Essential Oils

[Essential Oils: General account, extraction methods & their uses.]

What are essential oils?

- Essential oils are natural aromatic compounds found in the seeds, bark, stems, roots, flowers, and other parts of plants.
- It gives plants their distinctive smells and provide plants with protection against predators and disease and play a role in plant pollination.
- Essential oils are non-water-based phytochemicals made up of volatile aromatic compounds.
- They contain the true essence of the plant it was derived from.
- Essential oils are highly concentrated.
- It doesn't contain artificial substances, unlike perfumes and fragrance oils.
- Essential oils are steam distilled or expressed.

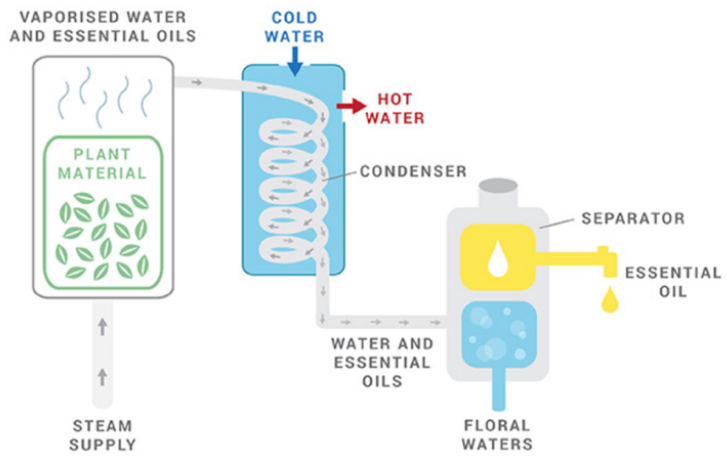
Essential oils – composition

- Essential oils are mixtures of organic compounds.
- Terpenes are the key components of all essential oils.
- The distinctive character of an essential oil can be attributed to the functional group present in its key molecule.
- Esters, ethers, aldehydes, lactones, ketones and alcohols are all found in essential oils.

Extraction method

Rather than being synthetically manufactured in labs, essential oils are extracted from plant materials through removal methods that are suited to the specific plant part containing the oils. Essential oils are the liquids that are isolated from plants when introduced to solvents – they are liquefied versions of the plants! Popular extraction methods include: **Steam Distillation, Solvent Extraction, CO_2 Extraction, Maceration, Enfleurage, Cold Press Extraction, and Water Distillation**.

Steam Distillation



Steam Distillation is the most popular method used to extract and isolate essential oils from plants for use in natural products. This happens when the steam vaporizes the plant material's volatile compounds, which eventually go through a condensation and collection process.

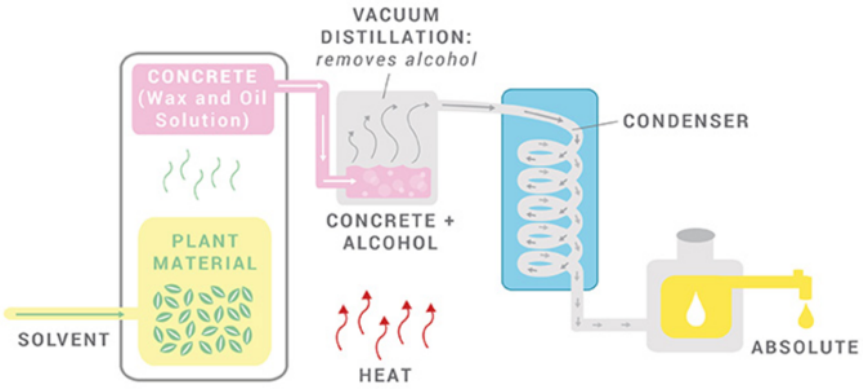
Process

1. A large container called a *Still*, which is usually made of stainless steel, containing the plant material has steam added to it.
2. Through an inlet, steam is injected through the plant material containing the desired oils, releasing the plant's aromatic molecules and turning them into vapor.

