Conflux treatment with aromatherapy including essential oils for numerous regimens

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Abstract: Aromatherapy is the practice or procedure of using natural or essential oils to bring the mind and body into harmony. It is complementary alternative drug that’s now used in number of countries to cure a variety of illness. Essential oils are liquid extracts extracted from plants, wood bark, and resins using methods such as distillation, steam distillation, and cold pressing. The essential oils can be accumulated by oral, topical and inhalation routes. Aromatherapy is also used in conjunction with essential oils to enhance their medicinal effects. Essential oils include monoterpenes and sesquiterpenes which are beneficial in the management of a variety of diseases including dementia, headaches, respiratory disorders, menopausal symptoms, viruses, hair loss, diabetes mellitus type-2 and other non-psychiatric symptoms. This study look into hoe essential oils and aromatherapy should be used to cure these conditions

Keywords: Aromatherapy, essential oils, dementia, virus, hair-loss

1. INTRODUCTION

Aromatherapy is CAM (complementary alternative medicine). It is the therapeutic use of plant essential oils that are aromatic in (having some kind of aroma or smell). These essential oils are going to absorbed via skin or olfactory pathways (Perry & Perry, 2006). According to the literature survey that they conducted is about creating awareness of aromatherapy among the pharmacy profession which is basically to promote its awareness and it gained a lot of attention (Esposito et al., 2014). Now the essential oils are the secondary metabolites which are terpenes and volatile in nature and also diverse array of chemical structure (Blowman et al., 2018), in following ways essential oils exhibit their therapeutic properties:

1. Exhibit cancer cell prevention/ cytotoxicity.
2. To relieve anxiety and depression.
3. They can increase the efficacy of drugs used in chemotherapy like Paclitaxel, Docetaxel.

The essential oils are complex and multifunctional substances (Edris, 2007) (Newman, 2008). The two largest groups are found in essential oils terpenoids and non-terpenoids. Terpenes or terpenoids are hydrocarbon chemicals. Terpenes are classified into two categories according to isoprene units: monoterpenes and sesquiterpenes. Mono-terpenes possess 10 carbon atoms built from 2 iso-terpene units are: linear terpenes, monocyclic terpenes, bicyclic terpenes. Additionally, sesquiterpenes contain 15 carbon atoms from 3 iso-terpene units.
The essential oils are classified into 3 categories (Reis & Jones, 2017). These categories are classified below:

- Synthetic or nature-identical oils: these oils have no therapeutic value and may cause harm.
- Extended or altered oils: these are the oils with perfume or aroma
- Natural or organic oils: which are 100% natural and pure.

There are many other organic constituents presents in the essential oils which possess some therapeutic actions which are listed below in Error! Reference source not found. (Winkelman, 2018)

**Table 1 organic constituents present in the essential oils**

<table>
<thead>
<tr>
<th>Organic constituents</th>
<th>Therapeutic action</th>
</tr>
</thead>
<tbody>
<tr>
<td>acids</td>
<td>Anti-infectious, immunostimulants</td>
</tr>
<tr>
<td>coumarins</td>
<td>Balancing, calming</td>
</tr>
<tr>
<td>monoterpens</td>
<td>Anti-infectious, cortisone-like activities</td>
</tr>
<tr>
<td>ketones</td>
<td>Wound healing, mucolytic, calming</td>
</tr>
<tr>
<td>C15 terpenes</td>
<td>Anti-histamine, anti-allergic</td>
</tr>
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**1.1 Effective in neuro-psychiatric symptoms**

