

CARBOXYLIC ACIDS FROM *Aronia melanocarpa*

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Aronia melanocarpa (Michaux) Elliot (black chokeberry) of the family Rosaceae Juss. is widely cultivated in Ukraine as a fruit, medicinal, and decorative plant. The principal active compounds of *A. melanocarpa* are phenolic compounds, organic acids, carbohydrates, and vitamins [1–4]. We studied previously essential oil of flowers, leaves, and fruit of this plant [1, 5].

The goal of the present work was to study the acid composition of branch bark, leaves, and fruit of *A. melanocarpa* collected in March, May, and September 2012 in the Botanical Garden of the Nat. Pharm. Univ. Raw material was identified based on herbarium plants stored in the herbarium foundation of the Department of Pharmacognosy, Nat. Pharm. Univ.

Carboxylic acids were determined by a modified method [6] on an Agilent Technologies 6890 chromatograph with a 5973 mass-spectrometric detector. Samples were prepared for analysis as indicated previously [6]. Table 1 presents the results.

It can be seen from the results that fruit of *A. melanocarpa* contained 25 carboxylic acids, of which 13 were fatty acids and 5, aromatic. The dominant acids (mg/kg) were linoleic (2655.6), malic (1786.9), oleic (1013.4), palmitic (883.0), and citric (814.7). Leaves of *A. melanocarpa* afforded 35 carboxylic acids, of which 18 were fatty acids and 7, aromatic. The dominant acids (mg/kg) were linolenic (3779.2), oxalic (2864.6), palmitic (2047.6), and malic (1506.9). Branch bark of the plant yielded 35 carboxylic acids, of which 18 were fatty acids and 5, aromatic. The dominant acids (mg/kg) were linoleic (3482.6), palmitic (3365.9), behenic (2811.9), linolenic (2456.3), citric (1391.5), and oxalic (958.8).

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TABLE 1. Contents of Carboxylic Acids in Organs of *Aronia melanocarpa*, mg/kg*

Acid	Retention index**	Fruit	Leaves	Branch bark
Caproic	1120	–	7.4	19.1
Enanthic	1217	–	–	15.0
2-Hexenoic	1221	–	9.1	–
Caprylic	1330	–	24.7	93.7
Oxalic	1359	129.3	2864.6	958.8
Pelargonic	1440	–	–	21.8
Malonic	1477	38.8	61.4	70.7
Fumaric	1516	76.3	3.0	15.4
Succinic	1575	26.5	69.5	115.3
Benzoic	1600	106.8	77.0	354.1
Glutaric	1686	–	–	27.8
Methoxysuccinic	1698	–	–	45.6
Phenylacetic	1746	3.3	17.3	11.8
Salicylic	1757	–	6.7	56.1
Lauric	1793	–	54.9	181.6
2-Hydroxy-3-methylsuccinic	1798	–	7.2	–
Adipic	1811	–	–	41.3
Myristic	1994	–	9.9	113.5
Malic	2008	1786.9	1506.9	132.6
Cinnamic	2057	–	31.6	–
Pentadecanoic	2101	21.9	19.2	34.8
Azelaic	2114	57.2	57.5	780.2
Palmitic	2204	883.0	2047.6	3365.9
Palmitoleic	2223	25.7	248.9	86.0
Margaric	2273	39.9	70.7	49.9
7,10,13-Hexadecatrienoic	2299	–	99.1	–
Citric	2367	814.7	652.5	1391.5
Stearic	2384	211.1	152.7	234.2
Oleic	2402	1013.4	93.4	650.7
Linoleic	2443	2655.6	644.8	3482.6
<i>p</i> -Hydroxycinnamic	2463	190.2	–	–
Linolenic	2490	265.6	3779.2	2456.3
Isocitric	2501	–	–	–
Vanillic	2522	32.4	7.4	169.9
Arachic	2543	116.0	66.1	642.6
2-Hydroxypalmitic	2542	51.8	19.7	–
Behenic	2698	59.0	40.1	2811.9
Tricosanoic	2743	13.1	6.9	50.9
<i>p</i> -Hydroxybenzoic	2780	–	17.2	27.0
Syringic	2793	–	–	47.7
Gentisic	2805	–	8.4	–
Lignocerinic	2843	45.8	40.1	297.7
Ferulic	2919	38.2	37.6	341.7

*Of air-dried raw material mass. **Retention index of acid methyl ester.

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