



## The Science and Art of Aromatherapy: A Brief Review

\*Nirmala Halligudi and Maryam Al Ojaili

Department of Pharmacy, Oman Medical College, Muscat, Oman

### 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". 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. Aromatherapy did not become popular in the United States until the 1980s. Today, many lotions, candles, and beauty products are sold as "aromatherapy."

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, bergamot, 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.

**KEYWORDS:** *Aromatherapy, essential oils, Candle diffuser*

### INTRODUCTION

Aromatherapy is commonly known as the practice of healing by scent, when in fact its effects go beyond the aromas and sense of smell. According to the National Association for Holistic Aromatherapy (NAHA) 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]. Treatment by aroma therapeutic essential oils is usually through inhalation, massaging onto the skin and very rarely by consumption of the oils through the mouth. Therapeutic use of essential oils falls under both preventive as well as active treatment measures. Therapy, however does not limit the use of essential oils. Aromatherapy expands to include spa treatments to enhance relaxation which some might argue could be considered as a treatment for stress. Although essential oils have a very wide range of aromas and effects, they all come from natural sources, mostly plants.

### HISTORY OF AROMATHERAPY:

Although it may seem like a newly discovered line of treatment, historic evidence shows that aromatherapy dates back to as early as 1555 B.C. Old records mention that ancient Egyptians used aromatherapy in very similar ways to the ones used in modern aromatherapy and

holistic medicine, they also used aromatic oils in mummification processes. India has a whole branch of traditional medicine which is now used as a holistic approach called ayurveda. It mostly deals with massaging essential oils. In Greece, **Hypocrites**, the father of medicine studied essential oils and recommended massages with aromatic oils and scented baths when treating his patients. Not many details are known about aromatherapy in that era but there is little evidence to prove that aromatherapy has been used since the old ages. Around 1000 A.D. **Ibn Sina** (Avicenna), the Persian polymath is known to be the first person to use distillation process to extract the essence of Rose which is an important and expensive oil used until this day. During the Renaissance in Europe (1450 – 1600), explorers and merchants brought exotic herbs and oils back to Europe from the Middle and Far East, which were considered luxuries at the time known only among the middle- and upper-classes. Wigs were scented with aromatic oils and people carried scented handkerchiefs to overcome the effects of unsanitary streets and living conditions. In France lavender (enhances the healing powers of the body[2]) and rosemary, (now used to stimulate the immune system) were used to fumigate hospitals.

In 1910 a French chemist named **Rene-Maurice Gattefosse** burned his hand while working in his laboratory

and soaked his hand in the nearest tub of liquid to him which happened to be lavender essential oil. Later he noticed his hand healing quickly and how no scars were left. This made him curious about essential oils and he started experimenting with them on World War I soldiers. He treated their wounds with lavender oil, thyme oil, lemon and clove oils to disinfect them, and he noticed how quickly their injuries healed. His interest in essential oils grew and he published many books on skin treatments for skin cancer, facial ulcers, gangrene and black widow spider bites. In 1937 he published a book called *Aromathérapie: Les Huiles Essentielles Hormones Végétales* which translated into Aromatherapy and hence the name was born. **Albert Couvreur**, who is also French, published a book about the medicinal uses of essential oils. French medical doctor and Army Surgeon **Dr. Jean Valnet** also researched essential oils. At about the same time French biochemist, **Margaret Maury** developed massage techniques for the effective application of these oils to the skin. The research results and techniques established by Jean Valnet, Margaret Maury - and her co-researcher **Micheline Arcier** form the basis of modern aromatherapy as taught by Colleges all over the world today.[3]

Aromatherapy is becoming increasingly popular; however there are few clear indications for its use. To systematically review the literature on aromatherapy in order to discover whether any clinical indication may be recommended for its use, computerized literature searches were performed.

#### EXTRACTION OF ESSENTIAL OILS

There are several different ways to extract essential oils, and all require complicated equipment. Most extraction techniques are based on the fact that the majority of essential oils mix with oils, fats, alcohol, and other non polar solvents, but not with water. The method used with each plant depends on the chemical structure of the plant itself.

#### DISTILLATION:

Most pure essential oils are extracted from plants through steam distillation. Freshly picked plants are suspended over boiling water, and the steam pulls the oils out of the plant. The steam rises, is captured in a vessel, and is pushed along tubing. Then the steam is rapidly cooled, causing it to condense back into water. Since water and essential oils do not mix, the two separate, and the essential oil is collected. A byproduct of this distillation is the remaining water. Some plants contain aromatic compounds that are so water soluble; they remain in the

water that is left over after distillation. Such waters are very fragrant and are prized by aroma therapists, who refer to them as hydrosols. In aromatherapy, hydrosols are used mostly in cosmetics to moisturize skin.

