

## CONSTITUENT COMPOSITION AND BIOLOGICAL ACTIVITY OF ESSENTIAL OIL FROM *Tripolium pannonicum*

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*Tripolium pannonicum* (Jacq.) Dobrocz. (syn. *Aster tripolium* L., *A. pannonicus* Jacq.) is a perennial plant, a Eurasian boreal species of the family Compositae, that usually grows in the tidal zone of marine aquifers and has purple flowers from July to October [1]. This halophyte can be used in food and animal feed, is cultivated as a decorative plant, and is melliferous [2]. The chemical composition and biological activity of essential oils from *T. pannonicum* have not been published.

The plant *T. pannonicum* was collected on Sept. 19, 2024, in Shkotovsky District, Primorsky Krai, in the vicinity of Shkotovo village, 1 km to the southwest of the village between mouths of the Shkotovka (Tsimukh) and Artemovka rivers (Maikh). Specimens of the plant are preserved in the herbarium of the Laboratory of Chemotaxonomy, G. B. Elyakov Institute of Bioorganic Chemistry, FEB, RAS (Vladivostok), under herbarium code *T. pannonicum* subsp. *tripolium*, No. 103602.

TABLE 1. Constituent Composition of Essential Oil from *T. pannonicum*

Constituent	RI	Content, %	Constituent	RI	Content, %
Hexanal	782	0.5	$\alpha$ -Muurolene	1471	0.7
$\alpha$ -Pinene	923	20.8	Tridecanal	1479	0.3
Sabinene	956	1.0	Germacrene B	1518	1.5
$\beta$ -Pinene	959	8.6	Spathulenol	1532	0.6
$\alpha$ -Myrcene	978	3.5	Caryophyllene oxide	1536	3.2
<i>o</i> -Cymene	1004	1.2	Salvial-4(14)-en-1-one	1547	0.6
Limonene	1013	4.2	Isoaromadendrene epoxide	1553	0.3
1-Octanol	1053	1.1	Humulene-1,2-epoxide	1564	1.7
<i>p</i> -Cymenene	1065	0.6	Epiglobulol	1587	0.5
Terpinolene	1071	0.8	$\tau$ -Cadinol	1605	0.5
Nonanal	1079	0.2	<i>ent</i> -Germacra-4(15),5,10(14)-trien-1-ol	1612	0.4
Pinocarveol	1110	0.6	Isospathulenol	1634	0.5
Verbenol	1117	0.6	Ledene oxide II	1646	0.3
Terpinen-4-ol	1147	0.2	$\alpha$ -Bisabolol	1658	0.3
<i>p</i> -Cymenol	1149	1.7	Pentadecanal	1698	0.3
$\alpha$ -Copaene	1358	0.9	2-Vetivol	1730	0.6
$\beta$ -Cubenene	1371	0.4	Tetradecanoic acid	1758	1.0
$\beta$ -Elemene	1373	0.8	Hexahydrofarnesyl acetone	1835	1.5
Caryophyllene	1395	1.3	Hexadecanoic acid	1951	1.8
Humulene	1425	0.7	$\gamma$ -Palmitolactone	2045	0.4
$\alpha$ -Farnesene	1440	0.7	Pentacosane	2515	1.5
Germacrene D	1449	0.3	Heptacosane	2697	0.7
$\beta$ -Eudesmene	1453	0.8	Total		91.0
Myristicin	1469	4.4			

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Essential oil was obtained from the ground aerial plant part by steam distillation in a Clevenger apparatus using hexane as a trap [3]. The yield of essential oil was 1.9%.

GC-MS analysis of essential oil from *T. pannonicum* was performed under conditions analogous to those in the literature [4]. The analysis of essential oil from the aerial part of *T. pannonicum* identified 50 compounds (Table 1), the major constituents (area% > 3.0) of which were  $\alpha$ -pinene (20.8%),  $\beta$ -pinene (8.6%), myristicin (4.4%), limonene (4.2%),  $\alpha$ -myrcene (3.5%), and caryophyllene oxide (3.2%).

The cytotoxic activity of *T. pannonicum* essential oil was studied using *Artemia salina* larvae and the published method [5]. The experiments found that essential oil from this plant did not exhibit toxicity against *A. salina* larvae below a concentration of 10 mg/mL.

The antiradical activity was determined by the known method [6, 7]. Essential oil from *T. pannonicum* exhibited weak antiradical activity as compared to the standard compound (butylhydroxyanisole).

Thus, the chemical composition of essential oil from *T. pannonicum* was established for the first time. Weak antiradical activity and low toxicity of the essential oil against *A. salina* larvae were determined.

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