

STUDY OF THE TOTAL CONTENT OF FLAVONOIDS IN DIETARY SUPPLEMENTS WITH LINGONBERRY

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Introduction. Lingonberry (*Vaccinium vitis idaea*) is small shrubs belonging to the genus *Vaccinium*, of Ericaceae family. The main biologically active substances of lingonberry leaves and berries are phenolic compounds (arbutin, hydroquinone, gallo- and ellagotannins), flavonols (luteolin, kempferol and quercetin), hydroxycinnamic acids (chlorogenic, cumaric and ferulic acids), coumarins, organic acids. Owing to the presence of various phenolic compounds, lingonberry leaves and berries possess the antibacterial, anti-inflammatory, and antioxidant activities.

The aim. Determine the total content of flavonoids in dietary supplements with lingonberry

Material and methods. The object of our study were dietary supplements with lingonberry: «Extract of lingonberry» («MEDAGROPROM», Dnipro) contains extract of lingonberry fruits, dosage form is drops (30 mL); «Lingonberry» («Danikafarm», Kharkiv) contains leaves and shoots of lingonberry, the dosage form is tablets (100 pcs); «Lingonberry nano» («LSS SYSTEM», Kharkiv) contains leaves and fruits of lingonberry, intercellular and intracellular liquid of lingonberry leaves and fruits, the dosage form is tablets (100 pcs). 3.2 g (accurate weight) of «Lingonberry» (Danikafarm) and «Lingonberry nano» (LSS SYSTEM) was dissolved in 96% ethanol and filtered in a 50.0 mL measuring flask. 5.0 mL of «Extract of lingonberry» (MEDAGROPROM) was added to a 25.0 mL measuring flask and diluted to the volume with 96% ethanol (Solution A). An aliquot of Solution A was mixed with 1.0 mL of 2% AlCl₃ solution in methanol and diluted to the volume of 25.0 mL with 5% solution of glacial acetic acid in methanol. The solution prepared was allowed to stand for 30 min, and its optical density was measured at 417 nm. An aliquot of Solution A diluted to the volume of 25.0 mL with 5% solution of glacial acetic in methanol was used as a compensation liquid. The total amount of flavonoids in «Lingonberry» (Danikafarm) and «Lingonberry nano» (LSS SYSTEM) dietary supplements in 1 tablet was calculated by the equation and expressed with reference to rutin:

$$X(\%) = \frac{A \times K_{dil} \times m_{aver\ tab} \times 100 \times 100}{A_{st} \times m_s \times (100 - W)},$$

where A – is the absorbance of the test solution;

A_{st} – is the absorbance of the standard solution of rutin;

m_s – is the sample weight, g;

m_{aver tab} – is the average mass of a tablet, g;

K_{dil} – is the coefficient of dilution;

W – is the percentage of moisture, %.

The total content of flavonoids in «Extract of lingonberry» (MEDAGROPROM, Dnipro) dietary supplement in the total volume of drops was calculated by the equation and expressed with reference to rutin:

$$X(\%) = \frac{A \times K_{dil} \times V_{drops} \times 100}{A_{st} \times V_{al}},$$

where A – is the absorbance of the test solution;

A_{st} – is the absorbance of the standard solution of rutin;

V_{al} – is the volume of an aliquot, mL;

V_{drops} – is the total volume of drops, mL;

K_{dil} – is the coefficient of dilution.

Research results. The total content of flavonoids were $0.15 \pm 0.01\%$ or 0.59 ± 0.03 mg/tab, $0.12 \pm 0.01\%$ or 0.44 ± 0.02 mg/tab and $6.37 \pm 0.31\%$ or 63.7 ± 3.10 mg/mL. Results are shown in Table 1. The highest content of flavonoids was in the dietary supplement «Extract lingonberry», (MEDAGROPROM, Dnipro).

Table 1. The total content of flavonoids in the dietary supplements in a dosage form

Dietary supplement	Total flavonoids	
	%	X
«Lingonberry», (Danikafarm)	0.15 ± 0.01	0.59 ± 0.03 mg/tab
«Lingonberry nano», (LSS system)	0.12 ± 0.01	0.44 ± 0.02 mg/tab
«Extract lingonberry», (MEDAGROPROM)	6.37 ± 0.31	63.7 ± 3.10 mg/mL

Conclusions. Based on the study, it can be concluded that only dietary supplement «Extract lingonberry» (MEDAGROPROM, Dnipro) has the high quality and can be recommended for use.

STABILITY DETERMINATION OF HYDROGEL WITH PELARGONIUM SIDOIDES DC. ROOT EXTRACT

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Introduction. Hydrophilic gels, which are usually called as hydrogels are networks of polymer chains and sometimes found as colloidal gels. They can retain large amount of water (hydrogels can entail 99% of water) or biological fluids. Hydrogels have positive characteristic properties such as reversibility, sterilizability or biocompatibility. With the growing popularity of hydrogels, scientists distinguish several advantages of this pharmaceutical form. Hydrogels are made of polymers, which are used for their synthesis are nontoxic, non-reactive, and can be safely used in pharmaceutical preparations.

The aim. Determination of stability of hydrogel with Pelargonium sidoides DC. root extract.

Materials and methods. Stability of two hydrogels were studied at this work. Quality parameters were determined: deforming force, consistency, viscosity and cohesion. The mechanical properties of hydrogels were determined twice: immediately after making them and after one month. It was produced two hydrogels: the first one was made of 5.0 grams sodium alginate and 47.5 grams Pelargonium sidoides DC. root extract, the second one was made of 7.5 grams sodium alginate and 45.0 grams Pelargonium sidoides DC. root extract. The mechanical properties of the hydrogels were