#### EXPRESSION:

The most direct method of producing essential oils is squeezing them from the plant's flesh, seeds, and skins -- a process similar to that used to obtain olive oil. This technique is used mostly with citrus peels, such as orange, lemon, lime, or grapefruit, because the oil in their peels is easily pressed out.

#### ENFLEURAGE:

This very old method is rarely used today except in France. It is a long and complicated process that has become very expensive. Blossoms are set on sheets of warm fat that absorb the oil from the flowers. Originally animal fat or lard was used, but now vegetable fats are more common. Once the essential oil has been incorporated into the fat, the "exhausted" flowers are removed and replaced with fresh ones. The process is repeated several times until the fat is infused with fragrance. Then the fat is separated out with solvents, leaving just the essential oil.

#### SOLVENTS:

Aroma therapists tend to stay away from oils obtained through chemical solvents, worrying that slight traces of the solvent may remain even though they are supposed to be completely removed. First, the plant is dissolved in a solvent such as benzene, hexane, or chloride of methylene. The solvent, which has a low boiling point, is then evaporated off, sometimes with the help of a machine that uses vacuum or centrifugal force to help pull it away from the essential oil.

The resulting oils are called "absolutes." A similar method uses paraffin waxes as the solvent, but does not evaporate them off. Instead, the remaining paraffins cause the final product to be solid, and thus it is called "concrete."

Even though the evaporated solvent is recaptured and cooled back into liquid so that it can be reused, this process is still expensive. As a result, it is reserved for costly oils that cannot be distilled, such as jasmine and vanilla, or for rose essential oil, which is slightly less expensive when obtained through this process rather than through distillation.



#### CARBON DIOXIDE:





New methods of obtaining essential oils are currently being introduced. One of the most interesting processes, although extremely expensive, extracts the oil with carbon dioxide. The result is an essential oil scent that is very close to that of the plant itself.


plant parts to treat various diseases. The amount of essential oils available is limitless. According to the National Association for Holistic Aromatherapy the top essential oils are Peppermint, Eucalyptus, Ylang Ylang, Geranium, Lavender, Lemon, Clary Sage, Tea Tree, Roman Chamomile, and Rosemary. These oils and a few more will be discussed in the following table.[4]

**ESSENTIAL OILS AND THEIR SOURCES:**

AROMATHERAPY is the use of concentrated essential oils extracted from herbs, flowers, and other

Essential Oil	Latin Name	Description	Uses
<p><b>Peppermint</b></p> 	<p>derived from the plant <i>Mentha piperita</i></p>	<p>a creeping herb with fragrant leaves</p>	<p>used to make tea. It has a camphor-like fresh scent that is very familiar due to being used a lot in the food industry (ice-cream flavors, chewing gum)[5].</p>
<p><b>Eucalyptus</b></p> 	<p>plant has the latin name of <i>Eucalyptus globules</i></p>	<p>it's Australian in origin but is now found all over the world</p>	<p>Its highly antiseptic and is used in all sorts of personal products like aftershaves, colognes and mouthwashes as well as house cleaning products. Eucalyptus is helpful in treating respiratory problems, such as coughs, colds, and asthma. Also helps to boost the immune system, and relieve muscle tension.[6]</p>
<p><b>Ylang Ylang</b></p>	<p>comes from the plant <i>Cananga odorata</i></p>	<p>Intensely sweet scent, floral, slightly spicy</p>	<p>It aids in relaxation, and can reduce muscle tension. Good antidepressant, used in bath products and massage oils.</p>

			
<p style="text-align: center;"><b>Geranium</b></p> 	<p>derived from <i>Pelargonium roseum</i>,</p>	<p>Extracted by steam distillation. Has a floral scent with a slight hint of rose.</p>	<p>Used to treat acne, cellulitis, dull skin and lice. [7]</p>
<p style="text-align: center;"><b>Lavender</b></p> 		<p>It has a pleasing smell and is one of the most versatile and safest of all essential oils.</p>	<p>Calmative, relaxing, cooling and anti-inflammatory, antibacterial and immuneenhancing, and hormonebalancing. Lavender enhances the healing powers of the body: it is effective against colds, flues, and infections, and used specifically for burns. It also has skin-regenerating benefits[8]</p>
<p style="text-align: center;"><b>Lemon</b></p> 	<p>Citrus limonum</p>	<p>Jean Valnet, M.D., discovered that vaporized Lemon essential oil can kill meningococcus bacteria in 15 minutes, typhoid bacilli in one hour, staphylococcus aureus in two hours and germs causing pneumonia within three hours.</p>	<p>good stimulant of the body's own immune system. It activates white blood cell formation and helps protect the body during flu epidemics</p>

