



The Effects of Orange, Sweet Basil, and Dok Mok Essential Oils Inhalation on Emotional State and Autonomic Nervous System

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ABSTRACT

Introduction: Chronic stress can be detrimental to both physical and mental health. Since essential oils (EOs) from herbs have been shown to activate the nervous system by sending an electric signal to limbic system modulating behavioral and emotional responses, and reversing a stress-induced change in both nervous system and hormone secretion. EOs from three Thai native medical herbs - *Citrus reticulata* Blanco (Orange), *Wrightia religiosa* (Dok Mok), and *Ocimum basilicum* L. (Sweet Basil) - are also used as aromatherapy to alleviate stress in Thai society for ages. Orange EO, Dok Mok EO, and Sweet Basil EO contain limonene, linalool, and linalool & eugenol respectively which are reported anti-stress, anti-anxiety, and anti-depression effects. **Objective:** This study aimed to investigate the effects of the three herbs EOs on the autonomic nervous system (ANS) and emotional states.

Methods: In this study, Orange EO is extracted by a cold press machine. Dok Mok EO is extracted by solvent extraction. Sweet Basil EO is extracted by steam distillation. Twelve healthy volunteers consented to participate in the experiment, and were assessed blood pressure and heart rate to determine the arousal level of the ANS. Besides, the participants filled out a questionnaire on emotional states before and after the 20-minute inhalation of aroma samples. Data were analyzed using paired sample t-tests. Means of the blood pressure, heart rate, and emotional states of subjects were compared before and after the inhalation.

Results: The results showed that, in terms of ANS, the heart rate mean was significantly decreased after the inhalation ($p < 0.05$) while the blood pressure mean did not show any statistically significant decrease. The mean of emotional state scores inputted by the subjects was significantly improved ($P < 0.05$).

Conclusion: This study demonstrated that aromatherapy from Orange, Dok Mok, and Sweet Basil seems to have effects on ANS regulation and positive emotional states. However, further studies are needed.

Keywords: essential oil; stress; orange; sweet basil; dok mok