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File: ■ Lavender (*Lavandula angustifolia*)
■ Premenstrual Syndrome
■ Mood

HC 071354-486

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RE: Effect of Lavender Aromatherapy on Premenstrual Emotional Symptoms

Matsumoto T, Asakura H, Hayashi T. Does lavender aromatherapy alleviate premenstrual emotional symptoms?: A randomized crossover trial. *Biopsychosoc Med*. May 31, 2013;7(1):12. doi: 10.1186/1751-0759-7-12.

Premenstrual symptoms vary between individuals, and there is no single effective treatment. Many women try complementary and alternative medicine, such as aromatherapy. The psychophysiological effects of aromatherapy can be clinically evaluated by measuring heart rate variability (HRV). Reduced HRV is correlated with acute and chronic stress, depression, anxiety, and chronic fatigue syndrome. People with greater emotion-regulation ability have higher levels of resting HRV. The purpose of this randomized, crossover study was: (1) to evaluate the efficacy of lavender (*Lavandula angustifolia*) oil on mood states and autonomic nervous system activity in the late luteal phase (7 days before menstruation) of normally menstruating women and (2) to investigate whether lavender aromatherapy can alleviate premenstrual psychoemotional symptoms.

Women (n = 17, mean age 20.6 years) with mild-to-moderate psychophysiological premenstrual complaints and self-reported regular menstrual cycles participated. The college students were recruited from a Shitennoji University (Osaka, Japan) campus advertisement. None of the subjects had diabetes mellitus, hypertension, hyperlipidemia, cardiovascular, or any other endocrine or systemic disorders that could affect the autonomic nervous system; all were non-obese and non-smokers; and none of the women took oral contraceptives. An olfactory test confirmed that all of the subjects had olfactory function. Menstrual cycles were confirmed via oral temperatures and urinary ovarian hormone concentrations in the late luteal phase.

A cotton pad impregnated with 10 µl lavender (Lot No. BLAH10; Kensoigakusha Co.; Tokyo, Japan) or water (control) was placed in a diffuser (airflow 1.3 m/min) and placed near the subject's nostrils. The washout period between treatments was not reported. The study began with the subjects relaxing quietly for at least 10 min in a seated position while equipped with electrocardiograph (ECG) electrodes. They then filled out the Profile of Mood States (POMS) for the baseline measurement. The ECG was recorded 5 min

before inhalation of the scent. Each subject inhaled the scent for 10 min. The ECG was measured for 5 min at 0, 10, 20, and 30 min after inhalation. During ECG recording, all subjects breathed in synchrony to a metronome at 15 beats per minute to ensure that the respiratory-linked variations in heart rate did not overlap with low-frequency heart-rate fluctuations (below 0.15 Hz). After the ECG was recorded, the subjects repeated the POMS test. Autonomic nervous system activity was noninvasively measured by HRV power spectral analysis, which decomposes the series of sequential heart R-R intervals into a sum of sinusoidal functions of different amplitudes and frequencies.

Ten minutes of lavender inhalation increased parasympathetic nervous system activity (the high frequency power) in comparison with water ($P = 0.050$). The rate of increase in high frequency power was greater at 10-15 min ($P = 0.051$) and 20-25 min ($P = 0.023$) with lavender compared to water. After treatment, none of the 5 POMS subscales significantly varied from baseline. When comparing the lavender and water treatments, there was a significant decrease in the subscales of depression-dejection ($P = 0.045$) and confusion ($P = 0.049$) with lavender, which lasted as long as 35 min after the aroma stimulation.

The authors conclude, "This study indicates that short-term inhalation of lavender could alleviate premenstrual emotional symptoms and could, at least in part, contribute to the improvement of parasympathetic nervous system activity."

This article was poorly written and very difficult to critically review. The use of a positive control that had an odor would have provided a more informative evaluation of the olfactory effect of lavender. It is questionable that benefits that last only 35 minutes could be of significant use. A difference in autonomic nervous system response would be expected when comparing exposure to scent versus no scent. Despite this, the difference between treatments was marginally significant ($P = 0.05$).

—Heather S. Oliff, PhD

Referenced article can be found at www.bpsmedicine.com/content/7/1/12.