<p><b>Clary Sage</b></p> 	<p>with the latin name of <i>Salvia sclarea</i></p>	<p>, the essential oil is distilled from the flowering tops and leaves of the plant.</p>	<p>Its mostly used to flavor food. When added to massage oil it relieves muscle tension and calms the nerves. It also promotes the action of the female hormone estrogen, easing menstrual cramps, PMS and menopausal hot flashes. The aroma of it alone helps take away depression, insomnia and lowers blood pressure</p>
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**THE BENEFIT OF AN AROMA ~ INHALING ESSENTIAL OILS:**

Essential oils that are inhaled into the lungs offer both psychological and physical benefits. Not only does the aroma of the natural essential oil stimulate the brain to trigger a reaction, but when inhaled into the lungs, the natural constituents (naturally occurring chemicals) can supply therapeutic benefit. Diffusing eucalyptus essential oil to help ease congestion is a prominent example. If not done correctly and safely, however, the use of essential oils can have severe consequences.

**THE BENEFIT OF PHYSICAL APPLICATION:**

Essential oils that are applied to the skin can be absorbed into the bloodstream. The constituents of essential oils can aid in health, beauty and hygiene conditions. **Since essential oils are so powerful and concentrated, they should never be applied to the skin in their undiluted form.** To apply essential oils to the skin, essential oils are typically diluted into a *carrier* such as a cold pressed vegetable oil, also known as carrier oil. Common carrier oils include sweet almond oil, apricot kernel oil and grape seed oil

**OTHER BENEFITS:**

In addition to therapeutic benefit at the emotional and physical level, essential oils are helpful in other applications. Essential oils can be used in household and laundry cleaners. Some oils act as a natural insect repellent and pesticide. Citronella essential oil is the ingredient in the insect repelling candles that is responsible for repelling the mosquitoes.

**METHODOLOGY AND DEVICES USED IN AROMATHERAPY:**

**HOW AROMATHERAPY WORKS:**

Researchers are not entirely clear how aromatherapy may work. Some experts believe sense of

smell may play a role. The "smell" receptors in nose communicate with parts of brain (the amygdala and hippocampus) that serve as storehouses for emotions and memories. On breathing in essential oil molecules, some researchers believe they stimulate these parts of brain and influence physical, emotional, and mental health. For example, scientists believe lavender stimulates the activity of brain cells in the amygdala similar to the way some sedative medications work. Other researchers think that molecules from essential oils may interact in the blood with hormones or enzymes.[9]

Aromatherapy massage is a popular way of using essential oils because it works in several ways at the same time. Skin absorbs essential oils on breathing them in which results the physical therapy of the massage itself.

**STEAMDIFFUSER:**

when it comes to buying essential oil diffusers, this type is one of the most common and preferred by users. This is due to the simplicity of using the device. All you have to do is to add 2 cups of water and wait for it to boil. Once the water is boiled, pour it into a separate bowl container and start adding the essential oil. The presence of the steam will stimulate the properties inside the essential oil and allowing it to release its own aromatic essences along with the steam. After some time of being exposed to the steam, the oil would have released enough amount of vapor to completely fill the room with its aroma.

The ease and efficiency of using the steam diffuser to vaporize essential oils are two top reasons why aromatherapy users prefer it. However, the use of heat element exposes the oil and its constituents from being destroyed and lose its quality in the process. Therefore, you need to keep an eye on the oil while diffusing it. Moreover, the aroma you are able to produce is not long-lasting either.



#### **ELECTRIC HEAT DIFFUSER:**

Electric-powered diffusers are widely available in the market for diffusing aroma oils. In a modern world, this model design provides a lot of convenience. Simply plug the device and turn it on, the electricity will then produce the heat and generate a fanning action that will quickly disperse the oil's aroma throughout the entire room. Not only are electric heat diffusers preferred due to its convenience and ease of use, but they are also useful in dispersing essential oil fragrances in a large area. Of course, it will depend on the size of the device but there are several size choices out in the market, which will depend on your intended use.

