

The Art and Science of Aromatherapy

Have you ever been transported back in time upon smelling a scent? Does the aroma of cinnamon call to mind childhood memories? What about the scent of freshly mown grass? Or the floral fragrance of a perfume worn by a beloved aunt? Science has shown that scents have the power to trigger strong emotional memories — even more than looking at photos. Scents can also influence mood.



The Power of Aromas

The ability of aromas to evoke memories and affect moods is related to how the brain processes scent information. Most sensory input (sights, sounds, etc.) is sent by the thalamus to the cerebral cortex to be processed and interpreted. In contrast, olfactory (scent) information is routed from the nose to the limbic system (the area of the brain that influences emotion and memory) where it can evoke an immediate response — a response that, unlike other sensory input, isn't dependent upon the brain to interpret or analyze it.

Humans have long realized the transformative power of scent. Although they didn't know the brain science behind the power of scent, ancient civilizations used plant-based scents as far back as 5000 years ago. Ancient Egyptians steeped flowers, foliage, and wood and used the scented water in religious and healing ceremonies. Ancient Greeks and Romans infused oil with flowers, herbs, and spices, and then used the fragrant oil in aromatic baths or applied it to the skin. Certain scents were believed to improve health and mood, providing the foundation for the practice of aromatherapy — the practice of using scent for therapeutic benefit.

Note: The terms scent and aroma are used interchangeably in this article. In common usage, both refer to an odor that is generally agreeable.

Why Plants Produce Scents

Although humans have made use of plant-based scents for millennia, plants don't produce scents for our benefit. The sweet smell of a rose, the bracing scent of peppermint, the citrusy fragrance of lemon balm — plants produce these familiar fragrances as a form of communication. Rooted in place, plants can't travel to fulfill their needs or escape from predators, so some have evolved scents to respond to interact with other organisms.

Some plants use scent to attract:

- When a flower is ready for pollination it emits a scent that advertises its nectar-rich blooms to pollinating insects.
- Many fruits produce a distinctive scent when they're ripe and the seeds inside are mature, ready for fruit-eating animals to consume them and disperse their seeds.
- Some plants send out scents as "distress calls" that attract beneficial insects. For example, researchers discovered that the smell of cut grass has been identified as the plant's way of summoning beneficial insects to the rescue. (Learn more [here](#).)

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Other plants use scent to repel:

- The scents of mint and citrus keep plant-munching insects at bay.
- The distinctive aroma of eucalyptus may alert herbivores that its leaves are toxic.

Scientists continue to discover ways plants use scent to communicate with each other and with other organisms. We humans are bystanders, stopping to smell the enticing fragrance of a rose blossom — a fragrance evolved not to please us but to lure pollinating bees. However, even though we may not be the target for the scents, humans can reap some of their benefits.

Essential Oils — The Foundation of Aromatherapy

Essential oils are aromatic substances extracted from the flowers, foliage, roots, bark, or other plant parts. The term refers to the historical belief, dating back thousands of years, that the extracted substance contained the "essence" of the plant. Essential oils are extracted from a single plant source and have distinctive scents (and sometimes flavors).

Essential oils are made by steaming or pressing the various plant parts to extract the compounds that produce the fragrance. The amount of plant material needed varies widely. For example, to make 1/2 oz. of essential oil, it takes just 2 lbs. of eucalyptus leaves, but more than 300 lbs. of rose flowers! The prices reflect these numbers, with rose essential oil usually the most expensive.

How Humans Use Scents in Aromatherapy

Although the therapeutic use of scent dates back thousands of years in cultures across the globe, the term "aromatherapy" first appeared in the 1930s. The last few decades have seen renewed interest in using botanical scents to support health and well-being. Some aromatherapy enthusiasts attribute wide-ranging healing effects to various plant scents. Note, however, that evidence to support such claims is anecdotal; there is currently no evidence-based research proving that essential oils can cure illnesses. (It will take large-scale, peer-reviewed clinical trials to determine if essential oils offer cures.) That said, the way our bodies process scent information through the limbic system reinforces the notion that essential oils, at the very least, can influence on emotions and mood.

Although simply breathing in a soothing or uplifting botanical scent can be considered a form of aromatherapy, many practitioners use essential oils. These concentrated plant extracts are primarily absorbed into the body in two ways: by inhalation or via the skin.

Inhalation:

- Aromatic molecules are taken up through the nose and routed directly to the limbic system.
- Some of the molecules may be absorbed through the lungs and gain access to the bloodstream.
- Essential oils may be inhaled directly, applied to surfaces such as bed linens, or dispersed into the air via a diffuser.

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Application to skin:

- The molecules in some essential oils can pass through the skin and into the bloodstream.
- Most essential oils are too concentrated to be applied directly to the skin and must be diluted in a vegetable carrier oil prior to use.
- Essential oils may be added to massage oils and lotions or added to bath water.

Most Popular Scents

Dozens of different essential oils are readily available, both as individual scents and in combinations. Some of the most popular scents (and their reported effects) are:

Lavender: relaxes, promotes sleep

Peppermint: Invigorates; may soothe headache pain and stomach upset

Lemon and orange: elevate mood

Ylang ylang: reduces tension, eases stress

Eucalyptus: may soothe coughs, reduce congestion

Safety Considerations

Essential oils are powerful substances and must be used with care. Consider the following safety information and guidelines:

Just because essential oils are "natural" doesn't mean they are always risk-free. They can be irritating, cause allergic reactions, and interact with medications.

- Never ingest essential oils.
- Always read labels carefully to ensure you're using 100% pure essential oil. Avoid "fragrance oils" which may be synthetic and contain little or no essential oil.
- The strength and chemical composition of an essential oil may vary among manufacturers and batches due to growing conditions and extraction process.
- Essential oils are not regulated and do not require approval by the U.S. Food and Drug Administration.
- Avoid sun exposure after applying products with citrus oils, which can cause photosensitivity.

Related articles:

Growing a Knowing Nose – A Scent Lesson

<https://kidsgardening.org/resources/lesson-plan-growing-a-knowing-nose-scent-lesson/>

Mindfulness in the Garden

<https://kidsgardening.org/resources/garden-activities-mindfulness/>

The Scents of the Holidays

<https://kidsgardening.org/resources/digging-deeper-scents-of-the-holidays/>

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