Fundamentals of Aromatherapy

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Fragrance & Flavour Development Centre, Kannauj
Aromatherapy

- Cure with aroma.
- The art-and science of using plant oil for treatment.
- Wholistic therapy, taking into account of the mind, body and spirit of the person.
Modes of Action of Aromatherapy

- Pharmacological
- Physiological
- Psychological
Do have specific effect

But in combination they behave

Synergistically
Modern & Ayurvedic Evidences of Aromatherapy
1,8-Cineole increases cerebral blood flow in the cortex.

Linalool & Linalyl Acetate

Mixed at 2%

Peanut oil

Applied Over

Human Skin

After 90 min Detected in

Blood Plasma (20ng/ml)

Essential oil

Blood Brain Barrier

&

Detected in Brain Tissues of Mice

(Buchbaur, G. 1993, New results in aromatherapy research, 24th International Symposium on essential oils, Berlin, Technical University)


1,8-Cineole (Eucalyptol)

Absorbed through Skin

Muscles

when an applicator was used the absorption rate increased 320%

Essential Oil

Interfere with metabolism of micro organism

By changing rate of enzyme reaction

Thereby influencing nutrient intake affecting enzyme synthesis at nuclear or ribosomal level
Rosemary Oil
(1,8-cineole rich)

Activating, refreshing, remedy against exhaustion

(The locomotor activity of test animals increased significantly after inhalation of this oil)

(Kovar, K.A. et al. 1987. Blood levels of 1,8–cineole and locomotor activity of mice after inhalation and oral administration of rosemary oil, Planta Medica, 53: 315–8).
**Jasmine oil**

*Effect similar to caffeine*

*Proved by increased CNV after inhalation*

**Lavender oil**

*Effect similar to tranquilizers (sedation)*

*Proved by decreased CNV after inhalation*

**CNV: Contingent Negative Variation**

*Upward shift in brain waves recorded by electroencephalogram (EEG)*

In perfumery, *The Psychology and Biology of Fragrance*, Toller and Dodd (Eds.) Chapmann & Hall, 107-120.
Lavender & Sandalwood oil

Increases $\alpha$-wave activity in EEG

(showing mentally relaxed state or meditation)

Sandalwood oil

Antiviral activity against Herpes simplex 1&2, by interfering to replicate it

Roman Chamomile

Anti-inflammatory & is comparable to Hydrocortisone

Established strong activity against many pathogenic fungal organisms.

Cumaldehyde (*Cuminum cyminum*), 1, 8-Cineole (*Luvunga scandens*), Eugenol (*Ocimum sanctum*), Caryophyllene

Modern & Ayurvedic evidences of aromatherapy

“Tryambakam Yajamahe Sugandhim Pushtivardhanam Urvarukamiva Bandhanam Mrityor Mukshia Mamritad”
Rigveda VII 59.12

