

Evaluation of the chemical composition and antimicrobial activity of summer savory (*Satureja hortensis* L.) essential oil

oil

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ABSTRACT

The chemical composition of savory (*Satureja hortensis* L.) essential oil was determined by GC/MS analysis. The main components of savory essential oil were represented by carvacrol (63.71%), γ -terpinene (20.47%), and *p*-cymene (5.08%). The main groups of compounds were represented mainly by aromatic oxygen derivatives (65.16%), and on the other hand, the participation of sesquiterpene oxygen derivatives (0.31%) was the lowest. The most significant antibacterial activity was determined against Gram-negative bacteria *Proteus vulgaris* (35.0 mm) and *Escherichia coli* (20.0 mm), and the Gram-positive *Bacillus subtilis* with zone of inhibition - 29.0 mm.

RESULTS AND DISCUSSIONS



Summer savory essential oil is a light yellow, easily mobile liquid with a characteristic odor and taste, and its physical characteristics are presented in Table I.

Index	
Appearance	easily mobile, transparent liquid
Colour	light yellow
Smell	characteristic
Taste	characteristic
Relative density (d_4^{20})	0.910 ± 0.0
Refractive index (n_D^{20})	1.5049 ± 0.01

Table 1. Characteristics of the summer savory essential oil

The main components of savory essential oil were represented by carvacrol (63.71%), γ -terpinene (20.47%), and *p*-cymene (5.08%).

