

EVALUATION OF THE ANTIOXIDANT ACTIVITY *IN VITRO* OF LIPOPHILIC EXTRACTS WITH BERRY POWDER

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Antioxidant compounds such as phenolic compounds, polyphenols, carotenoids, flavonoids inhibit free radicals and also inhibit the mechanism of oxidation itself. Berries are rich in antioxidant compounds and it has been established that lipophilic extracts from rosehip, sea buckthorn and hawthorn are characterized by high antioxidant capacity that ranges from $72.05 \pm 1.90\%$ to $90.84 \pm 1.90\%$. This fact is explained by the rich content of bioactive compounds with antioxidant properties from the studied extracts and directly in the vegetable powders from local berries [1,2].

The antioxidant activity was determined in the conditions of gastric and intestinal digestion *in vitro*. Gastric and intestinal digestion was simulated *in vitro* for 2 hours. The evaluation of the antioxidant activity following gastric digestion ($\text{pH} = 2.0 \pm 0.1$) shows an essential increase for the lipophilic extracts of sea buckthorn, hawthorn and rosehip compared to the control sample whose values are $17.58 \pm 0.90\%$. For lipophilic extracts the values are: for sea buckthorn - $46.43 \pm 0.90\%$; for rosehip: $37.08 \pm 0.90\%$ for hawthorn $39.29 \pm 0.90\%$. The high values of antioxidant activity of the extracts are explained by the gradual release of bioactive compounds in the process of gastric digestion. Following the gastrointestinal digestion process, the simulation of the intestinal digestion phase was performed by incubating the samples in an alkaline medium ($\text{pH} = 8.2 \pm 0.1$). The data obtained show that the antioxidant activity of lipophilic extracts is higher compared to the control sample. The antioxidant activity of the control sample is $4.26 \pm 0.3\%$, while for lipophilic extracts, the values are: for sea buckthorn - $8.09 \pm 0.3\%$; for rosehip - $7.06 \pm 0.3\%$ for hawthorn $4.56 \pm 0.3\%$. There is a gradual decrease in antioxidant activity within 2 hours for both powder and control samples. This can be explained by the low stability of bioactive compounds in alkaline conditions ($\text{pH} = 8.2 \pm 0.1$) and the formation of metabolites that inhibit the antioxidant activity of bioactive compounds in the studied products. Sea buckthorn, hawthorn and rosehip fruits are characterized by a rich complex of bioactive compounds, the use of which in obtaining lipophilic extracts or food products with high lipid content will slow down oxidative processes and ensure food with a longer shelf life [3].

Keywords: antioxidants, bioactive compounds, oils, lipophilic.

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