethyl linoleate, 4-vinyl guaiacol , linalool , and phenyl ethyl alcohol [36]. Changing in volatile profile caused by harvesting e type of drying procedure [37]

Figure-2. Main monoterpenic components from S. nigra flowers and berries [38].



Elderberry medicinal potential comes from its numerous phytochemicals which has important impact on health, in the following some of important therapeutic proprieties of its oil:

3.1. Boosting Immunity System

Elderberry play a role in boosting immunity system due to peptic polysaccharides compounds through the stimulation of macrophages [39]. Charlebois [30], indicated that medicinal potential of Elderberry comes from its antioxidant potential, and cyanidin has one of the highest antioxidant activities [40], that reflect on boosting immunity.

3.2. Improve Life Quality

Polyphenol constitutes in Elderberry oil reduces arterial pressure and also might reduce the side effects of the major classes of antihypertensive agents, also these polyphenol compounds reduce the glycosylated hemoglobin values and that could in general improve the quality of live [41].

3.3. Antioxidant Activity

Elderberry oil is characterized by high antioxidant activity, this proprieties are primarily attributable to the presence of phenolic compounds include anthocyanins which is able to eliminate free radicals and counteract the

oxidative stress, a factor causing the degradation of the human body, thus contributing to the development of a number of diseases [42].

3.4. Antidepressant

Depression constitutes the second most common chronic condition in clinical practice and will become the second leading cause of dis ease burden worldwide by the year 2020 [43]) using elderberry oil could fight the symptoms of depression, and it could consider as easily accessible source of natural antidepressant, that related to polyphenol and flavonoids contents of it Mahmoudi, *et al.* [44].

3.5. Antibacterial Activity

Elderberry has strong antimicrobial effects exhibited on various nosocomial pathogens notably upon methicillin-resistant Staphylococcus aureus MRSA, recognized globally as a clinically significant pathogen, associated with skin and soft tissue infections [45].

3.6. Antiviral Activity

Bioflavonoids antioxidants derived from Elderberry display considerable protection against viral disease. Another extremely important group of black elder are lectins and ribosome-inactivating proteins constituents showed antiviral effect [46]

4. Holy Basil

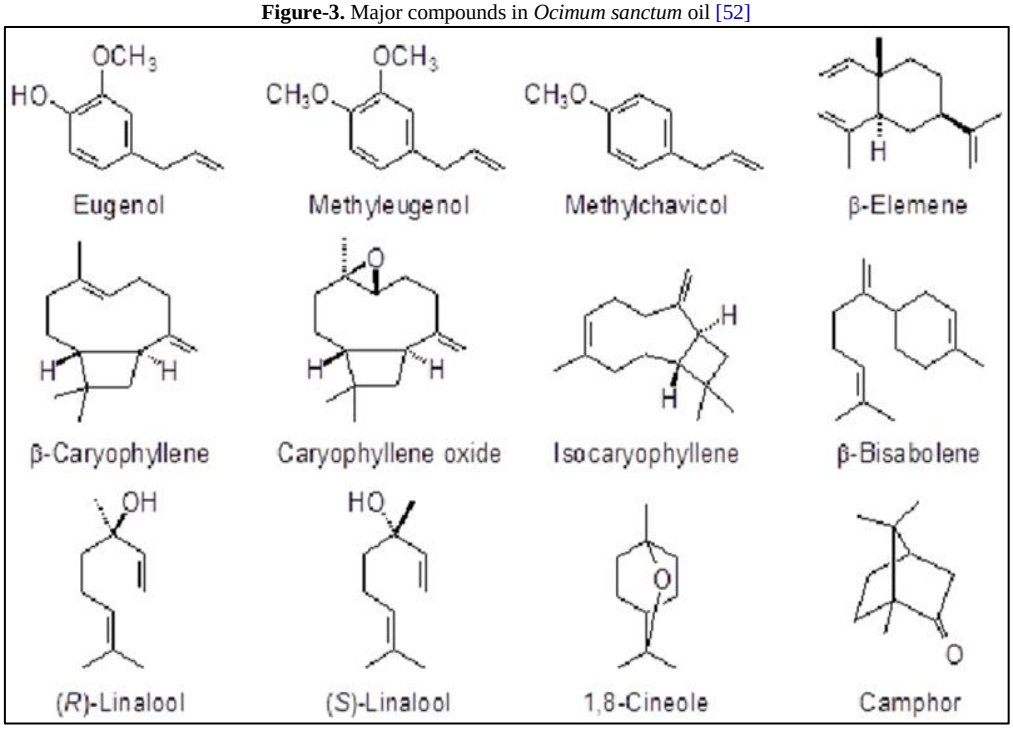
Ocimum sanctum L. is known as 'Tulsi' in Hindi and 'Holy Basil" in English belong to family *Labiatae*. Basil is a part of religious belief for Hindu as recognized thousands of years ago by ancient Rishis to be one of the India's greatest healing herbs that it was declared as a God in itself [47] in Ayurveda- which means science of long life, is at least a 5000 year old system of Indian medicine (1500–1000 BC) designed to promote good health and longevity rather than to fight disease, Tulsi has been well documented for its therapeutic potentials and it was recognized as one of the India's greatest healing herbs.