#### **FAN DIFFUSER:**

As the issue about the use of a heat source in aromatherapy diffusers continue, a new type of diffuser is made available in the market – fan diffuser. This is best suited for those who are concerned about depleting the therapeutic value of specific oil due to the presence of heat element. Like all the others, place the essential oil in a tray or bowl. Then, the fanning device is turned on to slowly but gradually fan the oil until its aroma is released in the air. One convenience with using a fan diffuser is its ability to fan a large or small room. Consequently, it will depend on the size of fan diffuser you use. However, knowing that it does not utilize heat to release the aroma of the oil gives aromatherapy users the confidence that it has preserved the therapeutic properties of the oil. One common complaint that users have with a fan diffuser though is the level of noise it produces when the device is on.

#### **CANDLE DIFFUSER [10]:**

Next to steam diffuser, candle diffuser is the second most popular choice of diffusion method in aromatherapy. And just like the one above, using it proves very simple. Begin by lighting the candle wick and allow it to burn for 5 minutes or so. Then, extinguish the fire and pour into a few drops of essential oil into the burnt wax. Avoid adding the oil into the wick since it is highly flammable and could be dangerous when you re-lit the wick. Once the oil has been added, light the candle again to gradually release the vapor and aroma of the essential oil all over the room.

One major advantage to using the candle diffuser is its portability. such that we can carry it around ,wherever we go. However, like the steam diffuser, the aroma quickly dissipates and the use of heat can potentially destroy some of its important constituents.



#### **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. 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.



#### **AROMATHERAPY SCENTED CANDLES:**

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. Therefore, as the heat continues to burn through the wax, it gradually releases the vapors 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 rose, lavender, neroli, 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



#### **SIMPLE TISSUE DIFFUSION:**

Place 3-4 drops of essential oil on a tissue and place it on the table. As movement occurs in the room, the aroma will waft through the air.

#### **ADVANTAGES:**

This method can be used anywhere and is quickly transportable. This is an ideal method to use in public (i.e. in a work cubicle or on an airplane) when essential oils can't diffuse throughout the room or space.

#### **DISADVANTAGES:**

This method does not emit much aroma into a room.

#### **STEAM DIFFUSION:**

Boil 2 cups of water. Pour the water into a bowl and add up to 10 drops of essential oil to the water. Use fewer drops if you are using an essential oil or synergy that may cause irritation to your mucous membranes (i.e. cinnamon, eucalyptus, rosemary, pine, thyme, cajuput). Use of energizing or relaxing oils can make this method useful any time of day or night. The steam will heat the oils and cause them to evaporate quickly into the room.

#### **ADVANTAGES:**

This method will quickly diffuse the oils into a room.

#### **DISADVANTAGES:**

The aroma is not exceptionally long-lasting. Additionally, the heat may alter or destroy certain constituents of the oils and thus the therapeutic benefit may not be as optimal as using cold-air diffusion methods.

#### **LAMP RING DIFFUSERS:**

Lamp rings are typically made out of terracotta or brass. They are shaped like a ring and set directly onto a standard light bulb. They have a grooved lip that goes all the way around them. This lip holds essential oil. The heat from a light bulb heats the essential oil in the lamp ring, and the oil is then gently diffused into the room.

#### **ADVANTAGES:**

Lamp Rings are usually inexpensive.

#### **DISADVANTAGES:**

If any essential oil gets onto the light bulb, the light bulb could break. It won't work with odd sized bulbs or with bulbs that are situated at odd angles. Lamp rings probably cannot be used with high efficiency bulbs. The

heat may alter or destroy certain constituents of the oils and thus the therapeutic benefit may not be as optimal as using cold-air diffusion methods.



#### TERRACOTTA AND SANDSTONE DIFFUSERS:

Terracotta clay and sandstone diffusers go by many names and come in an array of attractive shapes and sizes. Some terracotta diffusers resemble tiny clay pots that accept a small quantity of essential oil. Usually a cork is the method by which the opening is closed. The oils permeate through the pot and then diffuse out into the room. The intensity of the aroma depends on how much essential oil is added to the clay pot or other shaped diffuser. Sandstone is quite porous and is another lovely way to passively diffuse essential oils.

#### ADVANTAGES:

Clay pot diffusers are very inexpensive, easy to use, and do not require electricity or batteries.

