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**OPTIMIZATION OF EXTRACTION CONDITIONS
FOR SEPARATION OF FLAVONOIDS FROM
THE FRUITS OF *MACLURA POMIFERA***

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At the moment biologically active substances of plant origin are gaining more importance, as they have fewer side effects than synthetic drugs, and similar in structure and action to natural substances of the human body. Among the different classes of natural compounds, which determine the therapeutic effect of a medicinal plant raw material, flavonoids take a significant place. They have a wide range of a pharmacological activity: having P-vitamin effect, reducing the fragility of blood capillaries, enhancing the action of ascorbic acid. Medicinal raw materials have a antioxidant activity and they are used for preparing anti-inflammatory and antiulcer means [1, p. 1].

Medicinal plants are a source of polyphenolic compounds – strong natural antioxidants. Therefore, it is possible that in the plant extract there may be mechanisms that are characteristic of selected groups of bioactive compounds: suppression of chain reactions of free radical oxidation through inhibition of prooxidant enzymes, the formation of metallic chelates or neutralization of radicals [2, p. 60].

The samples of fruits of *Maclura pomifera* were selected as **an object** of the research.

The **aim** of this work was to optimize the extraction of samples of a fruit pulp with the purpose of increasing the yield of the final product – flavonoids.

The methods of extraction are maceration for 30 days under ordinary conditions of temperature and the 30 minutes' extraction in a water bath with reflux. The 70% ethyl alcohol was used as a solvent in both cases.

For the quantitative determination of flavonoids there was used a spectrophotometric method of the research, based on the determination of the optical density of the colored complex of flavonoids with $AlCl_3$. The optical density was measured at a wavelength of 413 nm, the concentration of flavonoids was found using the calibration curve built for routine [3, p.37].

While extraction by steeping the content of flavonoids was determined in the dynamics in 3, 10 and 30 days.

All definitions were carried out in three Parallels with subsequent statistical data processing (calculation of averages, deviations from the mean, dispersion and confidence interval) to determine the reproducibility and accuracy of the results.

The results of the investigation have found that extraction conditions have a significant impact on the degree of isolation of flavonoids.

The results content of flavonoids and calculation of metrological characteristics are given in table 1.

Table 1
The concentration of flavonoids, mg/1G of raw materials of pulp of fruits.

Extraction method	Time of Extraction	mg/1g of DRM*	% in 1 g of DRM*
Extraction under reflux	30 minutes	20,35	2,04
Maceration	3 days	17,87	1,79
	10 days	17,97	1,80
	30 days	20,20	2,02

Note: DRM – dry raw material.

During extraction by steeping (maceration method) there is a clear correlation of increasing in the concentration of flavonoids in time, due to a gradual transition from the raw material into the solvent.

It was shown that there is no statistically significant difference between the concentration of flavonoids in the extracts in 30 days of maceration and the 30-minutes' extraction under reflux, the content of flavonoids was 20.2 and 20,35 mg/g of an absolutely dry raw material, respectively.

Thus, during the allocation of flavonoids it is necessary to use extraction under reflux, which is more convenient to use and provides the equivalent output of the target product in a much shorter period of time – 30 minutes vs 30 days for extraction by the maceration method.

The high contents of flavonoids in the investigated raw materials *Maclura pomifera* demonstrates the feasibility of further more detailed research as a promising object for the selection of biologically active substances.

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РОЗТОРОПША ПЛЯМИСТА ЯК ПОТЕНЦІЙНИЙ ЕНТЕРОСОРБЕНТ ТОКСИЧНИХ МЕТАЛІВ

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Вступ. Розторопша плямиста є однорічною або дворічною рослиною, що належать до сімейства айстрових (складноцвітих). В плодах чи насінні розторопші плямистої містяться флаволигнани, силідіанін,
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