It is native of Indian subcontinent more specifically to North Central India, also it is cultivated in Southeast Asia, Australia, West Africa, and some Arab countries [48]. Tulsi is an upright, 30-60 cm tall plant covered with soft hairs. The stems are square in transection, and the leaves are opposite, elliptical-oblong with relatively long petioles and serrated leaf margins. The flowers appear in racemes arising in whorls on the terminal part of the stems and are labiate, bilaterally symmetrical and purplish in color [49].

Holy basil essential oil is extracted from its leaves by hydro distillation showing wide range of variation from 0.13 to 0.45 [50] this volatile oil consisting of about 70% eugenol as well as methyl eugenol and caryophyllene and β-elemene [51]. The chemical composition of Tulsi is highly complex, containing many nutrients and other biological active compounds with pharmacological properties such as eugenol, ursolicacid, rosmarinic acid, apigenin, myretenal, luteolin,β-sitosterol, and carnosic acid [52]

Tulsi acts as an adaptogen that helps the body and mind, having valuable constitutes with physiological and psychological function , with this proprieties it played a vital role in traditional medical uses, in the following some of its therapeutic actions. Knowing that, Eugenol is thought to be primarily responsible for the many medically beneficial characteristics of the herb Holy Basil [53].

Figure-3. Major compounds in *Ocimum sanctum* oil [52]



4.1. Immunity Booster

The use chemotherapeutics has been known recently for its negative impacts, so the attention increase towards drug resistance and immune suppression [54]. Essential oils contain hundreds of phyto-chemicals that help to promote general health and boost the body's immune system enhancing humoral (body fluids) and cellular immunity [55]. As according to Rakesh, *et al.* [56] O. sanctum leaf extract stimulates the immunity.

4.2. Antioxidant Activity

The presence of many pharmacologically active compounds in Ocimum species provides them protection against free radical induced oxidative damage of cellular components [57]. Eugenol that is contained in EO likely contribute to these pharmacological effects has lipid-lowering and ant oxidative effects that protect the heart against hypercholesterolemia [58].

4.3. Anti-stress Activity

Stress is very common problem in today's competitive life, herbal medicines have gained global attention in recent years for human health ailments and could be potential sources for alleviating stress [59]. Study performed on mice and rats indicated that eugenol and methyleugenol possess adapt genic (anti -stress) activity. Effective of *Ocimum sanctum* in the management of stress effects, and anti-stress activity could be due to inhibition of cortisol release [60].

4.4. Antimicrobials Effects

Various interesting possible applications are revealed such as the use of essential oils instead of synthetic drugs to circumvent the increasing resistance of some pathogens [61]. Essential oil extracted from the leaves of *O. sanctum* has been found to inhibit *in vitro* growth of *E. coli, B. anthracis* and *Pseudomonas aeruginosa* (*P. aeruginosa*) which showed its antibacterial activity [62].

