

Essential Oil from *Thymus vulgaris* L. as Antimicrobial Agent

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Abstract

The aim of the investigation was to study the antimicrobial activity of essential oil from *Thymus vulgaris*, grown at the altitude of 1700 -1800 meters above sea level (Aragyugh, Armenia) and harvested during the blossoming period (July, 2015). Antimicrobial activity was determined by the agar diffusion method. Gram-positive (*Bacillus subtilis* WT-A; *Staphylococcus aureus* MDC 5233) and Gram-negative (*E. coli* VKPM-M17; *Pseudomonas aeruginosa* GRP3 and ampicillin-resistant *E. coli* dhpa-pUC18) bacteria and yeasts (*Candida albicans* WT-174 and *Debariomyces hansenii* WT) were tested. The gas chromatography-mass spectrometry setup was used to reveal the chemical composition of essential oils. The 20 substances were identified in the *T. vulgaris* essential oil among which carvacrol (28.4 %), p-cymene (18.5 %) and γ -terpinene (15.3 %) were the main constituents. Gram-positive bacteria were more sensitive to essential oils than Gram-negatives. The minimal inhibitory concentration (MIC) of *T. vulgaris* essential oil was 0.195 mg/mL against *St. aureus* and was 1.565 mg/mL against *B. subtilis*. MIC values of oil under investigation against all tested Gram-negative bacteria, including antibiotic resistant, *E. coli* was 6.25 mg/ml. The action of the essential oil was bactericidal. Tested fungi were also sensitive against oil components: MIC value was 1.56 mg/mL against both tested yeasts. The obtained data show that thyme essential oil can be useful natural agents for cosmetics, medicine and food as antimicrobial agent. This study was done in the frame of research support from State Committee of Science, Ministry of Education and Science of Armenia.