



FORMULATING AND EVALUATING POLYHERBAL AROMATHERAPY CANDLE (DIFFUSER) FOR ANXIETY DISORDERS

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ABSTRACT

Aromatherapy is defined as “the art and science of utilizing naturally extracted aromatic essences from plants to balance, harmonize and promote the health of body, mind and spirit”.^[1] Aromatherapy is the use of essential oils from plants for healing. Essential oils have been used for therapeutic purposes for nearly 6,000 years. The ancient Chinese, Indians, Egyptians, Greeks, and Romans used them in cosmetics, perfumes, and drugs. Essential oils were also commonly used for spiritual, therapeutic, hygienic, and ritualistic purposes. By the 1950s massage therapists, beauticians, nurses, physiotherapists, doctors, and other health care providers began using aromatherapy.^[2] Aromatherapy did not become popular in the United States until the 1980s. Today, many lotions, candles, and beauty products are sold as “aromatherapy.”^[3]

Aromatherapy is used in a wide range of settings from health spas to hospitals to treat a variety of conditions. In general, it seems to relieve pain, improve mood, and promote a sense of relaxation. In fact, several essential oils including lavender, rose, orange, lemon, sandalwood, and others have been shown to relieve anxiety, stress, and depression. The purpose of this article is to review the current state of the science of aromatherapy and to propose future research. The author also offers guidelines for safe aromatherapy practice while awaiting future research on its clinical efficacy. This review also aims to summarize the randomized intervention Studies that have been carried out on the use of aromatic plant extracts (essential oils) for a variety of conditions.^[4]

KEY WORDS: Aromatherapy, essential oil, candle diffuser, anxiety.

INTRODUCTION

In the contemporary context, relaxation has emerged as a crucial process for alleviating both mental and physical stress. Amid the diverse array of relaxation methods available today, aromatic candles have gained prominence. Scented candles serve as a vital component in health spas, effectively relieving symptoms associated with bronchitis, high blood pressure, tension, and insomnia. Moreover, they offer holistic approaches to address emotional and mental stress, grief, and trauma. These scented candles incorporate a range of natural additives, including essential oils, herbs, spices, citrus fruits, berries, musk, oatmeal, and sea breeze. In the present day, the mass production of scented candles often relies on petroleum^[5]-derived sources like paraffin and benzene homologues, potentially posing health risks (Wilson EJ,2005; Bartsch J,2016; Derudi M,2012; Petry T,2014). Hence, it becomes imperative to craft aromatic candles from natural sources such as soy wax, beeswax, and natural essential oils to deliver the most practical benefits to use.^[6]

The primary objective of this study is to create scented candles that emit delightful fragrances.^[7] This is achieved using carriers, specifically sugars such as sucrose, dextrose, levulose, mannose, and glucose (Stabile L,2012; DerudiM,2012).^[8] The current approach involves a process for producing scented and/or colored candles, which comprises (a) forming numerous individual particles of candle wax; (b) blending the coloring and scenting agents with these particles; (c) enveloping the particles with the chosen agent(s) through agitation; and (d) situating the coated and dried particles around a candle wick. Various additives are employed in candles to impart desirable attributes, including color, aroma, texture, and stability (Petry T,2014; Stabile L,2012; Ahn JH,2015). The quantity of diluent required is precisely the amount needed to dissolve the fragrance or antioxidant. Scented candles incorporate a fragrance agent, typically scented oils, incorporated into the candle wax during the manufacturing process. This agent releases its aroma when the candle burns, and candles may offer varying concentrations of these scents. There is growing trend toward



Highly scented candles with a potent concentration of the scenting agent. Fragrance-dispersing candles are readily available and are commonly used to infuse spaces with pleasant scents.^[9]

However, very few studies have focused on the production of scented candles using a combination of beeswax, soy wax, and self-distilled lemongrass essential oil(Carroll AL,2016;Orecchio S,2011; Balti MA,2018). Notably, this product is crafted entirely from Candles and maintain the consistency of their aroma during storage and transport, antioxidants are employed.^[10]

The objectives of this study encompass three main areas: (i) investigating the factors influencing the distillation process of lemongrass essential oil; (ii) developing candles that are durable, affordable, and free from health concerns; and (iii) assessing certain physicochemical properties and conducting sensory evaluations of the end product. Aromatherapy's ability to influence human emotions has led to a widespread demand for aromatic candles, which are not only valued for their therapeutic benefits but also for their capacity to create diverse and pleasing aesthetic experiences, whether for religious, celebratory, or relaxation purposes.^[11]

OBJECTIVE

1. One of the biggest benefits of scented candles remains to be that they help to relieve stress.
2. We rely on our sense of smell a lot and exposing our noses to the pleasant essential oils in fragrance candles affects our hormones – helping to ease your anxiety and worries.
3. Scented candles are a popular relaxation method, promoting well-being through ambient lighting.
4. This study aims to create practical scented candles using natural materials like soy wax, beeswax, and essential oils.
5. The desired candle should offer a long burn time, be cost-effective, and pose no health risks to users.