_=;Ecda;tkegs lqxfU/ke~ iqf"Vo/kZue~AmOokZ#dfeo cU/kukUe`R;kseqZ{kh; eke``rkr~AA

_Xosn % llre~ 59-12
Extracted Aromatic Materials in Ayurveda

- Distilled Extract (Arka)
- Aromatic Water (Parisrutodaka)
- Alcoholic Extract (Gandhsattva)
<table>
<thead>
<tr>
<th>S. N.</th>
<th>Fragrant Material</th>
<th>Part used</th>
<th>Uses</th>
<th>Main Constituents</th>
<th>Ayurvedic Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Turmeric</td>
<td>Rhizome</td>
<td>Skin Care</td>
<td>ar-Turmerone, Curcumin</td>
<td>Atharva Veda</td>
</tr>
<tr>
<td>2.</td>
<td>Sandal Wood</td>
<td>Heart Wood</td>
<td>Skin disease</td>
<td>α -Santalol,β –Santalol</td>
<td>Ramayana Sushruta Smhita</td>
</tr>
<tr>
<td>3.</td>
<td>Cedar wood</td>
<td>Heart Wood</td>
<td>Antiseptic, Diuretic</td>
<td>Cedrol, α – Himacchalene,β – Himacchalene</td>
<td>Charak Samhita</td>
</tr>
<tr>
<td>4.</td>
<td>Jatamansi</td>
<td>Rhizome</td>
<td>Deodorant, Hair care</td>
<td>Jatamansone</td>
<td>Sushruta Samhita</td>
</tr>
<tr>
<td>5.</td>
<td>Nutmeg</td>
<td>Fruit</td>
<td>Mouth Freshner</td>
<td>Pinene, Myriticin, Dipentene</td>
<td>Sushruta Samhita</td>
</tr>
<tr>
<td>6.</td>
<td>Kadamba</td>
<td>Flower</td>
<td>Laxative</td>
<td></td>
<td>Bhavaprakash Nighantoo (4.34)</td>
</tr>
<tr>
<td>7.</td>
<td>Kamala</td>
<td>Flower</td>
<td>Lactation</td>
<td></td>
<td>Kaiyadev Nighantoo (1.1445)</td>
</tr>
<tr>
<td>S.N</td>
<td>Fragrant Material</td>
<td>Part used</td>
<td>Uses</td>
<td>Main Constituents</td>
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</tr>
<tr>
<td>8.</td>
<td>Saffron</td>
<td>Flower</td>
<td>Skin care</td>
<td>Safranal</td>
<td>Dhanvantari Nighantoo (3.13)</td>
</tr>
</tbody>
</table>
| 9.  | Keora            | Flower    | Foul Smell Aphrodisiac| Phenyl Ethyl Methyl Ether          | Bhava Prakash Nighantoo (4.41)
|     |                  |           |                       |                                    | Shaligram Nighantoo (382)            |
| 10. | Champaka         | Flower    | Wound                 | Benzyl Alcohol, Cineole, iso- Eugenol | Raj Nighantoo (10.241)               |
| 11. | Malti            | Flower    | Blood Disorder        |                                    | Bhava Prakash Nighantoo (4.26)
<p>|     |                  |           |                       |                                    | Astanga Sangraya (Su 12)             |
| 12. | Hazara           | Flower    | Haemorrhage Wound     | Tagetone, Linalool                 | Puspayurveda(24)                     |
| 14. | Sultan Champa    | Flower    | Lactation             |                                    | Dhanvantari Nighantoo (3.17)         |</p>
<table>
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<th>Part used</th>
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<th>Main Constituents</th>
<th>Ayurvedic Literature</th>
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<tr>
<td>15.</td>
<td>Bilva</td>
<td>Flower</td>
<td>Thirst &amp; Vomiting</td>
<td>α-Phellandrene, Citronellal, Citral</td>
<td>Kaiyadeo Nighantoo (1.23)</td>
</tr>
<tr>
<td>16.</td>
<td>Bela</td>
<td>Flower</td>
<td>Aphrodisiac</td>
<td>Benzyl Acetate, Benzyl Alcohol</td>
<td>Bhavaprakash Nighantoo (4.38); Raj Nighantoo (10.226)</td>
</tr>
<tr>
<td>17.</td>
<td>Juhi</td>
<td>Flower</td>
<td>Skin Disease</td>
<td></td>
<td>Bhavaprakash Nighantoo (4.27-28); Raj Nighantoo (10.253)</td>
</tr>
<tr>
<td>18.</td>
<td>Clove</td>
<td>Flower</td>
<td>Aphrodisiac, Mouth Freshener</td>
<td>Eugenol</td>
<td>Bhavaprakash Nighantoo (3.42); Vishnudharmotar Purana</td>
</tr>
<tr>
<td>19.</td>
<td>Vetiver</td>
<td>Roots</td>
<td>Skin Disease</td>
<td>Vetiverol, Vetoveryl Acetate</td>
<td>Ayurvediyam Navnitkam</td>
</tr>
<tr>
<td>20.</td>
<td>Eucalyptus</td>
<td>Leaf</td>
<td>Pain, Antiseptic</td>
<td>1, 8-Cineole</td>
<td>Charak Samhita</td>
</tr>
<tr>
<td>21.</td>
<td>Nagarmotha</td>
<td>Rhizome</td>
<td>Hair care</td>
<td>Bi &amp; Tricyclic Sasquiterpene Ketone</td>
<td>Bhaisajya Ratnavali</td>
</tr>
<tr>
<td>22.</td>
<td>Rose</td>
<td>Flower</td>
<td>Skin Care Aphrodisiac</td>
<td>Rhodinol, Geraniol, Phenyl Ethyl Alcohol</td>
<td>Arka Prakash</td>
</tr>
</tbody>
</table>
Ayurveda + Aroma + Therapy

Ayuromatherapy: Aromatherapy from Ayurveda
Ayuromatherapy

- Ayurvedic evidence of use of aroma
- Unlimited use of no. of fragrant material
- Self explanatory nature of name
## Rates of Absorption of Essential oil Through Skin

<table>
<thead>
<tr>
<th>Essential oil</th>
<th>Absorption time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turpentine</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Eucalyptus &amp; Thyme</td>
<td>20 – 40 minutes</td>
</tr>
<tr>
<td>Anise, Bergamot &amp; Lemon</td>
<td>40 – 60 minutes</td>
</tr>
<tr>
<td>Citronella, Pine, Lavender &amp;</td>
<td>60 – 80 minutes</td>
</tr>
<tr>
<td>Geranium</td>
<td></td>
</tr>
<tr>
<td>Coriander &amp; Peppermint</td>
<td>100– 120 minutes</td>
</tr>
</tbody>
</table>
Methodology of Action of Essential Oil Through Human body

