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File: ■ Geranium (*Pelargonium graveolens*, Geraniaceae)
■ Acute Myocardial Infarction
■ Anxiety

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RE: Effects of Geranium Aroma on Anxiety in Heart Attack Patients

Shirzadegan R, Gholami M, Hasanvand S, Birjandi M, Beiranvand A. Effects of geranium aroma on anxiety among patients with acute myocardial infarction: A triple-blind randomized clinical trial. *Complement Ther Clin Pract*. November 2017;29:201-206. doi: 10.1016/j.ctcp.2017.10.005.

As one of the most common forms of coronary artery disease, acute myocardial infarction (AMI), otherwise known as heart attack, is a leading cause of death with a life-threatening urgency that demands immediate treatment. AMI leads to disability, fatigue, depression, and sleep disorders. Nearly half (42%) of AMI patients experience anxiety. When hospitalized for an AMI, patients often experience severe anxiety during the first 48 hours. Aromatherapy is used to reduce stress, pain, depression, and anxiety. Geranium (*Pelargonium graveolens*, Geraniaceae) aerial part essential oil has antianxiety effects. According to the authors, there are no studies that evaluate the effect of geranium aromatherapy on patients with AMI. Moreover, according to the authors, there is a lack of well-designed, rigorous studies evaluating the safety and effectiveness of geranium aromatherapy for any condition. Hence, the purpose of this randomized, triple-blind, placebo-controlled study was to evaluate the effect of geranium aromatherapy on patients with anxiety and AMI.

Patients (n = 80) admitted for AMI at the Shahid Madani and Shahid Rahimi Hospitals of Khorramabad, Iran from December 2016 to May 2017 participated in the study. Included patients met the following criteria: aged 18-60 years; had a definitive diagnosis of AMI based on electrocardiography; no cardiopulmonary resuscitation (CPR) performed upon emergency room admission; no history of allergic rhinitis, eczema, or known respiratory disorders such as asthma or chronic obstructive pulmonary disease; no smell or taste disorders; no uncontrolled disorders; no mental illnesses; no history of head trauma or seizures; no diseases causing sleep disruption (i.e., migraine, rheumatoid arthritis, or nocturnal respiratory disorders); no drug addiction; stable vital signs; no pain during screening; no allergy to study treatments; not using benzodiazepines, analgesics, or anti-anxiety drugs within 10 hours prior to the study; no history of complementary and alternative medicine use within one week before the study; and scores > 20 on the State-Trait Anxiety Inventory (STAI). Patients were excluded if they had any of the

following: cardiac shock, cardiopulmonary arrest or MI during the study, decreased consciousness during the study, cardiac dysrhythmia, ventricular fibrillation, cardiogenic shock, dysrhythmia, hemodynamic instability, or death during the study.

Patients received either geranium or placebo. The geranium treatment was pure geranium essential oil diluted with 10% primrose (*Oenothera biennis*, Onagraceae) oil to a final concentration of 100%. Geranium treatment was given on the second and third days of the patient's stay in the cardiac care unit. Those in the placebo group received 12% sunflower (*Helianthus annuus*, Asteraceae) seed oil. The nurse put three drops of the geranium essential oil or the sunflower oil on absorbing patches placed inside each patient's oxygen mask for 20 minutes two times per day. Patients were treated with aromatherapy for four days. The geranium and placebo groups received aromatherapy or placebo at different times and places. Dyspnea, chest pain, dysrhythmia, and changes in vital signs were assessed daily. Anxiety was measured with the STAI, which was administered 30 minutes before and 15 minutes after the intervention.

The mean age of the geranium group was 44 years, and the mean age of the placebo group was 49 years. The baseline demographics were similar between groups. Both groups had a significant reduction in anxiety over time ($P < 0.001$). The geranium group had a significant reduction in the mean anxiety score after each session of aromatherapy compared with the placebo group ($P < 0.001$). There were no reports of dyspnea, chest pain, dysrhythmia, or changes in vital signs.

The authors conclude that geranium caused a significantly greater decrease in anxiety compared with placebo. They state that it is safe, easy-to-use, and inexpensive, and it should be recommended for use in patients in the cardiac care unit following an AMI. A limitation of the study is that there could have been another control group who were exposed to a nice smell with no known therapeutic benefits on anxiety. It is unknown whether the patients were less anxious after treatment with geranium because they had a pleasant smell as a distraction or whether geranium was providing a therapeutic benefit.

The authors declare no conflicts of interest.

—Heather S. Oliff, PhD