SUPPLEMENTARY MATERIAL

Study on essential oils from the leaves of two Vietnamese plants: *Jasminum sububtriplinerve* C. L. Blume and *Vitex quinata* (Lour) F. N. Williams

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The essential oil constituents of the leaves of *Jasminum subtriplinerve* (Oleaceae) and *Vitex quinata* (Verbanaceae) cultivated in Vietnam were analysed by gas chromatography-flame ionization detector (GC-FID) and gas chromatography-mass spectrometry (GC-MS) techniques. The main constituents identified in *J. subtriplinerve* were mainly oxygenated monoterpenes represented by linalool (44.2%), α -terpineol (15.5%), geraniol (19.4%) and *cis*-linalool oxide (8.8%). The quantitative significant components of *V. quinata* were terpene hydrocarbons comprising of β -pinene (30.1%), β -caryophyllene (26.9%) and β -elemene (7.4%). The chemical compositions of the essential oils are being reported for the first time.

Keywords: *Jasminum subtriplinerve*; *Vitex quinata*; essential oil composition; monoterpenes; sesquiterpenes.

3. Experimental

3.1. Plant materials

Samples of *J. subtriplinerve* and *V. quinata* were collected from plants growing in Pù Mát National Park, Nghệ An Province, Vietnam, in July 2011. Botanical identification was confirmed by Dr. Dai DN. Voucher specimens DND 237 and DND 236 respectively were deposited at the Botany Museum, Vinh University, Vietnam. The samples were air-dried under laboratory shade prior to extraction.

3.2 Distillation of plant materials

Aliquot of 500 g of air-dried leaves of each of the plant was used and essential oils were obtained by separate hydrodistillation in a Clevenger-type apparatus for 4 h at normal pressure according to the Vietnamese Pharmacopoeia (1997). The essential oils were collected over water and stored under refrigeration prior to analysis.

3.3. Analysis of essential oils

Gas chromatography (GC) analysis was performed on an Agilent Technologies HP 6890 Plus Gas chromatograph equipped with FID and fitted with HP-5MS column (30 m x 0.25 mm, film thickness 0.25 μ m). Temperature parameters: column oven: 40°C, injection pot: 250°C, detector: 300°C. Time programming: 40°C for 2 min, temperature raised to 220°C (10 min hold) at 4 °C/min. Carrier gas used was H₂ (1 mL/min), split ratio 10:1, volume injected-1.0 μ L. Inlet pressure was 6.1 kPa.

GC/MS was performed on HP 5973 MSD mass spectrometer with HP 6890N Plus GC system fitted with a fused silica capillary HP-5MS column (30 m x 0.25 mm, film thickness 0.25 μ m) The conditions were the same as described above for GC with He (1 mL/min) as carrier gas. The MS conditions were as follows: ionization voltage 70eV; emission current 40 mA; acquisitions scan mass range of 35-350 amu at a sampling rate of 1.0 scan/s.

Peaks were identified by comparison of relative GC retention indices with standards from literature, retention indices on HP-5 column, peak enrichment on co-injection with authentic samples wherever possible and comparison of mass spectra with literature data (NIST 2011; Adams 2007; Joulain & Koenig 1998). Relative percentage amounts were computed from GC peak areas without FID response factor correction.

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