Int. J. Mol. Sci. **2010**, *11*, 4771-4781; doi:10.3390/ijms11114771

OPEN ACCESS
International Journal of
Molecular Sciences
ISSN 1422-0067
www.mdpi.com/journal/ijms

Article

Identification of Compounds in the Essential Oil of Nutmeg Seeds (*Myristica fragrans* Houtt.) That Inhibit Locomotor Activity in Mice

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Received: 11 October 2010; in revised form: 8 November 2010 / Accepted: 15 November 2010 / Published: 23 November 2010

Abstract: The present study was designed to evaluate the inhibitory effect of nutmeg (*Myristica fragrans* Houtt.) seed essential oil on the locomotor activity of mice in a wheel cage. Active compounds in the essential oil were identified by off-line solid phase extraction (SPE-C18) and GC/MS analysis. The essential oil was administered by inhalation at doses of 0.1, 0.3, and 0.5 mL/cage. The results showed that inhalation of nutmeg seed essential oil at a dose of 0.5 mL/cage decreased locomotion by 68.62%; and inhalation of 0.1 and 0.3 mL/cage inhibited locomotion by 62.81% and 65.33%, respectively. Generally, larger doses and longer administrations of nutmeg seed essential oil exhibited greater locomotor inhibition. Subsequently, the plasma concentrations of essential oil compounds were measured. The most concentrated compound in the plasma was myristicin. Half an hour after the addition of 1 mL/cage of nutmeg seed oil, the plasma concentration of myristicin was 3.7 μg/mL; one and two hours after the addition, the blood levels of myristicin were 5.2 μg/mL and 7.1 μg/mL, respectively. Other essential oil compounds identified in plasma were safrole (two-hour inhalation: 1.28 μg/mL), 4-terpineol (half-hour inhalation: 1.49 μg/mL, one-hour inhalation: 2.95 μg/mL, two-hour inhalation: 6.28 μg/mL) and fatty esters. The concentrations of the essential oil compounds in the blood plasma were relatively low (μg/mL or ppm). In conclusion, the volatile compounds of nutmeg seed essential oil identified in the blood plasma may correlate with the locomotor-inhibiting properties of the oil when administered by inhalation.