4.5. Antiviral Activity

Prakash and Gupta [63] indicated that biologically active constituent in Tulsi oil is Eugenol (1-hydroxy-2-methoxy-4-allylbenzene) responsible for the mediation of therapeutic characteristics, producing anti-viral activity, also the other components of this oil such as linalool, apigenin and ursolic acid showed broad spectrum antiviral activity according to Sangeetha and Poornamathy [64].

4.6. Anti-Inflammatory Potentials

According to Thamilvaani, *et al.* [65] *Ocimum sanctum* essential oil (OSEO) has both antimetastatic and anti-inflammatory potentials, could be useful in the development of new therapeutic strategies for inflammation.

5. *Acorus calamus*

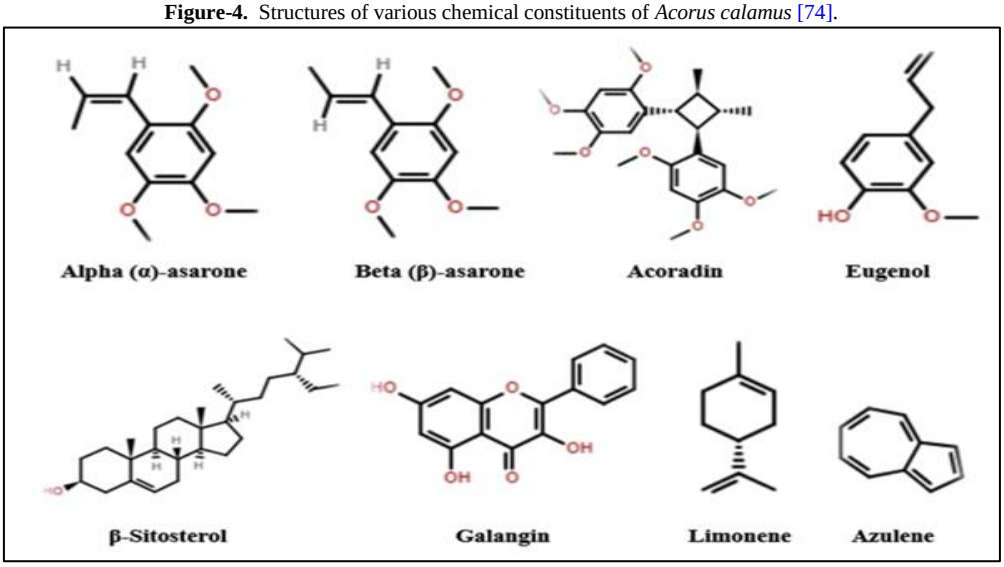
Acorus calamus (Sweet flag) is a wetland perennial monocot plant, it is consider as one of the few extra-tropical members of the *Araceae* family [66] . The genus Acorus derived from Acoron (coreon = the pupil of the eye) and the species calamus is derived from the Greek word Calamos (a reed). A few archaeological studies illuminate the use of medicinal plants in the Holy Land in Biblical times and even earlier [67]. *Acorus calamushas* has a rich ethno - botanical history dating back possibly to the time of Moses in the Old Testament of the Bible and in early Greek and Roman medicine [68], that its scented leaves and rhizomes of have long history of medicinal use in Chinese , Indian and American Indians herbal traditions. In Ayurveda medicine Calamus is an important herb, and is valued as a "rejuvenator" for the brain and nervous system, and as a remedy for digestive disorders [69].

Sweet flag is indigenous to India and now found across the temperate to sub-temperate regions of Eurasia and the Americas. Describe as an aquatic or wetland perennial with semi evergreen grass like foliage. It has narrow, 6 to 14 inch long (15 - 35.6 cm) glossy leaves and looks like thick, lush grass its leaf scars are brown, white and spongy. It possesses slender roots. , Rhizome of the plant is aromatic. It is cylindrical and up to 2.5 cm thick, purplish-brown to light brown in color externally and white internally, the fruits are small and berry-like, containing few seeds. The parts used are leaves, root (rhizome) and stem [2].

