FACTA UNIVERSITATIS
Series: **Physics, Chemistry and Technology** Vol. 16, N° 1, Special Issue, 2018, p. 93
49th International Symposium on Essential Oils (ISEO2018) • Book of Abstracts

PP29. Essential oils from five *Nepeta* spp. cultivated in Lithuania and toxicological evaluation of their main components

Petras Rimantas Venskutonis[1]*, Renata Baranauskienė[1], Vilma Bendžiuvienė[1]

Keywords: *Nepeta* spp., essential oil composition, toxicological evaluation, hydrodistillation residues

The genus *Nepeta* (Lamiaceae) is widespread in central and southern Europe, Asia, the Middle East and North Africa; it has also been naturalized in North America and comprises about 300 perennial species [1]. *N. cataria* (catnip), which has been used for ornamental and culinary purposes and as a domestic folk-medicine remedy, is the most intensively studied among *Nepeta* species, [2]. Essential oils (EOs) of *Nepeta* spp. possess strong antimicrobial, antibacterial, antifungal, antiviral, anti-inflammatory, repellent and other activities [3,4]. The composition depends on the variety, growing site, climatic conditions, growth phase and analysis method. In general, the following main chemotypes can be distinguished: with nepetalactones, citral derivatives, 1,8-cineole and/or linalool as the dominant EO compounds [1,2]. Therefore, it was of interest to study the composition of EOs isolated from five *Nepeta* spp., namely *N. cataria* var. *citriodora*, *N. transcaucasica*, *N. melissifolia*, *N. sibirica* var. *citriodora* and *N. nuda* cultivated in Lithuania. It was determined that the yield of the hydrodistilled EO varied from 0.1 (*N. nuda*) to 0.6% (*N. cataria* var. *citriodora*). More than 140 volatiles were identified in the studied *Nepeta* spp. by GC-FID and GC×GC-TOF/MS. *N. cataria* var. *citriodora* and *N. nuda* may be characterized by 4aα,7α,7aα- and 4aα,7α,7aβ-nepetalactones, while *N. melissifolia* and *N. sibirica* var. *citriodora* contained large percentages of 1,8-cineole and caryophyllene oxide. The composition of *N. transcaucasica* was more complex and the oil contained citronellol, 4aα,7α,7aα- and 4aα,7α,7aβ-nepetalactones, geranial, neral, geraniol, 1,8-cineole and caryophyllene oxide as the major components. The toxicology of the main identified EO components was reviewed based on the previously reported data. In the second part of this study acetone extracts (using the solid phase obtained after hydrodistillation) and water extracts (liquid phase after hydrodistillation) from *Nepeta* spp. were prepared and evaluated for their antioxidant activities and total phenolics content in order to reveal the possibility of using *Nepeta* plants as a source of various functional food ingredients.

References:
[1] Formisano, C. et al., 2011. Chem. Biodivers. 8, 1783–1818.
[2] Baranauskienė, R. et al., 2003. J. Agr. Food Chem. 51, 3840–3848.
[3] Bourrel, C. et al., 1993. J. Essent. Oil Res. 5, 159–167.
[4] Sparks, J.T. et al., 2017. J. Med. Entomol. 54, 957–963.

[1]Department of Food Science and Technology, Kaunas University of Technology, Radvilėnų rd. 19, Kaunas LT-50254, Lithuania.
**Corresponding author*: rimas.venskutonis@ktu.lt