



# Effects of Rosemary Essential Oil on Mood and Memory

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*Written by Jessica Patella, ND. This study showed that rosemary aroma from the essential oil improved cognitive learning and decreased the amount of time to answer questions correctly.*

Aromatic plants have been used for medical and religious purposes dating back to ancient times (1). Although they have been in use for thousands of years, how they affect human behavior has been unclear. For the first time, research has shown that exposure to the aroma of rosemary essential oil improved mood and memory (1).

Essential oils are composed of chemicals called terpenes, which are small molecules that are absorbed into the blood stream through the nose or lungs (1). Terpenes are so small they can easily cross the blood-brain barrier, which means they can be absorbed by the brain and have a direct effect on the brain (1). The major active chemical in rosemary essential oil is 1,8-cineole, a terpene (1,2). To understand the interaction better, the current research tested blood

levels of 1,8-cineole on participants who were exposed to rosemary aroma during memory testing (1).

The research included 22 participants (12 women, 10 men) with an average age of 23.2 years. The participants were told the study was investigating the relationship between mood and memory, but were not told about the rosemary essential oil. Participants were randomly assigned to be exposed to rosemary essential oil aroma for 4, 6, 8 or 10 minutes before taking the memory tests. The memory tests included serial threes subtraction and serial sevens subtraction, which started at a number between 800-999 and the participant had to count backwards by 3 or 7 depending on the test. The rosemary aroma was distributed by adding 4 drops of essential oil to a diffuser and turned on 5 minutes before the participant entered the testing room (1).

Each participant completed a pre-test visual mood scale (Bond-Lader) before entering the rosemary infused testing room. Then the memory tests were given on a computer in the same room, followed by a post-test mood scale and the venous blood draw.

A positive correlation was observed between the number of correct answers in cognitive learning measures and the levels of 1,8-cineole in the blood (serial threes subtraction, correlation=0.469,  $p=0.037$ ). Participants also took less time answering questions with higher levels of 1,8-cineole in the blood (serial threes subtraction, correlation=-0.502,  $p=0.024$ ; serial sevens subtraction, correlation=-0.466;  $p=0.038$ ) (1). This indicated that longer exposure

to rosemary essential oil improved cognitive learning through correct answers and decreased the amount of time to answer questions (1).

Regarding emotions, rosemary essential oil affected the feeling of contentment. The greater the exposure to the aroma, the less change in the sense of contentment (correlation= -0.454,  $p=0.044$ ). There were no changes in feelings of alertness, calmness or pleasure (1).

In conclusion, this study showed rosemary aroma from the essential oil improved cognitive learning and decreased the amount of time to answer questions correctly. It also showed that blood levels of the terpene 1,8-cineole found in rosemary is detectable in the blood after exposure to the aroma. This supports the theory that the terpenes are absorbed through the nose and lungs and affect the brain through the blood-brain barrier (1).

*Source: Moss, Mark, and Lorraine Oliver. "Plasma 1, 8-cineole correlates with cognitive performance following exposure to rosemary essential oil aroma." Therapeutic advances in psychopharmacology 2.3 (2012): 103-113.*

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