The rhizome roots essential oil extracted hydro stem distilled form these plant parts and the yield often is in the range of 2.9- 4.7, considered as a unique source of oxygenated sesquiterpene of great structural variety [70]. This oil is extensively investigated for its chemical compositions by various workers [71], A wide variety of chemical constituents have been reported from the rhizomeso [71] , it is dominated by the presence of phenolic compounds: (β)-asarone and (Z)-methyl isoeugenol, Other identified major components were (E)-caryophyllene, α-humulene, germacrene, linalool, camphor and isoborneol [72].

Individual plants show variation in the percentage of chemical components depending on the part of the plant from which the oil was extracted [73] But in general , It is reported that the biological activity of essential oil due to presence of β asarone, a-asarone which is manly believed to be responsible for its wide therapeutic actions. In the following some of its biological activities.

Figure-4. Structures of various chemical constituents of *Acorus calamus* [74].



5.1. Immunity Booster

Modulation of immune response to alleviate disease has been of interest since long. Plant extracts have been widely investigated for possible immunomodulatory properties. Mehrotra, *et al.* [75], indicated that *Acorus calamus* extract inhibited production of nitric oxide, interleukin-2, and tumor necrosis factor- -alpha showing anti proliferative and immunosuppressive potential.

5.2. Antimicrobial Activity

A. calamus rhizomes and leaves oil possess active principle ∞ and β -asarones which is believed to be responsible for their antimicrobial activities [76], it exhibited high in vitro activity against some pathogenic and nonpathogenic fungi, gram -ve and gram +ve bacterias specifically effective against S.aureus, E.coli and A.niger, also [77] found that methanol extract of *Acorus calamus* Linn. Rhizomes have high activity against filamentous fungi: *Trichophyton rubrum*, *Microsporum gypseum*, and *Penicillium marneffei.*

5.3. Anti-Convulsant Activity

Epilepsy is one of the most common chronic neurological disorders characterized by recurrent and unprovoked seizures, *A. calamu*s found to have many phytochemical constituents believed to display neuroprotective effect. According to [78] alpha asarone modulates GABAergic transmission in hippocampus in experimental animal exerting its antiepileptic action also [79] found that *A. calamus* can be new drug for epilepsy in near future by its antioxidant and modulation of GABA activity in central nervous system. That it is a highly valued herb as it acts as a rejuvenator for brain and nervous system. It is a main medhya drug, which has the property of improving the memory power and intellect [80].

5.4. Bronchodilatory Effect

Acorus calamus has been found to be the famous remedy for the respiratory disorders [81] . [82](indicated that the presence of unique combination of airways relaxant constituents in the extract of *Acorus calamus*, a papaverine-like dual inhibitor of calcium channels and phosphodiesterase in n-hexane fraction and a novel combination of anticholinergic, rolipram-like phosphodiesterase4 inhibitor in ethylacetate fraction and associated cardiac depressant effect, provide a pharmacological basis for traditional use of *Acorus calamus* in disorders of airways.

5.5. Sedative and Hypnotic Effect

The volatile oils from *Acorus calamus* showed potentiation of the sedative activity of pentobarbitone in mice. The active principle responsible for the activity resided in the hydrocarbon fraction of the oil or in an oxygenated component out of various fractions of the oil [83]. β -Asarone composition in the oil exerts sedative and hypothermic effects [84]

5.6. Anti-oxidants Activity

Natural antioxidants are generally classified as phenols, including flavonoids, phenolic acids and volatile compounds [85]. According to Archana, *et al.* [86] the oils isolated from A. calamus. Exhibited antioxidant activity in all the different seasons as a function of concentration, because of its phenylpropane derivatives like α-asarone, β-asarone, γ-asarone, isoeugenol, and methyl ether components.