Sense is the last frontier of neuroscience. Aromatherapy shows its effect on BPSD (behavioural psychotic symptoms of dementia including stress, anxiety, Alzheimer, anger, agitation). The mechanism involved in inhalation of essential oils in case of aromatherapy involve, smell travels from the nose and in the nasal cavity it travels from the end receptors to the olfactory bulb then to the brain (Flango Nina, n.d.). In the brain there are hypothalamus and thalamus that are involved in such aspects of mood changes and emotion. Which means they control the activity of neuroendocrine system and autonomic nervous system (Snow et al., 2004). The most common and safest oils which can be used these changes are lavender oil (Lavandula angustifolia) which contains linalyl acetate (35-40%), linalool (30-32%), Z-β-ocimene (6-7%), β-caryophyllene (3-5%) and lavandryl acetate (4%) whereas French lavender consist of Linalyl acetate (upto45%), R(-) linalool (35-38%), Z-β-cis-ocimene (10%), and Rosemary (Rosmarinus officinalis) constituents are 1,8-cineole (0-5%), camphor (10-11%), α-pinene(5-10%), borneol (4-8%), α-terpinol (4%) Δ-cymere (2%), E-caryophyllum (3%) , camphene (5%), bornyl acetate (1%). Scopolamine cause memory impairment by blocking the acetylcholine (Satou et al., 2018)(Perry & Perry, 2006). Alzheimer disease is a cognitive impairmien or neurodegenerative disease. Dementia is mainly observed in aged people because of neurodegeneration and there is formation of neurofibrillary tangles and acetyl choline also decreases (Sanka et al., 2018). The mechanism of action in aromatherapy is begins with the aroma of the small molecule which travels through the nasal cavity, and there it adheres to olfactory epithelium and this
stimulation passed to brain regions hippocampus and cerebral limbic system which release the neurotransmitters or discharges of Neurotransmitters occurs which activate the brain to produces behavioural change(Article, 2010).

In aromatherapy essential oils administers through inhalation or massage like essential oils when inhaled or rubbed they reaches to the bloodstream where it reacts with some enzymes and hormones that results in the changes in body, mood etc(Kamen et al., 2012). Lavender oil is non-invasive it directly acts on the actions of tryptophan which is the precursor of serotonin which helps the patients to sleep or able to enhance their mood(Dog & Rhyne, 2003)(Louis & Kowalski, 2015). Although some state that lavender oil act via limbic system where it decreases the amygdala and hippocampus. Lavender has similar mechanism of actions like benzodiazepines and enhances the effect of gamma-aminobutyric acid in amygdala. Linalool inhibit the effect of acetylcholinesterase release(Cavanagh & Wilkinson, 2002). Neuropsychiatric symptoms mainly include depression, anxiety, and agitators. Lavender oil act via diffuses, lotion or topically(Arquitectura et al., 2015). Therefore it is helpful to reduce Behavioural symptoms of dementia and improvement in the cognitive function(Kamen et al., 2012)

Second, the main or important oil recommended by some reviewer that is lemon balm oil (Melissa officinalis) the composition of lemon balm is citronellal (2-40%), citral (neral/geraniol) (10-30%), germacrene, D-citral (2-3%)(Carnat et al., 1998). The essential oil found in lemon balm is approximately 0.24%. lemon balm effects on GABA transaminase inhibitor with a broad-spectrum activity in addition to a potency of 5Hydroxtryptoamine & 4-aminobutyric acid receptors. Which result in decrease physical non-aggressive behaviour without dementia. (Watson et al., 2018). Lemon balm oil effect on GABA receptors which are influence ion-channels they inhibit the nervous system produce benefits like relaxation, sleep, mood changes etc(Burns et al., 2011).

