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ESSENTIAL OIL FROM *Aronia melanocarpa* FLOWERS

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Aronia melanocarpa (Michaux)Elliot belongs to the Maloideae subfamily (Rosaceae Juss.). It is native to the eastern part of North America and is widely cultivated in Ukraine as a fruit, medicinal, and ornamental plant. The principal active substances of aronia fruit are phenolic compounds, carbohydrates, organic acids, and vitamins [1–6]. We studied previously volatile substances from leaves and fruit of this plant [1].

The goal of the present work was to study essential oil from black chokeberry fruit collected in May 2009 at the NPU botanical garden. Raw material was identified based on voucher specimens stored at the herbarium of the Pharmacognosy Department, NPU. A sample for analysis was obtained from dry raw material by steam distillation and subsequent work up of the distillate with petroleum ether [1]. The yield of essential oil was 0.05%. The analysis used an Agilent Technology 6890N chromatograph with a 5973N mass-spectrometric detector. The analytical conditions included an HP-5MS (30 m × 0.25 mm) quartz capillary chromatography column, He carrier gas, flow rate 1 mL/min, sample volume 0.1–0.5 μL, sample injection with 1/50 flow division, 50°C thermostat temperature programmed at 4°C/min to 220°C, and 250°C detector and vaporizer temperature. Constituents of the essential oil were identified by comparing mass spectra of the products with data in the NIST02 mass-spectra library. Table 1 presents the results.

A total of 20 constituents, 63% of all observed, was identified in essential oil from *A. melanocarpa* flowers. Of the identified compounds, four were terpene in nature. These were squalene (0.29%), germacrene D (0.24%), *cis*-jasmone (0.21%), and α-terpineol (0.07%). Five were aromatic compounds such as benzaldehyde (72.01%), eugenol (0.50%), β-phenylethyl alcohol (0.24%), benzyl alcohol (0.15%), and benzonitrile (0.12%). Two were the alkanes heneicosane (0.86%) and pentadecane (0.07%). There were also other organic compounds (aldehydes and alcohols), e.g., nonanal (0.70%), octanal (0.63%), *trans*-2-hexenal (0.27%), decanal (0.19%), hexanol (0.16%), heptanal (0.12%), octanol (0.09%), dodecanal (0.09%), and 1-octen-3-ol (0.05%). Benzaldehyde dominated the essential oil of flowers, fruit, and leaves of *A. melanocarpa* [1, 6].

TABLE 1. Constituent Composition of Essential Oil from *Aronia melanocarpa* Flowers

Compound	Retention index	Content, %	Compound	Retention index	Content, %
trans-2-Hexenal	887	0.27	Benzonitrile	1142	0.12
Hexanol	897	0.16	α-Terpineol	1196	0.07
Heptanal	919	0.12	Decanal	1211	0.19
Benzaldehyde	973	72.01	Eugenol	1366	0.5
1-Octen-3-ol	984	0.05	*cis*-Jasmone	1406	0.21
Octanal	1005	0.63	Dodecanal	1415	0.09
Benzyl alcohol	1035	0.15	Germacrene D	1485	0.24
Octanol	1072	0.09	Pentadecane	1500	0.07
Nonanal	1105	0.7	Heneicosane	2100	0.86
β-Phenylethyl alcohol	1116	0.24	Squalene	2795	0.29

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