Ingredient

1. Bees wax
2. Lavender oil
3. Orange peel oil
4. Sandal wood oil

Material Collection

Lavender oil: Lavender essential oil collected from market

Orange peel oil:

Fresh and healthy orange (citrus sinensis) peels collected from market and washed Thoroughly with distilled water. The peel of oranges is boiled in water and the oil produced (limonene) distilled in steam at a temperature just below 100°C, well below its normal boiling point. The immiscible oil can then be separated.^[12]

Sandal wood oil:

Sandal wood essential oil collected from the local market.

Procedure

1. Take a beeswax and Weigh the beeswax accurately.
2. Cut the beeswax in small cuts and Melt the beeswax in beaker with the help of heating Mantel.
3. After the properly melting Start add the essential oil lavender oil, orange peel oil and sandalwood oil in beaker
4. After the adding extract then Start the mechanical stirrer slowly
5. After adding all ingredient , Keep stirring up to 15 minutes.
6. Pour above mixture in suitable size mould.
7. Allow the mould to be cooled at room temperature.
8. After ½ hour remove the candle from mould.

Formulation

Sr.no	Ingredients	Quantity gm/ml	Uses
1	Bees wax	50g	Emits the brightest most warm toned flame
2	Lavender oil	1.5ml	Treating anxiety, insomnia, depression, and restlessness
3	Orange peel oil	1ml	Lifting mood and reducing stress to adding a fresh.
4	Sandal wood oil	1ml	Improves mental functions by boosting memory and focus

**Material Collection****1. Bees wax**

Beeswax is a natural biological polymer containing a mixture of several non-toxic and cheap substance (esters of fatty acids, alcohols, acids, etc.).The number of reported individual components have been contained bees wax exceeds 300 which are from various species of honeybees. Depending on the honeybee species and the geographical zone, the concentrations of individual components and substance classes may have only small differences.^[13] In addition, from the view point of chemistry it is a stable and water-repellent substance . Beeswax is a highly crystalline natural product that is used in pharmaceutical, cosmetics, food and other industries. It also is frequently used in the preparation of controlled release drug preparations .it is a natural pesticide and it is also used in the mosquito repellents candles.

Lavender Oil

Synonym : lilac

Biological source : Lavender oil, obtained from the flowers of *Lavandula angustifolia*

Family : Lamiaceae



Common name : Lavandula Angustifolia

Organoleptic Characteristics

Color: light shade of purple or violet.

Odour: floral scent, but one that is light and fresh, without being too pungent or overwhelming

Taste : floral with hints of mint and rosemary

Chemicals Constituents

1. Linalool,
2. linalyl acetate,
3. 1,8-cineole,
4. β -ocimene,
5. terpinen-4-ol,
6. camphor.

Uses

It can be taken orally, applied to the skin, and breathed in through aromatherapy. Lavender oil can benefit the skin in numerous ways. It has the ability to lessen acne, help even skin tone, and reduce wrinkles. It can even be used to treat other things, such as improving hair health and digestion.^[14]

Orange Peel Oil



Synonyms: Citrus Aurantium Var.Sinensis peel

Biological source: Orange peel oil is obtained from orange peel which is dried or fresh outer part of the pericarp of ripe or nearly ripe fruits of Citrus aurantium.

Family: Rutaceae

Geographical Source: Orange peel oil is obtained from orange peel which is dried or fresh outer part of the pericarp of ripe or nearly ripe fruits of Citrus aurantium. It is indigenous to India and commercially cultivated in Spain, Caribbean islands, the USA, Morocco, and Sicily.^[15]

Organoleptic Characteristics

Color: Yellow orange to deep orange clear liquid.

Odour: Citric, fresh, juicy, sweet.



Taste : unpleasant, bitter

Chemical Constituents

Limonene, α -Pinene, Sabinene and β -Pinene, Myrcene, Monoterpene hydrocarbons, linalool ,aliphatic aldehydes, octanal ,decanal .

Uses

Used in aromatherapy, Orange Essential Oil's pleasant scent has a cheerful and uplifting yet simultaneously relaxing, calming effect that helps reduce pulse rate. It can not only create a warm environment but can also stimulate the strength and resilience of the immune system and eliminate airborne bacteria.^[16]



Sandal Wood Oil

Synonyms :chandan, cendana

Biological source: Sandalwood album oil (SAO), also known as East Indian sandalwood oil (EISO), is an essential oil distilled from the Santalum album tree and has demonstrated biological activity as an anti-inflammatory, anti-microbial, and anti-proliferative agent.

Family: Santalaceae

Geographical source: Found in India and Malaysia. Sandalwood tree is an evergreen plant, 10- 12 m high found widely distributed in India. 3. HEARTWOOD AND SAPWOOD • Central region of old trees forms heart wood.^[17]

Organoleptic Characteristics

Color: yellow or brown

Odour: sweet and smells slightly of hay

Taste: slightly bitter, resinous.

Chemical Constituents

Sesquiterpene alcohol

α -santalol

β -santalol, .

hydrocarbons santene,

nor-tricycloekasantalene,

α -, and β - santalenes.

