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File: ■ Lavender (*Lavandula angustifolia*)
■ Aromatherapy
■ Geriatrics
■ Fall Prevention

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RE: Lavender Aromatherapy Reduces Falls in Elderly Nursing Home Residents

Sakamoto Y, Ebihara S, Ebihara T, et al. Fall prevention using olfactory stimulation with lavender odor in elderly nursing home residents: A randomized controlled trial. *J Am Geriatr Soc*. 2012;60(6):1005-1011.

Falls are a major health problem for the elderly, as they are linked to increased morbidity and mortality. Risk factors for falls include physical weakness, gait and balance instability, sedating and psychotropic medications, and cognitive impairment. The latter is a strong factor due to the multiple behavioral and psychological symptoms of dementia (BPSD), such as pacing, wandering, aggression, anxiety, and agitation. The essential oil of lavender (*Lavandula angustifolia*) is used in aromatherapy to treat anxiety, nervousness, insomnia, and melancholy. Studies have shown that aromatherapy using lavender can improve balance and gait performance and reduce anxiety in elderly people. The purpose of this randomized, placebo-controlled, double-blinded study was to evaluate the effect of continuous lavender olfactory stimulation on the incidence and risk of falls in elderly nursing home residents.

The study was conducted in 3 nursing homes in Aomori, Japan. It included subjects (n = 175; aged ≥ 65 years) who had the ability to move independently regardless of assistive devices used. Subjects with pica disorder (appetite for non-nutritive substances such as dirt or paper) were excluded. Lavender olfactory stimulation was provided using a commercially available 1 cm x 2 cm paper patch (Aromaseal Lavender; Hakujuji Co.; Tokyo, Japan). The placebo was an identical unscented Aromaseal paper patch. The Aromaseal lavender patch was originally developed to help busy and stressed people relax by providing continuous olfactory exposure to lavender for 24 hours. The odor is so faint that it can only be sensed by the person wearing the patch. [Note: No information on the lavender source, concentration, or the patch production was given.] The head nurse prepared the patches (no details given) and distributed them to the nursing home staff who affixed the patch inside the subject's clothing near the neck. The staff replaced the patch daily for 360 days.

The primary outcome measure was the number of falls. A fall was defined in accordance with the World Health Organization's definition: "an event which results in a person coming to rest inadvertently on the ground or floor or other lower level." The nursing home staff were trained to identify falls according to this definition and recorded daily falls. Behavioral

measurements included the Cohen-Mansfield Agitation Inventory (CMAI) to quantify behavioral and psychological symptoms, the Barthel Index to assess level of functional ability, the mini-mental state exam (MMSE) to assess cognitive function, and the Vitality Index to assess activity of daily living (ADL)-related vitality. The groups did not significantly differ in age or risk factors for falls.

There were a total of 62 falls reported, with subjects in the lavender group falling 0-5 times and subjects in the placebo group falling 0-7 times (only 2 falls resulted in injury; 1 in each group). In the lavender group, 35.6% of subjects fell at least once, and 50% of the placebo group fell at least once. In the placebo group, 47% had recurrent falls, while only 24% in the lavender group had more than 1 fall ($P = 0.08$). The total number of falls in the placebo group was 88 compared to 46 in the lavender group. The incidence rate ratio (IRR) for the lavender group was significantly lower than for the placebo group ($P < 0.04$). After adjusting for confounding variables (such as age, sex, fall history, MMSE, tranquilizer use, etc.), the IRR significance was even greater ($P < 0.02$).

There were no between-group differences in the behavior and cognitive measurements at baseline. At 12 months, the lavender group had a significant decrease from baseline in agitated status ($P = 0.04$); in contrast, the placebo group did not. There was no significant difference between groups in the number of subjects who were given newly prescribed tranquilizers. However, the frequency of tranquilizer use was lower in this trial compared to other studies; a difference the authors attributed to the use of Yokukansan, a traditional Asian medicine commonly prescribed for BPSD. No adverse events were reported.

The authors conclude that daily olfactory stimulation with lavender may prevent falls in elderly nursing home residents. Although the mechanism is unknown, the results of this study support lavender's traditional use to sooth anxiety and agitation, which may play a role in reducing falls. Lavender's previously demonstrated stabilizing effects on balance may also be a factor. They also suggest that the relationship between lavender stimulation, tranquilizers, and Yokukansan warrants further investigation.

In the final analysis though, only 2 of the 145 subjects incurred injurious falls; this study was not large enough to detect clinically relevant reductions in injurious falls. The study is also limited by its potential lack of adequate blinding, which could have resulted in reporting biases; and there is also the possibility that some subjects could not detect the odor (olfactory functioning was not tested). The results cannot be generalized because people in nursing homes are subjected to different, and possibly fewer, environmental risks than the elderly dwelling in the community. Although no adverse events were reported, the authors did not rigorously evaluate safety of long-term use.

—Heather S. Oliff, PhD

The American Botanical Council has chosen not to reprint the original article.