



## Phytochemical and Therapeutical Aspects of Aromatherapy

**Dr.Kamla R.Nagar**, Professor, Department of Agad Tantra & vavayhar Ayurveda, Faculty of Ayurvedic Sciences, Jayoti vidhyapeeth women's university, jaipur

**Dr. Rakesh K. Nagar**, Associate Professor, Department of Kaumar-Bhritya, National Institute of Ayurveda, Jaipur

**ABSTRACT:** Aromatherapy involves using pure essential oils, derived from plants, in a huge range of health & beauty treatments, as well as for pleasure. In offering us a natural way of caring for our health, it is just one aspect of the growth of interest in all forms of alternative or complementary medicines & traditional home remedies. In our search for ways of keeping fit & healthy without needing to use synthetic drugs, aromatherapy oils offer the advantage of their complete naturalness and their general safety & simplicity of use. They offer ways of preventing illness & treating ourselves at home, and in the hands of professional practitioners they can be used as part of a multifaceted holistic treatment.

**Key words:** Aromatherapy, treatments, health, holistic.

### I. INTRODUCTION:

Aromatherapy literally means "Treatment through Aroma" without specifying the source of scent it is on ancient art for promoting and protecting the health of individual as well as the environment. Aromatherapy involves using pure essential oil, derived from plants, in a huge range of health and beauty treatment as well as for pleasure. It offering us a "natural way of caring for our health."<sup>1</sup> It is just one aspect of the growth of interest in all forms of alternative and complementary medicine and traditional home remedies.

Modern medicine is spectacularly successful in many ways, but increasing numbers of people feel that in modern medicine we are treated as a collection of parts, some of which may have problems, rather than as a whole organism and least of all as a person.

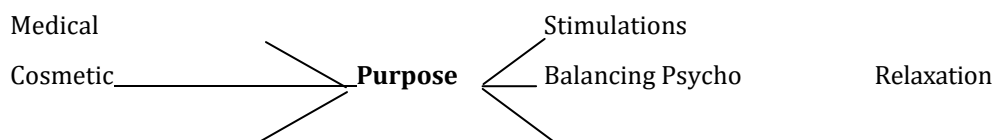
In our research for ways of keeping fit and healthy without needing to use synthetic drugs, Aromatherapy oils offer the advantage of their complete naturalness and their general safety and simplicity of use. They offer ways of preventing illness and treating ourselves at home and in the hands of professional practitioners they can be used as part of a multifaceted holistic treatment.

### ORIGIN OF AROMATHERAPY:

Aromatherapy has the reputation of being used in ancient civilization about six thousands years ago. Egypt has been believed to use aromatic products for the 1<sup>st</sup> time for body massage, skin care and rejuvenation, embalming mummies and eradicating all types of diseases.

Hippocrates, the great Greek physician gave scientific outlook to aromatic oils. He tried to fumigate the streets of Athens with aromatic oils to control plague. Art of using aromatic products for many purpose spread to Rome, Greeks, Arab, China, France, Germany, Italy, England, India and other countries. R.M. Gattefosse of France coined the word 'Aromatherapy'; when he accidentally burnt his lavender oil<sup>2</sup>. He is also known as "Father of Aromatherapy" and Lavender oil is the "King of Aroma oil".

### TYPES OF AROMATHERAPY:



### NATURE OF AROMA OILS:

Aroma oils are pure essential oil of volatile nature derived from plants. Essential oil are true essence, hormone or soul of the plant located in very tiny glandular pockets of the plants. These sacs or pockets can be present in leaves, flowers, stem, bark, seed or root of the plant/bush or tree. Essential oils are odoriferous and volatile in nature by virtue of volatility they reach deeper sites of the system and environment.

Essential oil is also known as “volatile oil” and “Ethereal oil”. It may also be referred to as “oil of” the raw plant material from which it was extracted such as oil of clave.

### PHYTOCHEMISTRY OF AROMA OILS:

An essential oil is concentrated, hydrophobic liquid containing volatile aromatic compound, extracted from plants. It may be produced by distillation, expression or solvent extraction. The term “Essentia<sup>3</sup>” is intended to indicate that the oil is the fragrant essence of the plant from which it is extracted and not in the more common sense of being indispensable. It is not to be confused with essential fatty acids.