1.2 As a conceivable medical treatment toward the disastrous viruses

Essential oils having various therapeutic aspects as an anti-inflammatory, broncho dilatory, anti-viral agents(Asif et al., 2020)(Onah, 2020). SARS -CoV-2 is declared as a pandemic disease. The main mechanism involved behind the use of essential oils is that enhance the immune system during a pandemic(Hariadi et al., 2021). Mechanism of action that involved in SARS-CoV-2 is that virus enters the cell by ACE-2. Essential oils which are lipophilic in nature they interrupts the protein membrane of host cell.(Boukhatem, 2020)That mainly effect on lungs and may cause pneumonia which will leads to overproduction or pro-inflammatory cytokines molecules(Tshibangu et al., 2020). There are many essential oils used to treat these viruses like eucalyptus oil, Eucalyptus oil Globulus which is used to treat COPD, asthma or to treat different respiratory ailments like pharyngitis, bronchitis, and sinusitis. 1,8 cineol is the main constituent found in eucalyptus which is responsible for decreasing the muscle contraction of airpath ways induced by different agents. The main constituents of Eucalyptus oil are pipertone (41%), α-phelandrene (18%), p-cymene (9%), terpin-4-ol (4.8%)(Gilles et al., 2010). Similarly, oxycedrus oil also effective against HSV-1/HSV-2 virus. The major constituents of oxycedrus oil are β-oicimene, 1,8 cineole, α-piene, β-mycrein, these are responsible for blocking the effect of HSV-1/HSV-2 virus. HSV-1/HSV-2 these are high risk factor HIV-infection (Loizzo et al., 2008). Germanium oil[(citronellol (34%), geraniol (27%), linalool (11%), citronellyl formate (7%), p-menthone (6%)(Rana et al., 2002)]and lemon oil (limonene) downregulate the ACE-2 expression in epithelial cells therefore blocks the entry of virus into the host cell (Kumar, 2019). Other essential oils which are having anti-viral properties are Organium acutidenes (carvacol (31%), thymol (19%), P-cymene (11%), caryophyllene (7%), 3-carene (41%)(Tavakoli et al., 2017)and Salvia limbate α-piene (25%), β-piene (22%), 1-8, cineole (7-8%), transcaryophyllene (10%), spathulenol (8%) (Salehi et al., 2008)these might be active against the influenza virus(Sökmen et al., 2004)(Öğütçü et al., 2008). Essential oils from tee tree oil and chamomile are effective against HSV-1/HSV-2 Virus(Koch et al., 2008). The chemical present in all the essential oils are discussed below Figure 2
Diabetes mellitus is a major public health issue approximately 6% of population, according to WHO more than 340 million will be diabetic globally in 2030. From which DM-type-2 is common among the 90% the population. Consequently, there has been a growing interest in herbal essential oils due to their antioxidative, hypolipidemic activities etc (Chung et al., 2011). Diabetes can be source of risk various complications such as obesity or hypertension (Hamden et al., 2011). There are two enzymes that plays a crucial role in the metabolism of starch metabolism, α-amylase and α-glucosidase inhibition of these enzymes delay the increase of blood glucose level in the diabetes patients. In the essential oils monoterpenes hydrocarbons are the active ingredients for inhibiting glucosidase activity for example like benzoic acid and chlorogenic acid are main ingredients in menthol (Endemic, 2016). According to some studies use of omega-3 reduces the risk of developing chronic disease like heart diseases (hypertension) and diabetes. The essential oil of fenugreek seeds from trigonella foenum graecum which is rich source of terpenes (Hamden et al., 2011), chemical active ingredients β-piene (15%), 2-5 dimethyl pyrazine (6%), neryl acetate (17%), 3-octane-2-one (5%), camphor (16%) this oil decreases the activity of amylase and maltase in the diabetic rats and increase the HDL level (Safarinejad et al., 2010). Tunisian folk medicine Pelargonium graveolous is used for the treatment of hyperglycaemia because of its anti-oxidant activity, total constituents found are 47 this oil decrease the lipid peroxidation content and reduces 44% SOD superoxide dismutase catalase (36%), and glutathione peroxidase(41%) (Boukhris et al., 2012). Essential oil of black pepper Piper guineense seed decrease the ACE-2 angiotensin converting enzyme (Schnaith et al., 1994) because if the level of ACE enzyme increases then angiotensin which is potent vasoconstrictor it will increase the blood pressure which will be lead to hypertension so it decrease the ACE-2 activity (Sultan et al., 2014)
Table 3 different essential oils used in the treatment of DM-TYPE-2

<table>
<thead>
<tr>
<th>Essential oil</th>
<th>Scientific name</th>
<th>Major chemical constituents</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black cumin</td>
<td><em>Nigella sativa</em> L.</td>
<td>Thymoquinone and carvacol</td>
<td>(Sultan et al., 2014)</td>
</tr>
<tr>
<td>Orange peel</td>
<td><em>Citrus sinensis osbeck</em></td>
<td>Limonene (92%), sabinene (5%), neral (3.8%)</td>
<td>(Oboh et al., 2017)</td>
</tr>
<tr>
<td><em>Zygophyllum album</em></td>
<td></td>
<td>Hyacinthine (1%), 1-noene-4-ol (3%), carvacol (13%)</td>
<td>(Mnafgui et al., 2015)</td>
</tr>
<tr>
<td>Cumin</td>
<td><em>Cuminum cyminum</em></td>
<td>Cumin aldehyde (42%), myrtenal (10%), cis-dihydrocarvon (3%)</td>
<td>(Jafari et al., 2018)</td>
</tr>
<tr>
<td>Blume</td>
<td><em>Cinnamomum zeylanicum</em></td>
<td>(E-CINNAMALDEHYDE (81%), cinnamyl acetate (5%), CAL= inhibitory activity sows as 21.69% dose manner</td>
<td>(Tepe &amp; Ozaslan, 2020)</td>
</tr>
<tr>
<td>Clove bud</td>
<td><em>Eugenia aromatica Kuntez</em></td>
<td>Phenolic contents (13%), flavonoids (7%), EC50=88.9 ml/l</td>
<td>(Oboh et al., 2015)</td>
</tr>
</tbody>
</table>
1.4 Effective in alopecia

