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## VOLATILE COMPOSITION, ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY OF ESSENTIAL OIL FROM *MENTHA ARVENSIS* L. ORGANICALLY PLANTED FROM MACEDONIA

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The volatile composition, antioxidant and antimicrobial activity of essential oils from flowers, leaves and whole plant of *Mentha Arvensis* L. organically planed from the territory of Macedonia were object of this study. The essential oils from dried and powdered plant materials were isolated by hydro-distillation using Clevenger-type apparatus.<sup>51,51</sup> The composition of three essential oils was identified by GC-MS and quantified by GC-FID.<sup>51,51</sup> Fifty-five components were identified and quantified in the three essential oils isolated from the flowers, leaves and whole Mentha plant. The most abundant component in all three oils was menthol with 35.64%, 32.47% and 52.53% respectively. The second most dominant component in the three essential oils was isomenthone with 20.38%, 15.97% and 8.42% respectively. All other components were in quantity less than 8%. The antioxidant activity of essential oil from whole Mentha plant was determined against ABTS radical with value of 1.58 TE mg/L of oil. The antimicrobial activity of essential oil isolated from whole Mentha plant was determined against *Escherichia coli* and *Candida albicans*. Our results showed significant antibacterial activity against *Escherichia coli* ATCC 25922 (24 mm) and significant antifungal activity against *Candida albicans* ATCC 10231 (32 mm).

**Key words:** *Mentha arvensis* plant, essential oil, volatile composition, antioxidant activity, antimicrobial activity.

### References:

- [1] Tiwari, Recent advances and callenges in trichome research and essential oil biosynthesis in *Mentha arvensis* L., *Ind. Crop. Prod.* **82** (2016) 141-148.  
[2] B. R. Rajeswara Rao, Biomass and essential oil yields of cormint (*Mentha arvensis* L. f. *piperascens* Malinvaud ex *Holmes*) planted in different months in semi-arid tropical climate, *Ind. Crop. Prod.* **10** (1999) 107-113.

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