



Abstract

Multidisciplinary Screening of Three Species belonging to Caprifoliaceae Family Traditionally Used as Antidepressants [†]

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Abstract: The essential oils (EOs) of the Eurasiatic *Valeriana officinalis* (Vo), the Himalayan *Valeriana jatamansi* (Vj) and *Nardostachys jatamansi* (Nj), are traditionally used to treat neurological disorders. A multidisciplinary approach based on micromorphology, DNA barcoding, EOs characterization as well as evaluation of the biological effects on the nervous system was carried out. Nj showed the highest inhibitory activity on acetylcholinesterase (IC₅₀ 67.15 µg/mL), followed by Vo (IC₅₀ 127.30 µg/mL) and Vj (IC₅₀ 246.84 µg/mL). Microelectrode arrays analyses on rat cortical neurons revealed stronger inhibition by Nj (IC₅₀ 18.8 and 11.1 µg/mL) and Vo (16.5 and 22.5 µg/mL), compared with Vj (68.5 and 89.3 µg/mL). These results could be related to the different EOs composition and in particular to the different content of oxygenated compounds such as aldehydes and ketones, which represents a discriminating factor in determining the order of potency. In conclusion, this multidisciplinary approach could be a useful tool to quickly discriminate these three plant species and avoid adulterations.

Keywords: Caprifoliaceae; essential oil; Acetylcholinesterase; neuroactive effects; MEA analyses; DNA barcoding; micromorphology; botanicals' authentication

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