Alopecia is defined as hair loss or baldness. Alopecia areata and androgenetic alopecia are two classification of the alopecia. Aromatherapy topically stimulate hair follicle and it is safest way to cope up with the different type of hair loss(Kaushik et al., 2014). Androgenetic alopecia which occurs due to hormonal imbalance. The pathogenesis of hair loss is discussed in(Rai et al., 2012).there are some essential oils are effective intreatment of hair loss

Pumpkin seed oil
In Indian native language known as “Kadoo” belonging to family Cucurbitaceae. Chemical constituents are found in the pumpkin seed oils are fatty acids, sterols, phytoestrogens, tocopherols, terpenic alcohol, fibre (Lestari & Meiyanto, 2018). Similarly the belonging species is Cucurbita Pepo contains polyunsaturated fatty acids, about 91%, MYRISTIC ACID, STERAIC ACID, OELIC ACID (Pumpkin et al., n.d.). It may inhibit 5α-reductase activity due to phytosterols and lipids are its constituentse.

Grape seed oil
V. vinifera berries of which belongs to family Vitaceae contain about 15(Patel et al., 2015). Major constituents are anthomycine, vitamin E, petiole, polyphenols, trimer gallate, catechins, epicatechilns, proanthocyanins. Proanthocynains showed activity in proliferation of hair follicle cells(Garavaglia et al., 2016).
1.5 Against different types of cancer
Illicium cinnamaldehyde commonly known as Star anise effective against colon cancer. Its cytotoxic effect plays an important role in free radical scavenging, induction of apoptosis, and inhibition of tumour metagenesis (Asif et al., 2016). The composition of the essential oil is trans anethole (7%), P-anisaldehyde (1%), cyclohexanol 2-[pyridyl] (3%), elaïdic acid (5%). It is used against colon cancer, rutin which is having anticancer properties (Wolcott et al., 2010)

Cancer has 3 stages initiation, promotion, and progression. Initiation is the process in which DNA damaged and mutation occurs where as in promotion hyperproliferation occurs (Blowman et al., 2018). Essential oil of Taxus Brevifolia is used in the treatment of ovarian cancer and non-small living cancer whereas 10-deacetyl-baccatin -111 has been used in the treatment of breast cancer (Treatment, 2005)
Curcuma longa also known as turmeric essential delayed or prevent the event skin papilloma development in 7,12-dimethyl-benz[a]anthracene so this way it can be used against skin carcinogenesis (Pavithra et al., 2018)

In the menopause symptoms
Menopause occurs due to change in the hormonal status and cessation of the menstrual cycle of the women ages between 45 and 52 years. There are two types of symptoms observed in the menopause primary symptoms include vasometer symptoms whereas the psychological symptoms are the secondary symptoms (Johnson et al., 2019). Vasometer symptoms includes hot flushes and night sweats. Hot flushes are due to decreased level of estragon (Choi et al., 2014). The Citrus aurantium L.var.amara which is also known as neroli oil(Costa et al., 2013) after inhaling it, it activates the 5-HT neurotransmitter which is responsible for regulating the body temperature and HRT activated noradrenaline and 5-HT to treat vasometer symptoms (Hardy & Kuh, 2002) the components of citrus oils are listed below. The mechanism of action is described below
For almost 6000 years essential oils have been used to promote the effectiveness or mental state of a person. Aromatherapy is described by National Holistic Aromatherapy association (NAHA) as the clinical intervention or medicine for the holistic treatment of scented substance or essential oils. Essential oils are not often added directly to affected area. They must be combined with a transportation oil, in specific, only several droplets of essential oils per drop of carrier oil is recommended amount. Another very, popular carrier oils are sweet almond oil. These oils should not be taken orally or swallowed they can harm the digestive system if consumed by mouth because they release some toxins. Citrus essential oil can increase the probability of sunburn by rendering the skin more tolerant to ultraviolet light. But as compared to some health risk they have some benefits also as they are used in numerous regimens like asthma, heart diseases etc.

REFERENCES


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