#### DISADVANTAGES:

The aroma is strongest shortly after adding essential oil to the clay pot and then dissipates as time passes. As such, it's hard to keep the same level of aroma in the room.



#### ADVANTAGES AND DISADVANTAGES OF AROMATHERAPY:

Aromatherapy could be used for treatment purposes as well as a preventative measure. Examples on how it is used in treatment would be Lavender getting rid of Pathogens; Fights Infection: genito-urinary infections, respiratory infections, cough, asthma, bronchitis, whooping cough. While its preventative against aging by rectifying the skin and regulating the Liver and Heart. On the other hand, Aromatherapy could have many disadvantages if not used carefully, which are

#### PREGNANCY INTERACTIONS:

The UMMC notes that specially-trained midwives can administer aromatherapy during pregnancy and childbirth with few risks. However, certain essential oils may increase the risk of preterm labor or birth defects. Nature's gift, an aromatherapy manufacturer, recommends that pregnant women avoid sage, clary-sage, rosemary, basil, cedar, juniper, coriander, jasmine and hyssop.

#### ALLERGIES AND ASTHMA:

The essential oils used in aromatherapy can cause allergic reactions such as sneezing, wheezing, skin irritation, rash, hives and asthma attack. The UMMC advises people with severe asthma or allergies to avoid essential oils.

#### HORMONAL EFFECTS:

Some aroma therapeutic oils contain compounds similar to estrogen. In theory, these oils can stimulate breast tissue growth, trigger changes in the uterus, increase the growth of some forms of cancer and reduce breast milk supply. People who are pregnant, nursing or taking hormone-affecting drugs should avoid fennel, aniseed, sage and clary-sage oils. Women with hormone-sensitive cancers--including breast and ovarian cancer--should use aromatherapy only under the guidance of a qualified health care provider.

#### STIMULANT EFFECT:

People with hypertension, epilepsy or anxiety disorders should avoid stimulant essential oils. Cinnamon, peppermint and rosemary can all temporarily elevate blood pressure. The UMMC notes that hyssop oil can cause seizures in people with epilepsy.

#### CONCLUSION:

Aromatherapy massage can be helpful for anxiety reduction for short periods. Essential oils plays very important role in the field of aromatherapy. Essential oils



include muscle relaxants (marjoram and black pepper), digestive tonics (cardamom and mint), circulatory stimulants (rosemary and basil) and hormone precursors (clary sage and fennel). Many repair injured cells (lavender and helichrysum); others help carry away metabolic waste (grapefruit and juniper). In addition, a number of essential oils enhance immunity, working with the body to heal itself. They are capable of stimulating the production of phagocytes (white blood cells that attack invaders), and some (e.g., tea tree and lavender) are antitoxic for insect bites and stings.

There is no published literature that provides a sound rationale for the use of aromatherapy massage as a medical intervention. It would be of considerable interest to know exactly how much aromatherapy is being practiced in National Health Service establishments and how much it is costing the service. National guidance on the use of aromatherapy and other complementary therapies within the health service is needed.

Available scientific evidence does not support claims that aromatherapy cures or prevents disease; however, a few clinical studies suggest aromatherapy may be a helpful complementary therapy. In Britain, there are reports of the successful use of aromatherapy massage in people who have cancer to reduce anxiety, depression, tension, and pain. However, some studies show no difference in outcome between massage with aromatherapy oils and massage without them. There are also reports that breathing the vapors of peppermint, ginger, and cardamom oil seems to relieve the nausea caused by chemotherapy and radiation. However, these claims are not supported by available scientific evidence. Laboratory studies suggest that the oils can affect organ function, although whether this can be useful is not yet clear.

Some of the clinical controlled trials showed good results. Aromatherapy is promoted as a natural way to help patients cope with stress, chronic pain, nausea, and depression and to produce a feeling of well-being.

Proponents also claim aromatherapy can help relieve bacterial infections; stimulate the immune system; fight colds, flu, and sore throats; improve urine production; increase circulation; and cure cystitis, herpes simplex, acne, headaches, indigestion, premenstrual syndrome, muscle tension, and even cancer. Fragrances from different oils are promoted to have specific health benefits. For example, lavender oil is promoted to relieve muscle tension, anxiety, and insomnia. Further extensive clinical research evidences may lead to the popularity of the aromatherapy. Clinical research on aromatherapy is in its infancy. Early trials suggest aromatherapy may help patients cope with chronic pain, stress, nausea, and depression.

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