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FILE: ■ Jasmine (*Jasminum officinale*)

■ Aromatherapy

■ Sleep

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RE: Jasmine Odor Experienced During Sleep May Affect Mood, Alertness, and Thinking

Raudenbush B, Koon J, Smith J, Zoladz P. Effects of odorant administration of objective and subjective measures of sleep quality, post-sleep mood and alertness, and cognitive performance. *North Am J Psychol.* 2003;5(2):181-192.

In the past 20 years, there has been an increase in research examining the connection between olfaction (smell) and mood, behavior, and performance. Odors have widespread effects on the central nervous system, even in the absence of awareness of odors. Therefore, it is likely that the human body may respond to odors presented during sleep. The authors state that presentation of odors during sleep may influence sleep quality, which can impact post-sleep activities, such as cognitive performance, alertness, and mood. This study investigated whether the presence of a relaxing odor during sleep had an affect on (1) sleep patterns during the night, (2) mood and cognitive functioning the following morning, and (3) alertness throughout the following day.

Twenty college students (10 men and 10 women) from Wheeling Jesuit University, Wheeling, WV participated for 3 sleep periods. The subjects did not have abnormal sleeping patterns or sleeping pathology. They did not have any abnormal events that might interfere with sleeping, such as an exam. The sleeping room was randomly diffused with jasmine odor, lavender odor, or a non-odored control condition. All subjects were exposed to all 3 conditions; each condition was separated by 2 to 7 nights. The sleep room had furniture similar to their dorm rooms. Sleep quality and duration were recorded with a Sleep Monitor recording device. Electrodes were not placed on the participants and they were not observed during sleeping, both of which have been shown to affect the first night's sleep. Participants completed the Profile of Mood States, which is used to rate fatigue, vigor, and anxiety. They also completed the Digit-Symbol Substitution Test, which measures cognitive information processing speed and psychomotor performance.

Sleep efficiency (time in bed spent sleeping) in the jasmine condition was greater than both the control and lavender conditions ($P < 0.01$). Participants spent fewer minutes moving during sleep in the jasmine condition compared to the other conditions ($P < 0.01$). The jasmine condition caused less restlessness compared to the other conditions ($P < 0.05$). No differences were found for total sleep time (time between sleep start and sleep stop) or sleep latency (period of time required for sleep onset after going to bed). The amount of time required to complete the Digit-Symbol Substitution Test was shorter in the jasmine condition than in the control condition ($P < 0.05$). According to the Profile of Mood States evaluation, the jasmine condition resulted in a lower level of anxiety than the other conditions. Both jasmine and lavender produced less vigor than control ($P < 0.05$). There was no effect on fatigue. When sleeping in the control condition, participants had a decline in alertness during the second half of the day. In contrast, while sleeping in the jasmine condition, participants had an increase in alertness during the second half of the day ($P < 0.05$).

It is interesting that participants reported less vigor in the morning after the jasmine condition and yet cognitive testing was enhanced in the morning. This study is in agreement with another study, which found an enhanced cognitive task performance with patients exposed to jasmine odor.¹

Odor presented during sleep had marked effects on sleep behavior. The authors conclude that jasmine caused an increase in sleep quality so that the participants did not need additional sleep. Since the participants reported less vigor in the morning after the jasmine condition, the authors believe that athletes with morning competitions should be cautious when using jasmine inhalation during sleep. In contrast, occupations that rely on a good night's sleep, such as physician, air traffic controller, and long-haul driver, might benefit from jasmine inhalation. Considering that sleep patterns changes with age, it is necessary to evaluate these odors in an older population. In addition, it would be interesting to repeat this study in subjects that have sleep-disorders.

—Heather S. Oliff, Ph.D.

Reference

¹ Rottman, TR. The effects of ambient odor on the cognitive performance, mood, and activation of low and high impulsive individuals in a naturally arousing situation. *Doctoral Dissertation*. 1989.

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