Uses

Sandalwood essential oil is anti-inflammatory and antiseptic. It is also restorative and a sedative which is effective in relieving stress and anxiety



The sweet, powerful, and lasting odour has made sandalwood oil useful in the perfume industry, soaps, candles, incense, folk medicine, and religious and cultural purposes for centuries. In addition, the wood and its powder are used for religious and medicinal purposes, and the food industry, especially in India.^[18]

Aromatherapy Scented Candle

This is another prevalent form of aromatherapy Diffuser, which is common in homes and offices. This is Somewhat similar to the candle diffuser method with the Only difference being the essential oils are mixed with the Wax in the actual recipe for making the candle.^[19] Therefore, As the heat continues to burn through the wax, it gradually Releases the vapours' from the oil into the air for you to Inhale in. There are a few essential oils commonly used in Making aromatherapy candles, such as sandal wood oil, lavender, orange oil, among others. Lighting the aromatherapy candle is A great way to de-stress anytime during the day wherein The aroma from the oil creates a relaxing and calming Effect on the body.^[20]



Formulation of Polyherbal Scented Candle

CLAY POT DIFFUSER

This particular aromatherapy diffuser comes in Different sizes and styles. To use this device, simply pour in The essential oil into the clay pot.^[21] It comes with an opening that you must seal with a cork-style cap. Eventually, the Aroma from the oil will be released and permeate through The opening.



Although quite new, many are already using Clay pot diffuser due to the convenience and since it is Inexpensive as compared to other types of diffuser. To Achieve the right strength in aroma, you can simply adjust The amount of essential oil to use. One disadvantage with The clay pot diffuser is that the scent is not long lasting.^[22]

Mechanism of action

Lavender Oil

Lavender essential oil has an extensive anecdotal history of anxiolytic benefit that has recently been supported by clinical studies examining its efficacy in the treatment of anxiety. The two primary terpenoid constituents of lavender essential oil, linalool and linalyl acetate, produce an anxiolytic (calming) effect in combination. Investigators believe this occurs due to inhibition of voltage-gated calcium channels, reduction of 5HT1A receptor activity, and increased parasympathetic tone.^[23]

Orange Peel Oil

Sweet orange peel contains a variety of chemical compounds, including essential oils, flavonoids, carotenoids, steroids, terpenoids, alkane groups, and ethyl esters.^[24] These chemical compositions confer antioxidant properties to sweet orange peel, which can protect the body from oxidative damage caused by free radical

Its antioxidant properties reduce the pace of skin damage caused by UV light, pollution, and toxins. The oil's high limonene concentration

Sandal Wood Oil

Requires development of better anticancer agents with greater efficacy and fewer side-effects.^[25] Natural products are important sources for the development of chemotherapeutic agents and almost 60% of anticancer drugs are of natural origin. A-Santlrol, a sesquiterpene isolated from Sandalwood, is known for a variety of therapeutic properties including anti-inflammatory, anti-oxidant, anti-viral and anti-bacterial activities.^[26]

Pharmacology

When you light the wick of your scented candle, the heat from the flame melts the wax. With fragrance and essential oil molecules in the wax are heated, they give off an aroma. This aroma is released through the evaporation from the hot wax pool (melt pool) hence scented candles usually give off the scent gradually^[27]

Different scents stimulate different areas of the brain, producing varying effects on mood and well-being. For example, floral scents like lavender and rose are often associated with relaxation and stress reduction, while citrus scents like lemon and orange can evoke feelings of energy and vitality.^[28]

**Evaluation Test**

Sr no.	Evaluation parameters	Observation
1	Colour	Yellowish white
2	Odour	With fragrance and essential oil molecules in the wax are heated, they give off an aroma.
3	Stability	Stable
4	Soot/smoke	Burns evenly and does not give off soot or smoke
5	Wick behaviour	Curl while burning
6	Burning behaviour	The flame heats the nearby air and starts to rise
7	Burn time	1 hour
8	Flame height	1.5 cm

RESULT

Every formulated candle was tested in a laboratory in a standard usual room Environment in a confined area , relieving stress and anxiety lightening and contrasting with the same size aromatic herbal Candle and flammability rate ,burning efficiency with respect to burning time and overall efficient the test showed greater quality and efficacy than the commercialized candle

CONCLUSION

Natural base poly herbal scented candle was successfully developed in this research work. The ideal outcome for the produced candle should encompass the following attributes: it Should have a prolonged burn time, be cost-effective, and have no adverse health effects on Users. Antioxidants are highly effective in preventing undesired changes during the Manufacturing process, storage, and burning of the candles. The composition of scented Candles includes gel wax, vegetable fat or animal fat, Lavender oil, orange peel oil and sandal wood oil. Evaluation tests found that the drug was very effective and safe to use. Statistically it indicates that the commodity being offered is successful.^[29] Out of these Formulations fragrance which could not cause any allergic reaction and The other 2 formulations has high fragrance levels and it might cause counter-irritation Effects. No complaints about allergic effects and this is healthy product.^[30] While the Formulation gives a fresh fragrance of herbs it will relieve the stress. Even the wording was Climate conscious, competitive and wallet safe.

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