

Can Inhaling Menthol Help Your Brain?

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✓ Fact Checked

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STORY AT-A-GLANCE

- › Researchers seeking a connection between smell and the central nervous system discovered that smelling menthol can improve cognition in healthy animals and those with neurodegenerative disease
- › This data highlights the potential therapeutic benefit that menthol may have in modulating immune health and central nervous system disease
- › Menthol is a popular aromatherapy essential oil, as well as peppermint and frankincense
- › Peppermint oil is often associated with relieving nausea, pain, stomach and respiratory symptoms, and managing stress and mental fatigue
- › Frankincense essential oil has anti-inflammatory properties, can help reduce symptoms of ulcerative colitis and irritable bowel

Researchers¹ from Cima University of Navarra published a paper in *Frontiers of Immunology* in which they demonstrated that smelling menthol could improve cognition in animal models suffering from neurodegenerative disease. The study lends another layer of evidence that aromatherapy, or the practice of inhaling a scent or absorbing components of essential oils through the olfactory system or skin,² can have beneficial effects on your body and brain.

According to *Consumer Reports*,³ U.S. consumers spent \$1 billion on essential oils in 2015. This grew to \$4.6 billion in 2022⁴ and experts estimate the market will reach \$9.85 billion by 2030.

The term aromatherapy wasn't used until the late 1920s, but the history of benefiting from aromatic plants dates back thousands of years. Ancient Egyptians, Greeks, Chinese and Romans used essential oils in their cosmetics and drugs.⁵ Today aromatherapy practitioners work with patients who have a variety of health conditions and help them use aromatherapy at home.

Data from the featured study suggests that this simple practice may help improve cognitive function in those with Alzheimer's disease.⁶

Menthol Enhances Cognitive Performance

The researchers sought to investigate the connection that exists between the olfactory, immune and central nervous systems. Past research⁷ has identified the complex interactions between the olfactory system and the brain, including studies that showed a correlation between the appearance of the first symptoms of Alzheimer's disease and loss of smell.

Dr. Juan José Lasarte, director of the Immunology and Immunotherapy Program at Cima and principal author of the investigation, commented in a press release:⁸

"We have focused on the olfactory system's role in the immune and central nervous systems, and we have confirmed that menthol is an immunostimulatory odor in animal models. But surprisingly, we observed that short exposures to this substance for six months prevented cognitive decline in the mice with Alzheimer's and, what is most interesting, also improved the cognitive ability of healthy young mice."

The researchers chose to use menthol, a naturally occurring compound found in peppermint and other mint leaves, to analyze the impact on cognitive capacity and immune system.⁹ After brief and frequent exposure to menthol, the researchers evaluated the immune response and typical cognitive decline in an animal model of Alzheimer's disease.

When the animal detected the scent, the body showed a decrease in interleukin-1-beta levels, which is a key protein in the inflammatory response.¹⁰ When the mice were exposed to menthol for one week every month for 6 months, the cognitive impairment normally observed in the mouse model was prevented.

The researchers also used a medication approved for managing autoimmune conditions to suppress the same protein and found an improvement in cognitive capacity in healthy mice and those with Alzheimer's disease. They concluded:¹¹

"These data suggest an association between the immunomodulatory capacity of smells and their impact on the cognitive functions of the animals, highlighting the potential of odors and immune modulators as therapeutic agents for CNS-related diseases."

Another researcher from the study noted that data demonstrating a connection between the olfactory, central nervous and immune systems, suggest that immune modulators and odors may play an important role in preventing and relieving central nervous system diseases,¹² and may open the door to creating new therapies.

Not All Odors Are Therapeutic Agents

The data from this research highlights the potential that odors, specifically scents from essential oils, may have therapeutic benefits in modulating physiology and impacting disease. Data analyzing the therapeutic effect of essential oils is not new. A 2017 study¹³ found evidence that compounds in essential oils have an analgesic-like action and may hold some promise in the development of pain relief products.

Aromatherapy has also been used to reduce anxiety,¹⁴ alleviate depression,¹⁵ and it has shown a beneficial effect on obesity.¹⁶ Results of using fennel essential oil in an animal model revealed an improvement in lipid metabolism and a decrease in insulin levels indicating that inhaling fennel essential oil could affect cardiovascular health and other indicators of obesity-related dysfunction.¹⁷

The Power of Aromatherapy

Scent can have a powerful influence on your well-being and is known to trigger memory, also known as odor-linked memories. Odors are better at triggering memory than pictures.¹⁸ For example, smelling your mother's perfume on another woman can trigger strong memories and emotions about your mother.

Aromatherapy uses concentrated essential oils from a variety of botanicals to harness olfactory power for healing. Essential oils carry biologically active volatile compounds in a highly concentrated form.

Two powerful essential oils are **peppermint** and frankincense. In the featured study, researchers demonstrated how menthol improved cognition in an animal model. The main active ingredient of peppermint oil is menthol.¹⁹

Peppermint oil is popular in the aromatherapy world and is derived from the leaves of the peppermint plant. It's widely used as a home remedy for stomach problems and is effective in helping to relieve nausea. Peppermint oil has exhibited antiviral, antimicrobial, antifungal, antioxidant, analgesic and anti-edema properties²⁰ and may be useful for:

- **Relieving stomach problems** — Peppermint oil may help ease functional dyspepsia,²¹ relieve indigestion, stomach cramps and bloating²² and is effective in improving symptoms of irritable bowel syndrome.²³
- **Easing respiratory problems** — Peppermint oil has expectorant and decongestant properties²⁴ that can help clear up phlegm in the respiratory tract.
- **Relieving pain** — Peppermint oil can help relieve sore muscles²⁵ when it's added to massage oil. Some may find relief from headaches²⁶ by dabbing a few drops mixed with a carrier oil on the wrist, or inhaling the essential oil.
- **Managing stress and mental fatigue** — Studies suggest that the essential oil has an effect similar to psychostimulants,²⁷ helping to manage stress and mental fatigue, as demonstrated in an animal study.

A second essential oil that stands out from the crowd is [frankincense](#), commonly referred to as the King of Oils. Anecdotally, many swear by the healing powers found in the essential oil and research demonstrates several benefits including reducing inflammatory conditions, anti-inflammatory effects in ulcerative colitis and irritable bowel syndrome, reducing the risk of asthma and an antiproliferative effect on tumors.²⁸

You can choose to use frankincense oil with a few drops of your favorite carrier oil, add it to your bath, or in a warm compress. When using a diffuser or vaporizer, ensure the device is made specifically for essential oils.

Sources and References

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