3. The vaporized plant compounds travel to the condensation flask or the *Condenser.* Here, two separate pipes make it possible for hot water to exit and for cold water to enter the Condenser. This makes the vapor cool back into liquid form.
4. The aromatic liquid by-product drops from the Condenser and collects inside a receptacle underneath it, which is called a Separator. Because water and oil do not mix, the essential oil floats on top of the water. From here, it is siphoned off. (Some essential oils are heavier than water, such as clove essential oil, so they are found at the bottom of the Separator.)

Solvent Extraction

This method employs food grade solvents like hexane and ethanol to isolate essential oils from plant material. It is best suited for plant materials that yield low amounts of essential oil, that are largely resinous, or that are delicate aromatics unable to withstand the pressure and distress of steam distillation. This method also produces a finer fragrance than any type of distillation method.



Through this process, the non-volatile plant material such as waxes and pigments, are also extracted and sometimes removed through other processes.

Once the plant material has been treated with the solvent, it produces a waxy aromatic compound called a "concrete." When this concrete substance is mixed with alcohol, the oil particles are released. The aforementioned chemicals used in the process then remain in the oil and the oil is used in perfumes by the perfume industry or for aromatherapy purposes.

Solvent Extraction encompasses the following methods: Hypercritical CO_2 (Carbon Dioxide), Maceration, Enfleurage.

Common oils and their uses

There are dozens of essential oils, each with a unique scent and potential healing properties.

- **Basil**: Distilled from the popular cooking herb, basil oil is believed to ease coughs and congestion, enhance mood, improve digestion, increase alertness, and soothe muscle aches.
- **Bergamot:** This citrus oil gives Earl Grey tea its distinctive flavor and is used to relieve anxiety. Bergamot also is being studied for its potential to lower cholesterol.4
- **Calendula:** A relative of the marigold, calendula may soothe rashes, wounds, yeast infections, and other skin irritations.
- **Cinnamon:** Research suggests the oil in this popular spice may improve circulation, relieve stress, ease pain, fight off infections, and improve digestion.6
- **Citronella:** A natural insect repellant, citronella also may relieve stress and fatigue.
- **Clove:** Spicy clove oil can be used to treat toothaches and other types of pain.7
- **Eucalyptus:** The active ingredient in VapoRub, eucalyptus is commonly used to treat colds, congestion, and coughs, and is being studied for antibacterial benefits.8

- **Jasmine:** A sweet-smelling floral oil, jasmine is touted as a stress-reliever with the potential to help treat dry skin and signs of aging, inflammation, and psoriasis.
- **Lavender:** One of the most widely used essential oils, lavender is used for relaxation and to relieve insomnia.
- **Lemon:** Said to boost mood and energy, this citrus oil relieves anxiety and may help promote weight loss.
- **Lemongrass:** Used for stress-relief and to help boost immunity, studies suggest this oil can treat dandruff and fungal infections, and ease anxiety, headaches, and upset stomach.
- **Neem:** Neem is used to treat nail fungus and acne. It also is an effective insect repellent.
- **Orange:** The bright citrus scent of orange can boost energy and improve mood. There's also researched to suggest it can ease anxiety.
- **Peppermint:** This popular oil is used for headaches, pain, and stomach issues like irritable bowel syndrome.
- **Rosemary:** Distilled from the cooking herb, rosemary essential oil is believed to enhance mental focus and is being studied for the prevention of dementia.
- **Sandalwood:** Popular in meditation centers and spas, this fragrant earthy scent is thought to relieve anxiety and improve sleep.
- **Ylang ylang:** Used to relieve pain, reduce inflammation, improve mood, and enhance libido, research shows this oil also may lower blood pressure.

References

- www.newdirectionsaromatics.com
- www.verywellhealth.com

[The information, including the figures will be used solely for academic purpose.]