An important aspect to consider when combining essential oil for therapeutic effect is their chemistry. Essential oils are very complex chemical compounds. A single oil can be composed of hundreds of chemical constituents. The majority of these constituents, however can be grouped into eleven (11) main chemical family/group.

Essential oils are mainly composed of terpenes. These eleven groups are:

CHEMICAL GROUP	THERAPEUTIC EFFECT
Monoterpenes	Stimulating
Sesquiterpenes	Balancing
Esters	Relaxing
Aldehyde (Aliphatic)	Relaxing
Ketones	Relaxing
Lactones	Balancing
Oxides	Mild Stimulating
Acid	Mild Stimulating
Aldehydes (Aromatic)	Mild Stimulating
Alcohol	Stimulating
Phenols	Stimulating

### NEED TO KNOW PHYTOCHEMISTRY OF AROMA OILS:

A knowledge of the chemical components of essential oils is important for several reasons. Essential oils which share a high proportion of common blend (mixing) well together. For example calary sage<sup>4</sup> and beragamat oil combined well because they both contain a high proportion of Linalyl Acetate (Ester), although they belong to different botanical families and odour group.

The chemical make-up of an individual oil or a blend of oils, can also provide a very useful key to its potential properties and bioactivities on both a physiological and psychological level.

### PRODUCTION OF AROMA OILS:

Aroma oils are purely essential volatile oil, so more heat, deteriorate their chemical structure. So for commercial level usually for extraction methods are applied:

1. Steam distillation
2. Expression
3. Solvent Extraction
4. Super Critical Fluid Extraction

### II. STEAM DISTILLATION:

Today most common essential oils, such as lavender, peppermint and Eucalyptus are distilled, Raw plant material, consisting of the flowers, leaves, wood, bark, roots, seeds or peel is put into a clembic (distillation apparatus) over water. As the water is heated the steam passes through the plant material,

vaporizing the volatile compounds. The vapours flow through a coil where they condense vapour to liquid, which is then collected in a holding vessel.

The water recondensed from the distiller in process is referred to as "Hydrosol" or plant water essence which may be sold as another fragrant product and popular hydrosols are Rose water, lavender water and orange blossom water.

#### **EXPRESSON:**

Most citrus peel oils are usually expressed mechanically or cold pressed. Due to the large quantities of oil in citrus peel and the relatively low cost to grow and harvest the raw material. Citrus fruit oils are cheaper than most other essential oils.

#### **SOLVENT EXTRACTION:**

Most flowers contain very little volatile oil to undergo expression and their chemical compounds are too delicate and easily denatured by the high heat used in steam distillation. Instead of it a solvent such as hexane or supercritical CO<sub>2</sub> is used to extract the oils. Extracts from hexane and other hydrophobic solvents are called CONCRETES which is a mixture of essential oil, waxes, resin and other oil soluble plant<sup>5</sup>.

Although highly fragrant concretes contain large quantities of non fragrant waxes and resins. As such another solvent often "Ethyl Alcohol" which may dissolve the fragrant, low molecular weight compound is used to extract the fragrant oil from the concretes. The Alcohol is removed by a second distillation, leaving behind the absolute essential oils.

#### **SUPER CRITICAL FLUID EXTRACTION:**

In this liquid CO<sub>2</sub> is used as solvent. This method has many benefits including avoiding petrochemical residue in the product, obtaining absolute essential oil directly without having to deal with a concrete and lower temp. process to prevent the decomposition and denaturing of compounds.

#### **FACTORS AFFECTING THE YIELD OF AROMA OILS:**

Yield of Aroma oil is very small in quantity however yield and quality of oil vary widely from country to country, climate – to – climate, species – to – species, of the plant and method of extraction and storage container.

**For Example:** 100 kg Rose petals may yield 30 – 30 gm of oil only, while same amount of Eucalyptus leaves can yield 3Kg of it. So, one can imagine the cost of the oil and difference in cost of different oils.

