

STUDY OF ANTIOXIDANT ACTIVITY OF MEDICINAL PLANT EXTRACTS

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In the conditions of modern life there are a lot of negative factors affecting on the human body, which are able to disrupt the natural antioxidant system of human protection. That's why, antioxidants, drugs that can protect from the harmful effects of highly active oxygen and nitrogen compounds that causes oxidative stress cause a particular interest.

Medicinal plants occupy a special place among the antioxidants; the use of them in medicine is particularly relevant.

The main aim of the research is comparative analysis of antioxidant activity of medicinal plants extracts of CBG NAS of Republic of Belarus.

Research samples were medicinal plants: wood betony (*Stachys officinalis*), spring adonis (*Adonis vernalis*), serpent grass (*Persicaria bistorta*), estragon (*Artemisia dracuncululus*), oregano (*Origanum vulgare*), lavender, (*Lavandula officinalis*), common tansy (*Tanacetum vulgare*), garden sage (*Salvia officinalis*), licorice (*Glycyrrhiza glabra*) and pearl plant (*Lithospermum officinale*).

To determine the amount of biologically active substances (BAS) with reducing ability, a technique was used in which a solution of potassium permanganate in a sulfuric acid was titrated at room temperature by the research sample until the solution was discolored. For the quantitative characterization of AOA of the samples, the value B was introduced, which is the concentration of BAS with reducing ability of sample, used for titration of 1 ml 0,05 N solution of potassium permanganate, mg/g. The higher the value of B means the higher AOA of the research sample [1]. The results of concentration measuring of BAS with reducing ability are shown in table 1.

Table 1 – Concentration of BAS with reducing ability

Sample	B, mg/ml	Sample	B, mg/ml
Wood betony	26,5	Lavender	27,8
Spring adonis	20,0	Licorice	20,8
Serpent grass	25,0	Common tansy	25,0
Pearl plant	27,8	Garden sage	31,3
Oregano	50,0	Estragon	41,7

The results of the study showed that oregano (*Origanum vulgare*), garden sage (*Salvia officinalis*) and estragon (*Artemisia dracuncululus*) have the highest AOA. The next stage of research was determination of specific antioxidant activity (CAA) of chosen medicinal plants. CAA was judged by their ability to inhibit adrenaline autooxidation *in vitro* and thereby prevent the formation of active oxygen forms. The CAA of plant extracts was calculated as a relative value and determined by the ratio of extinctions at a specific reaction time [2]. The value of CAA more than 10%

indicates the presence of antioxidant activity. The results of the specific antioxidant activity determination of the studied medicinal plants are presented in table 2.

Table 2 – Specific antioxidant activity of medicinal plants extracts depending on exposure time

Studied medicinal plant	CAA, %		
	3 min	5 min	100 min
Oregano (<i>Origanum vulgare</i>)	84,0	91,0	69,2
Estragon (<i>Artemisia dracunculus</i>)	47,4	47,8	50,8
Garden sage (<i>Salvia officinalis</i>)	15,8	17,4	26,2

The results of research confirm that all studied plant extracts exhibit high antioxidant activity, but the greatest potential has oregano (*Origanum vulgare*), which can be used in the pharmaceutical industry for manufacturing medicinal drugs with high antioxidant properties.

References

- [1] Maksimova, T. (2001). Method of antioxidant activity determination. Patent of Russian Federation, 2170930, I.M. Sechenov Moscow Medical Academy.
- [2] Ryabinina E., A New Approach in the Evaluation of the Antioxidant Activity of Plant Raw Materials in the Study of the Process of Adrenalin Autooxidation // Chemistry of Plant Raw Materials. 2011