6. *Boswellia sacra*

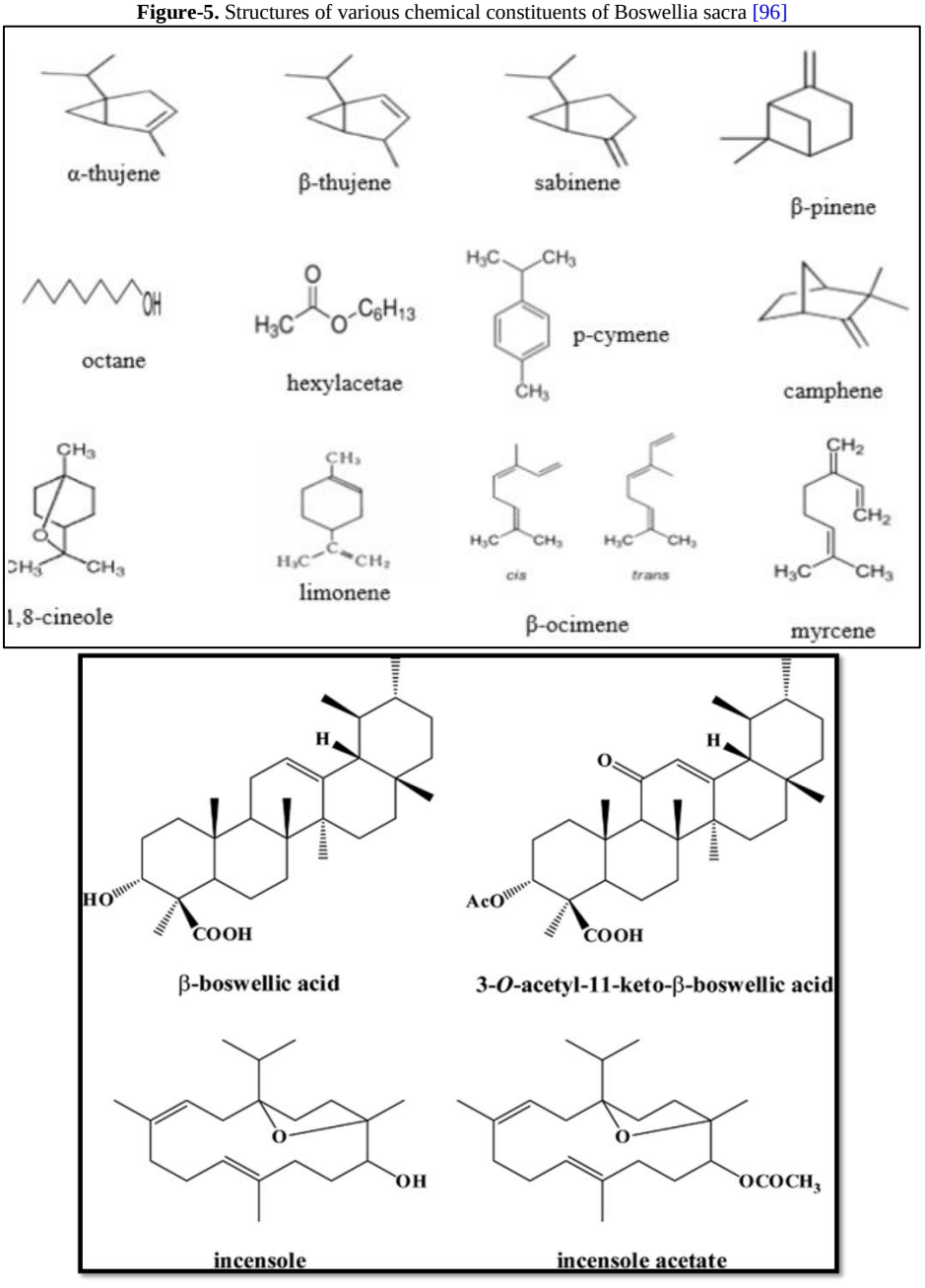
Boswellia sacra Flueck (*Burseraceae*) belonging to *Burseraceae* family, is one of the most important wild genetic resources of Oman Hammer, *et al.* [87], considered as the only native species to the Arabian peninsula,