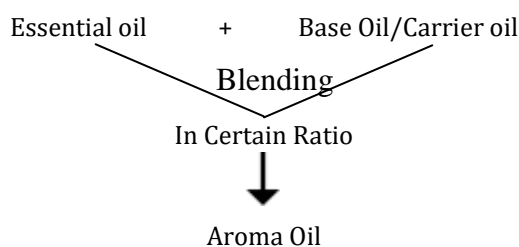
#### **HOW TO USE AROMA OILS IN THERAPEUTICS:**

##### **Keywords**

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- **Base oil**
- **Carrier oil**
- **Bland (Mixing)**

As we know, that Aroma oils are very much concentrated, thus should not be used directly on the skin except lavender or Tea tree oil in certain conditioners. They can be diluted by vegetable oil which is known as "Base oil" which works as carrier oil after blending (mixing) with an essential oil in some certain proportion.



The blending (mixing) of Aroma oil is not instant preparation. Before use Aroma oil, it should be stored in a well Stopped glass container not plastics, in a cool, dark place for a few weeks. So that it becomes more efficient for therapeutic use<sup>6</sup>.

Some Base oil/Carrier oils are – Sweet Almond oil, Jojoba, olive, apricot, coconut, sunflower, castor,

evening primrose, wheat germ and sesame oil<sup>7</sup> etc.

#### ROUTES OF ADMINISTRATING AROMA OIL IN THE BODY:

There are four routes of administering the Aroma oils in the body –

1. Direct Absorption through skin (Massage, compress and Bath)
2. Inhalation through lungs (Steam inhalation, vaporizer etc)
3. Inhalation through olfactory system (Inhalation, room sprays)
4. Direct Ingestion (Internal use in prescribed form)

#### DOSE / RATIO OF BASE OIL AND ESSENTIAL OIL:

Standard dilution (2.5%)

Base oil	Essential oil in drops
5 ml	2 – 3 drops
15 ml	6 – 7 drops
25 ml	12 – 13 drops
50 ml	23 – 25 drops
100 ml	45 – 50 drops

But in some special conditions:

- Physiological complaints like muscle ache, sprains rheumatism requires strong concentrations - around 3%
- In Psychological disorders like depression, insomnia and stress - 1.5 – 2%
- For sensitive skin, facial lotion and body oil more dilution is needed - 0.5 – 1%
- In infants, children and pregnant women - 0.5%

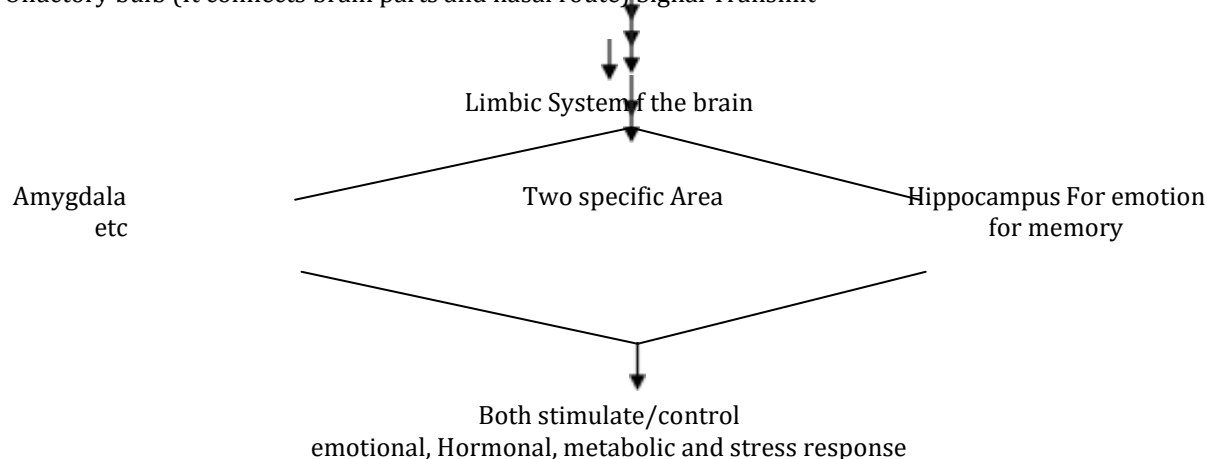
#### MODE OF ACTION OF AROMA:

It works through olfaction (small activity which is a complex networking system. It has been established that olfaction can influence our physical and psychological level through mood, thought, sexual behaviour cognition, vigilance, mental spiritual and physical health<sup>8</sup>.

