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THYMUS SERPHYLLUM AND *TH. VULGARIS* ESSENTIAL OIL AND HYDROLATE AS A POTENT ANTIOXIDANTS AND *A*-GLUCOSIDASE INHIBITORS

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Thymus serphyllum L. (wild thyme) and *Th. vulgaris* (common thyme) are well-known medicinal and culinary herbs with a significant amount of essential oil, rich in bioactive phenolic terpenes. Both herbs are consumed as tea and syrup, especially for their antimicrobial and anti-inflammatory properties. The aim of this study was to investigate the chemical composition, antioxidant and antidiabetic effects of essential oils (EO) and hydrolates (HYD) of two *Thymus* species grown in the fields of the Institute for Medicinal Plants Research "Dr. Josif Pančić", Pančevo, Serbia. The EO and HYD were obtained by hydrodistillation and subjected to analysis using GC-FID and GC-MS techniques. Wild thyme contained mainly bornyl acetate (almost 50% of EO) and thymol (even 98% of HYD). Common thyme was characterized by high amounts of thymol (over 50% and 90%, respectively). The results of the Folin-Cioacalteu method show that the EO of both species have a total phenolic content of over 350 mg GAE/g, while the HYD displayed values of approximately half of that. The total reduction power test results show that the EO of both species has dose-dependent antioxidant activity, reaching values of about 170 µM AAE/g at the highest concentration applied, while the values for HYD are about 125 µM AAE/g. The EO of both species inhibited *α*-glucosidase in a dose-dependent manner and achieved an inhibition of about 80% at the highest applied concentration. The inhibition of *α*-glucosidase by the HYD of wild and common thyme (87.39 and 83.44%, respectively) was similar to that of the positive control acarbose (87.74% at 1 mg/mL). These findings underscore the significant presence of phenolic compounds with potent antioxidant and antidiabetic properties in EO and HYD of both thyme species, thereby highlighting their potential applications in the food and pharmaceutical industries.

Keywords: Thymus, essential oil, hydrolate, antioxidants, antidiabetic

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