where it is restricted to the southwest of Oman and the Hadramawt and Mahra regions of Yemen Raffaelli and Tardelli [88]. Frankincense that represents purity and holiness is associated with rituals among different religions and widely used world over as incense [89] .The ancient use of frankincense ranged from cultural to religious, medicinal and economic purposes, played major roles in shaping human activities, cultures and civilizations [90]. Frankincense is the timeless incense of the Western sun-gods of the Sumerians, Babylonians, Persians, Egyptians, Hebrews and Greeks, operates by inducing the state of focused contemplation necessary for aspiration to the divine, to the spirit, it was believed that Its divine power would effectively disperse the forces of evil or negative energy that were responsible for disease and bad karma among humans. It is simply, the scent of purification. Peter [91]. Yemen and Oman have been involved in the production of this resin, and its trading flourished for many centuries. According to historical sources, 3,000 tons of incense per year reached the ports of these countries from which they were shipped to the Mediterranean or to Iran and India [92].

Boswellia sacra is a slow-growing tree up to 9–10 m tall. Leaves are opposite and impair pennate and are mostly shed during the dry season. Bisexual flowers are borne in axillary racemes that appear at the end of the branches. The fruit is an ovoid capsule opening by 3–5 valves and releasing small, tetragonal-ovoid seeds. Andrea, *et al.* [93], Frankincense exudes from the bark of the tree after a series of man-made incisions about surface area of 10 cm^2, at a depth of 5 mm and 6–8 incisions in a season [94].

The frankincense resin produced by steam distillation, it is composed of essential oil (5–15%) and its major components are mainly monoterpenes and sesquiterpenes, such as alpha-pinene, limonene, alphathujene, and beta-pinene with small amounts of diterpenoid components [95]. Figure.5, shows the most important chemical compounds present in the essential oil of frankincense.

Figure-5. Structures of various chemical constituents of Boswellia sacra [96]



Recently, increasing interest in natural dietary and therapeutic preparations used as dietary supplements has been observed. One of them is frankincense, it is a good source of high quality resin and bioactive compounds having a wide range of vital biological activities [97] In the following some of its therapeutic properties of:

6.1. Immune Modulators

Extracts from the gum resinits of *Boswellia serrata* and some of its constituents including boswellic acids affect the immune system in different ways, it have been shown to target both the humoral and adaptive immune responses according to Ammon [98] 11-keto-β-boswellic acid (KBA) and acetyl-11-keto-β-boswellic acid , boswellic acids may exhibit actions in the immune system. Frankincense has promising ability in regulatory mechanism, on immune dysregulation typical of various immune disorders [99].

6.2. Alzheimer's Disease (AD) Controlling

Alzheimer's disease is a progressive neurodegenerative disorder. Nemat, *et al.* [100], revealed that B. serrata has protective and therapeutic effects on AD-induced rats. It could ameliorate the neurodegenerative characteristics of AD. Mohammad, *et al.* [101], indicated that Boswellia resins attenuates memory deficits and the major component of *Boswellia serrata* (Bs) gum resin, beta boswellic acid increased neurite outgrowth and branching in hippocampal neurons.

6.3. Anti-inflammatory

Boswellic acids are the main active components of the resin of Boswellia using for the treatment of rheumatoid arthritis and other inflammatory diseases [102], also an anti-inflammatory activity of B. serrata extracts on endothelial cells was reported by Martina, *et al.* [103] suggests a potential pharmaceutical application for cardiovascular health, though cytotoxicity or proliferative stimulation can occur instead of a protective effect, depending on the dose and the formulation , according to acetyl-11-keto-β-boswellic acid is the most potent inhibitor of 5-lipoxygenase, an enzyme responsible for inflammation [104].

6.4. Antioxidant Activity

The antioxidant activities of the frankincense can be attributed to the presence of total phenolic and flavonoid compounds . According to Singh, *et al.* [105] there is a positive relationship between antioxidant activity and total phenols content

6.5. Anti -Bacterial Activity

The highest biological activity among terpenes is characteristic of 11-keto-ß-acetyl-beta-boswellic acid, acetyl-11-keto-ß-boswellic acid, and acetyl-α-boswellic acid. Contemporary studies have shown that frankincense resin indeed has an analgesic and anti-bacterial effect [96].