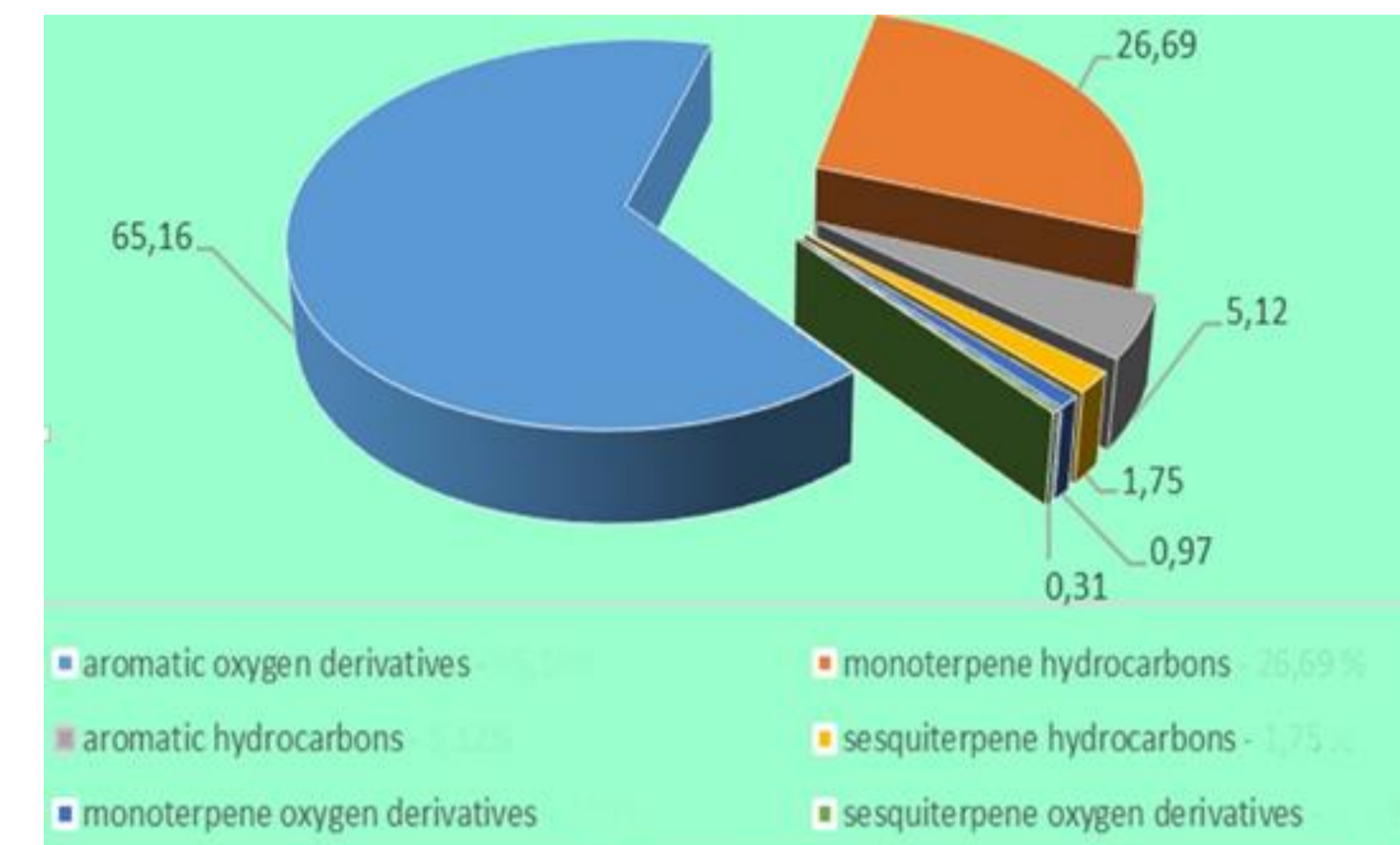
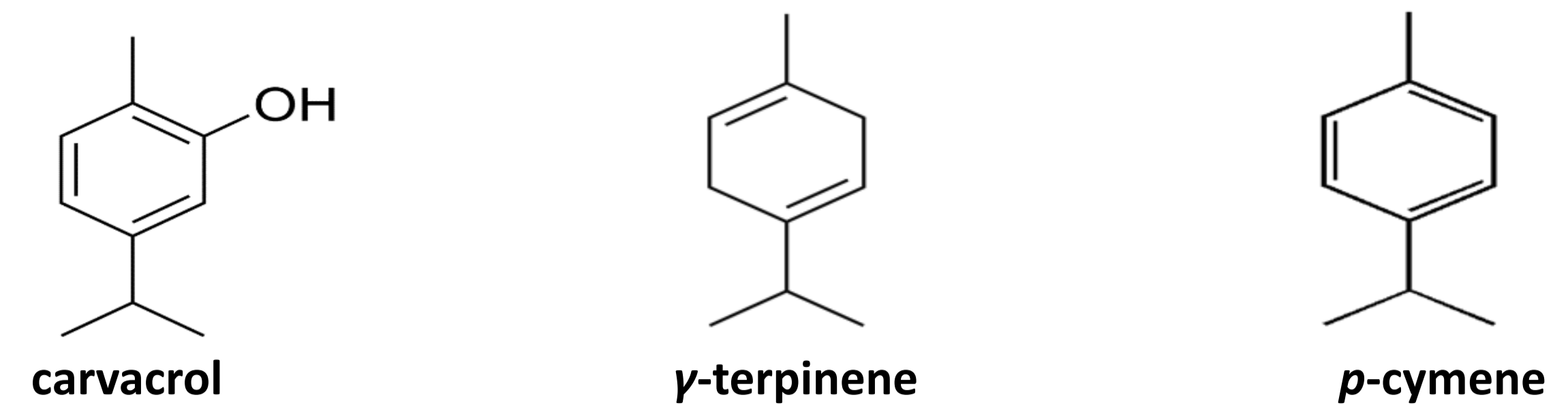


Fig 1. Distribution of components by groups of compounds, %

The data showed that the zones of inhibition were the largest against Gram-negative bacteria *Proteus vulgaris* and *Escherichia coli*, and Gram-positive *Bacillus subtilis*.




Bacterial strains	Diameter of the zones of inhibition, mm	
<i>E. coli</i> ATCC 8739	20.0 ± 0.19	
<i>P. vulgaris</i> ATCC 6380	35.0 ± 0.34	
<i>B. subtilis</i> ATCC 6633	29.0 ± 0.28	

Table 2. Antimicrobial activity of savory essential oil

Conclusions

- The main components represented in the savory essential oil were carvacrol (63.71%), γ -terpinene (20.47%), and *p*-cymene (5.08%), which defined the oil as carvacrol chemotype.
- The essential oil had the most pronounced antibacterial activity against the Gram-negative bacteria *Proteus vulgaris* and *Escherichia coli*, and the Gram-positive bacteria *Bacillus subtilis*.