Aroma (Very fine volatile molecule) Floating in Air

Touch the Cilia (Hair like structure of nasal epithelium) Aroma Signals

Olfactory bulb (It connects brain parts and nasal route) Signal Transmit



## PLANT SOURCE

NAME	FAMILY	HINDI/ENGLISH NAME	PART TO BE USED	ODOUR INTENSITY
Antheom Sowa	Apiaceae	Soya/Dill	Seeds	Medium
Angelica glauca	Apiaceae	Taskar/Chorak	Root	High
Boswellia serrata	Burseraceae	Shallaki/obiamum /frankincense	Gum resin	High
Cedrus deodara	Pinaceae	Cedar/Devdar	Stembark/ Heartwood	Medium - low
Matricaria chamomile	Compasitae	Babuna/chamomile	Flowers	High
Cinamomum zeylanica	Lauraceae	Dalchini/Cinamom	Leaves	High
Cinamomum camphora	Lauraceae	Karpur/camphor	Wood, root	High
Commiphora myrrh	Burseraceae	Gandhras/Myrrh	Resin	High
Coriandrum sativum	Apiaceae	Dhaniya/Cariander	Crushed seeds	Medium
Symbopogan citrates	Poaceae	Gandhtarun/leamongrass	Leaves	High
Symbopogan martini	Poaceae	Rohish/palmrosa/ Geranium	Fresh grass	Medium high
Citrus limon	Rutaceae	Neembu/lemon	Fresh peal	Medium
Citrus sinensis	Rutaceae	Narangi/Orange	Fresh Peal	Medium
Citrus paradise	Rutaceae	Grape fruit	Fresh Peal	Medium
Eletteria cardamomum	Zingiberaceae	Ela/Cardamom	Ripen seed	Very high
Eucalyptus globules	Myrtaceae	Tailparn/Eucalybtus	Leaves and young twigs	High
Ferula gumbosa	Apiaceae	Javashir/galbanum	Oleoresin gum	Very high

Hyssop Officinale	Labiatae	Juffa / hyssop	Leaves and flowers	High
Officinale Jasminum	Oleacrae	Chameli/jasmine	Flowers	High
Lavendula stoechas	Labiatae	/lavender	Flowers	Medium
Malaluca leucodendrom	Myrtaceae	Kayaputi/cajeput	Leaves	Medium high
Mentha piperata	Labiatae	Putiha/ Peppermint	Flowering herb	High
Ocimum basilium	Labiatae	Tulsi/Basil	Flowering herb	High
Santalum album	Santalaceae	Chandan/Sandal	Drild root and heartwood	Low medium
Rosamarinus officinalis	Labiatae	Rosemarry	Whole plant	Medium high
Melaleuca alternifolia	Styraceae	Loban/Benzain	Resin	Medium
Syzygium aromaticum	Myrtaceae	Lavang/clvebud	Flower buds	High
Valeriana officinalis	Valerianaceae	Valerian	Roots	Very high
Vetivaria zizanioides	Poaceae	Vetivert/usher	Roots	High

#### PRECAUTION TO BE TAKEN WHILE USING AROMA OIL:

1. Never put a drop of neat essential oil on the tongue and protect your eyes from neat oils. Use in diluted form only.
2. Many oils are prohibited during pregnancy, epilepsy, Asthma and other health problems<sup>9</sup>. So check before using.
3. Essential oils from citrus family can cause skin problems under sun exposure, so, should be avoided. They can be used in evening and in bath water.
4. They should be stored in dark coloured glass bottle (Blue, Red, Purple) as they may lose their activity.
5. Essential oils are highly inflammable. So, don't use them near fire.
6. They are not meant for human consumption internally until prescribed under health professionals.
7. They are so much costly, so use them judiciously.

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