6.6. Ant-Stress Activity

Frankincense essential oil due to its major components, limonene and α-pinenec, can counter the effects of stress by effectively relieving sleep debt and maintaining antioxidant capacity without increasing oxidative stress, and, therefore, may be beneficial in the management of stress [106].

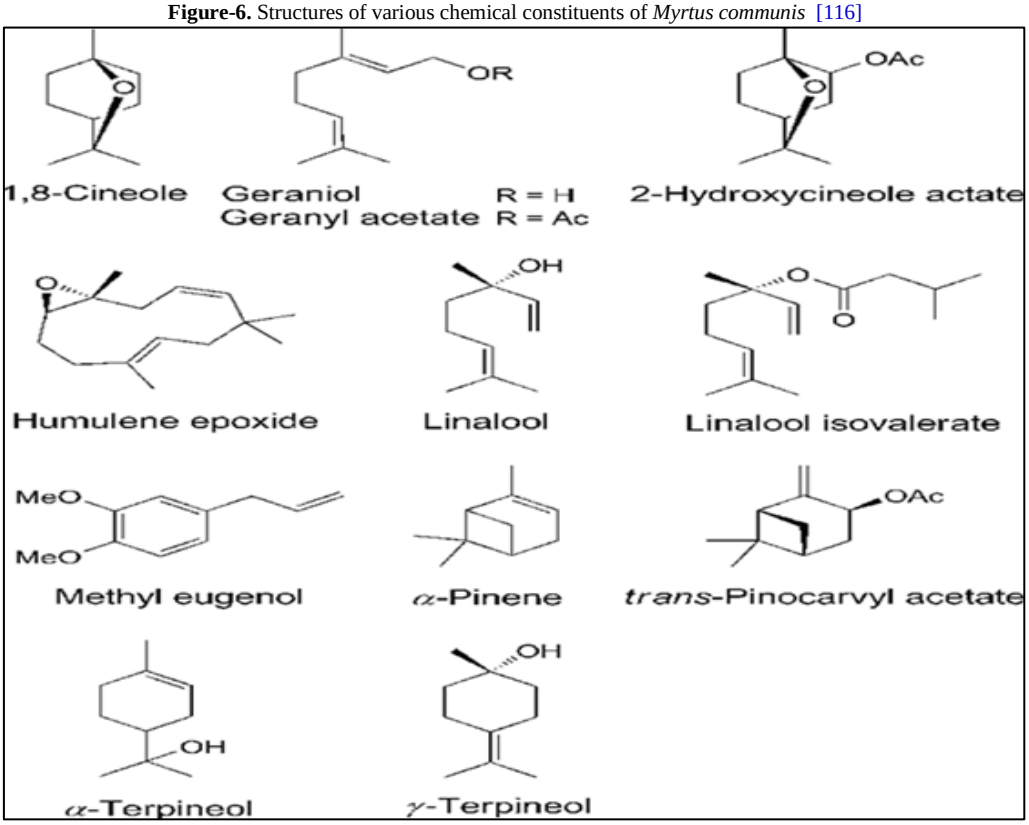
7. *Myrtus communis*

Myrtle (*Myrtus communis* L.), belonging to the *Myrtaceae* family, Myrtus, the Greek name for Myrtle and communis means common plant growing in groups. Is it consider as one of the popular drugs being used in the Unani system of phyto-medicine since ancient Greece period, Ethnobotanical information revealed that *M communis* has been a folkloric repute for the treatment of several diseases [107] In ancient mythology, myrtle was sacred to Aphrodite – Greek goddess of love, sex and beauty – and her Roman equivalent Venus, as it was to the Mesopotamian goddess Ishtar, it also symbolized beauty and youth, There is also a link between myrtle and the Bona Dea (the Good Goddess), a very old Roman deity of women, fertility, healing and virginity [108]. In Christianity, myrtle was given as a sacred plant to the Virgin Mary, to symbolize purity and fertility, the wearing of the crown on the head is derived from early Christian tradition [109] Also, in Tibb-ul-Nabbi (Medicine of Prophet Mohamed), said to the Prophet: «If anyone offers you myrtle as a present, do not refuse it. It is from the Heaven».

