

## Membranoprotective action of food concentrate of apple phenolic compounds on spontaneous hemolysis model

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**Introduction.** Based on data from the literature, it is possible to assume that the use of antioxidants for the membrane-stabilizing effect is quite promising [1]. Therefore, preparations of plant origin of polyphenolic nature deserve special attention.

**The aim of the research** was to study the membrane-stabilizing activity of the food concentrate of apple phenolic compounds on spontaneous hemolysis model according to the F.C. Jager method.

**Materials and methods.** The research was carried out on male rats weighing 170-190 g, which were kept on a standard ration of the vivarium of the National University of Pharmacy. Membrane-stabilizing activity of the food concentrate of apple phenolic compounds was evaluated by the degree of hemolysis by the method of F.C. Jager [2] which is based on the extra-erythrocyte hemoglobin determination, which enters the blood due to spontaneous lysis of erythrocyte membranes caused by lipid peroxidation activation by the environmental oxygen. Animals were divided into four groups: group 1– control animals administering placebo; group 2 – animals treated with the food concentrate of apple phenolic compounds at a dose of 9 mg calculated for polyphenols per 100 g of body weight; group 3 – animals treated with  $\alpha$ -tocopherol oil solution at a dose of 50 mg / kg body weight. Solutions of the food concentrate of apple phenolic compounds and reference medication ( $\alpha$ -tocopherol) were administered intragastrically to animals for three days. On the fourth day of the experiment, blood samples were taken from the tail vein in all animals and the degree of hemolysis was determined. Membrane stabilizing activity was calculated as the ratio of the degree of hemolysis in the experimental group to the degree of hemolysis in the control group as a percentage.

**Results and their discussion.** Analysis of the experiment results showed that in the control group of animals the degree of hemolysis was 36.2%. When rats were given a food concentrate of apple phenolic compounds, the degree of hemolysis was reliably reduced by almost 1.8 times compared to the control group of animals. Membranoprotective activity of the extract of the food concentrate of phenolic compounds of apples was quite high and amounted to 40%, which may be related to the polyphenolic composition of the extract. The degree of hemolysis under the influence of the food concentrate of phenolic compounds of apples was also significantly lower than in the group of animals treated with comparative medication (1.4 times compared to  $\alpha$ -tocopherol). After analyzing the indicators of the degree of hemolysis in the control group of animals and the group of animals that were previously injected with the reference drug, it can be concluded that  $\alpha$ -tocopherol reliably reduces the studied indicator by 1.3 times compared to the control group.

**Conclusions.** Thus, the membrane-protective activity of the studied extract was comparable to the effect of  $\alpha$ -tocopherol.

1. Івашенко О. Д. Визначення загального вмісту поліфенолів і антиоксидантної активності масляних екстрактів петрушки і м'яти перцевої / О. Д. Івашенко // XIV Менделєєвські читання : матеріали міжнар. наук.-практ. конф. – Полтава, 2021. – С. 11–14.
2. Посібник до лабораторних і семінарських занять з біологічної хімії: Навч.-метод. посібник для ВУЗів / Л.М. Вороніна, В.Ф. Десенко, В.М. Кравченко, Т.С. Сахарова / Під ред В.Ф. Десенко. Х.: Основа, 1996. 432с.