

FATTY ACIDS OF POTENTILLA ALBA L. LIPOPHILIC EXTRACTS

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Potentilla alba L., also known as white cinquefoil, is a plant native to Central Europe where it has been used in folk medicine for centuries. Recent research shows that white cinquefoil can be successful in the treatment of hyper- and hypothyroidism, goiter and thyrotoxicosis.

The aim of this study was to investigate the fatty acid composition of Potentilla alba L. herb and rhizomes lipophilic extracts.

Materials and methods

Raw materials of white cinquefoil were harvested in Kharkiv region in 2014.

Study of qualitative and quantitative composition of fatty acids was performed with mass spectrometric detection. By adding the solution of boron trichloride in methanol to the plant material methyl esters of fatty acid were obtained. Analysis of the methyl esters were carried out using the chromatograph Agilent Technology HP6890 GC with mass spectrometric detector 5973N. The identification of methyl esters of fatty acids were carried out using the data of the mass spectra library NIST 05 and Wiley 2007. Calculation of the quantitative content of fatty acids performed by the method of the internal standard in mg/kg and percentage of their total content.

Obtained results

As a result, in the Potentilla alba L. herb lipophilic extract 14 fatty acids were identified, including 10 saturated (lauric, myristic, pentadecanoic, palmitic, margaric, stearic, arachidic, heneicosylic, behenic and lignoceric), 2 monounsaturated (palmitoleic and oleic) and 2 polyunsaturated (linolenic and linolenic). The lipophilic extract of Potentilla alba L. rhizomes unlike the herb one did not contain heneicosylic acid, but contained monounsaturated 7-hexadecenoic and 10-octadecenoic acids (in minor quantities).

The total fatty acid content in the white cinquefoil herb extract amounted 16086 mg/kg, in the white cinquefoil rhizomes extract – 3438 mg/kg. Dominant fatty acids of the herb and rhizomes extracts were palmitic (8351 mg/kg and 1144 mg/kg, respectively), stearic (1853 mg/kg and 451 mg/kg), linoleic (704 mg/kg and 597 mg/kg) and linolenic (2193 mg/kg and 191 mg/kg).

Conclusions. In the Potentilla alba L. herb and rhizomes lipophilic extracts 16 fatty acids were identified. Dominant acids of the both extracts were palmitic, stearic, linoleic and linolenic.