It is a shrub that grows throughout the Mediterranean area and Middle East contains about 140 genera and more than 4000 species [110] distributed in Southern Europe, North Africa , West Asia, South America, North western Himalaya and Australia [111]. Myrtle is an evergreen shrub or small tree, growing to 5 m tall. The leaf is entire, 3–5 cm long, with a fragrant essential oil. The star-like flower has 5 petals and sepals, and numerous stamens. Petals usually are white. The fruit is a round blue-black berry containing several seeds. The flower is pollinated by insects, and the seeds are dispersed by birds that eat the berries [112].

The isolation of essential oils from *Myrtus communis* leaves is usually obtained by hydro distillation method in a Clevenger apparatus type and the average yield is 0.7%. El Hartiti, *et al.* [113] it is rich in monoterpenes hydrocarbons [114] and the major compounds in the essential oils were alpha-pinene, 1,8-cineole, and limonene and linalool [115]. These compounds are known to possess good biological activity. Figure.6, shows the most important chemical compounds present in the essential oil of Myrtle.

Figure-6. Structures of various chemical constituents of *Myrtus communis* [116]



The essential oils of *Myrtus communis* L. could be for various commodities of medicinal and pharmacological attributes, in the following some of its therapeutic properties:

7.1. Immunity Booster

Recently, there has been growing interest in investigating the immune modulatory activities of essential oils (EOs) and their individual components, Eos have been found to stimulate the immune system by increasing the amount of circulating lymphocytes and enhancing their phagocytic activity [117]

7.2. Antioxidant Activity

The antioxidant activity of myrtle oil was predominantly determined in cell-free methods, though very few works also used cell model methods. The essential oil contained mainly monoterpene hydrocarbons and these compounds are known to possess good antioxidant activity [118]. Also, according to Aicha, *et al.* [119] the antioxidant proprieties is generally attributed to the presence of the main components (1,8-cineole, α-pinene, eugenol, methyleugenol, myrtenyl acetate, among other components.

7.3. Antimicrobial Activity

M. communis essential oil is an effective antimicrobial agent against persistent endodontic microorganisms [44]. High monoterpene hydrocarbons such as 1, 8-cineole, α-pinene, and linalool, which were found to be responsible for the antibacterial activity of myrtle essential oil [120].

7.4. Antifungal Activity

Essential oils and their components are gaining increasing interest because of their relatively safe status. Mohammadi, *et al.* [121], found that Myrtus communis essential oil was effective against Aspergillus species . Also, Myrtle oil was able to control the white rot of potato tubers caused by F. solani by reducing the average penetration by 70%. According to Slim, *et al.* [122] indicating that it have promising antifungal effects to be valorized in agricultural activities.

7.5. Hypnotic Effect

Hypnotics initiate sleep, which are effective for patients who are unable to achieve or maintain sleep. The essential oils of *M. communis* potentiated a hypnotic effect with significant central nervous system depressant activity [123].

7.6. Anti-inflammatory Potential

The anti-inflammatory potential of myrtle oil was also evaluated using an in vitro model of lipopolysaccharide-stimulated macrophages. Assessment of cell viability was made through the MTT assay. The oil was able to significantly inhibit NO production, without affecting cell viability [124]. Also, Touaibia [125] demonstrated a significant anti-inflammatory activity of Algerian common myrtle essential oil.

8. Conclusion

The therapeutic use of essential oils seems to be as old as human civilization itself, it have played important roles in traditions and mythologies in ancient times. In this sense, when new pandemic arise, many scientific approaches will try to find answers in recorded myths.

This review highlighted on six sacred essential oils that have been recorded throughout history because of its medicinal and pharmacological attributes. Due to its volatile constituents, it was considered as a part of traditional drugs for the treatment or prevention of human diseases.

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