- Inhalation & Massage
- Blood & Cortex

Gas Chromatography – Spectroscopic Method (Parts per billion level)
<table>
<thead>
<tr>
<th>Condition</th>
<th>Dose Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Dose Level</td>
<td>2.5%</td>
</tr>
<tr>
<td>Muscular Pain/Rheumatism</td>
<td>3.0%</td>
</tr>
<tr>
<td>Depression/Stress</td>
<td>1.5-2.0%</td>
</tr>
<tr>
<td>Facial Lotion</td>
<td>0.5-1%</td>
</tr>
<tr>
<td>Babies &amp; Pregnant Woman</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
CHEMISTRY OF CARRIER OILS

THEY ARE TRIGLYCERIDES ESTERS OF LONG CHAIN FREE FATTY ACIDS

Mol. Wt.
41

Mol. Wt.
650-970
SOME IMPORTANT CARRIER OILS

- **ALMOND OIL** *(Prunus amygdalus)*
  Myristic (1%), Palmitic (4.5%), Oleic (77%), Linoleic (17%)

- **APRICOT OIL** *(Prunus armeniaca)*
  Saturated fatty acid (3.6%), Oleic (61%), Linoleic (30%)

- **GRAPE SEED OIL** *(Vitis vinifera)*
  Saturated fatty acid (8-16%), Un-Saturated fatty acid (85-90%), Palmitic (4-11%), Stearic (2.5-5%), Archidic (Traces), Oleic (12-33%), Linoleic (45-72%), Linolenic (0.2%)

- **OLIVE OIL** *(Olea Europa)*
  Myristic (0.1-1.2%), Palmitic (7-16%), Stearic (1-3%), Arachidic (0.1-0.3%), Oleic (65-85%), Linoleic (4-15%)
SOME IMPORTANT CARRIER OILS

- **SESAME OIL (Sesamum indicum)**
  Myristic (Traces), Palmitic (7-9%), Stearic (4-5%), Arachidic (0.4-1.0%), Oleic (37-49%) Linoleic (35-47%)

- **WHEAT GERM OIL (Triticum)**
  Palmitic (11-16%), Stearic (1-6%), C-20-C22 saturated (0-1%), Oleic (8-30%), Linoleic (44-65%), Linolenic (4-10%)

- **COCONUT OIL (Cocos nucifera)**
  Caproic (0-.8%), Caprylic (5-9%), Capric (6-10%), Lauric (44-52%), Myristic (13-19%), Palmitic (8-11%), Stearic (1-3%), Arachidic (0-.4%), Oleic (5-8%), Palmitoleic (1%) Linoleic (Trace)
ESSENTIAL OILS FOR COMMON PROBLEMS

SANDAL WOOD OIL (*Santalum album linn*)
ACTION: Antidepressant, Antiseptic, Aphrodisiac, Sedative
USES: Skin care (Acne, dry, cracked & chopped skin), depression, nervous tension & stress related complaints

CLOVE BUD (*Szygium aromaticum*)
ACTION: Antioxidant, Antiseptic, Antibiotic, Antirheumatic
USES: Skin (Acne, cuts, burns), Arthritis, sprains, rheumatism, insect repellant

CITRONELLA OIL (*Cymbopogon nardus*)
ACTION: Antiseptic, deodorant, fungicidal, diuretic
USES: Skin care (oily skin), depression, headache, migraine, insect repellent.
ESSENTIAL OILS FOR COMMON PROBLEMS

PALMAROSA OIL (Cymbopogon martini)
ACTION: Antiseptic, bactericidal
USES: Skin care (Acne, dermatitis, scars, wrinkles, moisturizes the skin, stimulate cellular regeneration)

LEMONGRASS OIL (Cymbopogon citratus)
ACTION: Analgesic, Antidepressant, Antiseptic, Antimicrobial, bactericidal
USES: Skin care (Acne, Athlete’s foot), muscular pain, headache, stress related conditions, insect repellent (fleas, lice ticks).

JASMINE (Jasminum officinale)
ACTION: Analgesic (mild), Anti-inflammatory, Antiseptic, Sedative
USES: Skin (Dry, greasy sensitive skin), Labour pain, depression, stress related condition
Storage of Essential Oil

Reactions Responsible for Deterioration

- Oxidation
- Resinification
- Polymerisation
- Hydrolysis of Ester
- Interaction of Function Group

Air (Oxygen)
Heat

Light
Moisture
What will happen if improperly stored?

High terpene Essential Oils
Citrus, Pine, Tagetus, Turpentine

Prone to Oxidation & Resinification

High Ester Essential Oils
Lavender & Bergamot

Essential oil with High Acids

High Aldehyde Essential Oils
Lemongrass

Reduced aldehyde contents
Storage of Essential Oil

How to remove moisture, metal?

- Smaller sample
- Bulk
- Anhydrous sodium Sulphate
- Rectification
- Centrifuging at high speed rpm more than 15,000
- Metallic Impurities in Clove, Bay
- Treat with Tartaric acid & filter
Long Shelf Life of Essential Oil

- Storage in Cool Place
- Storage in Dry Environment
- Protection from Sunlight
- Removal of Air
- Removal Of Moisture
- Removal Of Impurities
Thanks for patient hearing