

СУЧАСНІ ДОСЯГНЕННЯ ФАРМАЦЕВТИЧНОЇ НАУКИ В СТВОРЕННІ ТА СТАНДАРТИЗАЦІЇ ЛІКАРСЬКИХ ЗАСОБІВ І ДІЄТИЧНИХ ДОБАВОК, ЩО МІСТЯТЬ КОМПОНЕНТИ ПРИРОДНОГО ПОХОДЖЕННЯ

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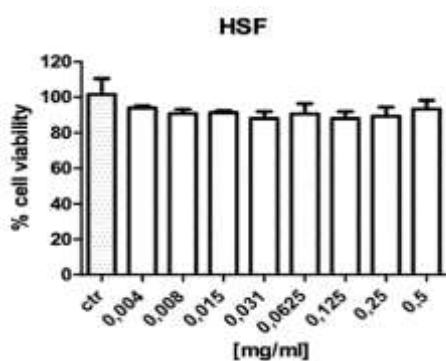


Fig.2 Viability of human normal fibroblasts (BJ cell line, ATCC CRL-2522TM) after 48-h treatment with serial dilutions of the burdock extract. The cell viability was evaluated using a MTT assay. Significantly different data ($p < 0.05$, unpaired t-test) compared to control, i.e., culture medium without substances—0 $\mu\text{g/mL}$. tutor: Ewelina Gumbarewicz

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STUDY OF THE HEPATOPROTECTIVE ACTIVITY OF THE EXTRACT FROM THE HERB OF LENTIL

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Introduction. Liver and pancreatic diseases are among the most serious life-threatening diseases of our time. The constant increase in the number of patients is primarily due to the deterioration of the environmental situation in the world, increased alcohol consumption, including low quality alcohol, poor nutritional quality, and drug exposure [4]. Previously, we obtained a dry extract from the herb of nutritional lentils [3]. The aim of the study was to investigate the hepatoprotective activity of the dry extract.

Materials and methods. The hepatoprotective activity of the extract from the herb of lentils was studied according to the method of Pozdnyakov V.S., Ivanov N.G. on the model of acute toxic liver injury with tetrachloromethane [2]. The experiments were performed on white rats weighing 0,21 – 0,24 kg, divided into 4 groups of 6 animals. To reproduce acute toxic liver damage, animals of groups 1-3 were subcutaneously injected with a 50 % oil solution of tetrachloromethane at a dose of 0,8 mL per 0,1 kg of animal weight for 2 days with an interval of 24 hours. The test extract and the comparison drug were administered to the animals 1 hour before and 2 hours after the administration of the hepatotropic poison. The animals of group 2 were administered an aqueous solution of the lentil herb extract at a dose of 25 mg per 1,0 kg of animal body weight. Animals in the third group were administered the comparison drug Silibor at a dose of 25 mg per 1,0 kg of body weight. The fourth group consisted of intact animals. Rats were decapitated on day 3 after the first injection of tetrachloromethane.

The study of biochemical and functional parameters of the liver was performed 24 hours after the last administration of tetrachloromethane. The activity of aspartate

aminotransferase (AST) and alanine aminotransferase (ALT) was determined by the unified dinitrophenylhydrazine method using a standard reagent kit from DIACONT-DS, CJSC. Hemoglobin level, red blood cell and leukocyte counts were determined according to generally accepted methods [1].

Results and their discussion. As a result of the studies, it was found that the toxic effect of tetrachloromethane on the liver of untreated animals was characterized by the development of hepatocyte cytolysis (a significant increase in the activity of ALT and AST enzymes by 2,0 and 2.4 times, respectively, compared to intact animals). The simultaneous administration of hepatotropic venom and lentil grass extract allowed to establish a significant decrease in the activity of ALT and AST. The results of the research are presented in the table.

These properties are confirmed by a clearly expressed tendency to normalize the activity of the studied enzymes in animals of the second group (serum ALT activity decreased by 1,8 times; AST – by 1,7 times) compared to the first group of animals. In this group of animals, an increase in the number of red blood cells and hemoglobin level was observed compared to the animals of the control group.

Table

Effect of the studied extract on blood parameters in acute toxic hepatitis in rats.

Group of animals	Object of research	Number of animals	Dose, mg/1,0 kg	Erythrocytes, $\times 10^{12}/L$	Leukocytes, $\times 10^9/L$	Hemoglobin, g/L	AST, $\mu\text{mol}/h\text{-mL}$	ALT, $\mu\text{mol}/h\text{-mL}$
1	Control	6	—	$6,04 \pm 0,3$	$17,97 \pm 0,10$	$111 \pm 4,5$	$0,96 \pm 0,03$	$1,14 \pm 0,02$
2	Lentil herb extract	6	25	$6,40 \pm 0,3$	$15,0 \pm 0,20$	$124 \pm 1,5$	$0,54 \pm 0,02$	$0,69 \pm 0,03$
3	Silibor	6	25	$7,24 \pm 0,21$	$12,21 \pm 0,10$	$130 \pm 3,0$	$0,48 \pm 0,03$	$0,59 \pm 0,02$
4	Intact animals	6	—	$7,44 \pm 0,25$	$12,98 \pm 0,06$	$135 \pm 4,0$	$0,40 \pm 0,02$	$0,56 \pm 0,03$

The studies have shown that the dry extract from the herb of food lentils at a dose of 25 mg/kg of animal body weight showed pronounced hepatoprotective properties and had a positive effect on blood parameters under the influence of tetrachloromethane. The mechanism of action of the dry extract is likely to be due to the binding of toxic free radicals and stabilization of cell membranes by phenolic compounds in the extract.

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DETERMINATION OF TOTAL PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY *IN VITRO* OF *CHELIDONIUM MAJUS* L. RAW MATERIAL

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Introduction. *Chelidonium majus* L. (*C. majus*), commonly known as greater celandine, is a perennial herbaceous plant belonging to the *Papaveraceae* family. It has a long history of use in traditional medicine, particularly for its antimicrobial, antiviral, and anti-inflammatory properties. The plant is rich in secondary metabolites, including alkaloids, flavonoids, and phenolic compounds, which contribute to its pharmacological effects. Recent studies have highlighted the potential antioxidant activity of *C. majus*, making it a valuable subject for further phytochemical and biomedical research [1]. The aim of the study was to determine the content of phenolic compounds in *C. majus* raw material and to evaluate their antioxidant activity.

Materials and methods. Raw material (stems, leaves, and flowers) of *C. majus* was collected in Lithuania between June and August. The total phenolic content was determined using the Folin–Ciocâlțeu assay, while antioxidant activity *in vitro* was evaluated using ABTS, FRAP, and CUPRAC methods.

Results and their discussion. The highest total phenolic content in *C. majus* raw material (27.25 GAE mg/g DW) was recorded in June, while the lowest (19.50 GAE mg/g DW) was observed in August. The strongest antioxidant activity, as determined by the CUPRAC and ABTS assays, was observed in July – 188.88 μmol TE/g and 177.53 μmol TE/g, respectively. However, according to the FRAP method, the highest antioxidant activity (58.63 μmol TE/g) was found in the raw material collected in August. The lowest antioxidant activity of *C. majus* extracts, as measured by the CUPRAC and ABTS assays, was recorded in June – 111.15 μmol TE/g and