

## INFLUENCE OF PRESERVATION PROCEDURES ON BIOACTIVE COMPOUNDS IN SEA BUCKTHORN

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Bioactive compounds are of major interest to researchers and the food industry, and sea buckthorn is a natural food ingredient rich in bioactive compounds such as carotenoids, flavonoids, lipids, vitamins, tannins and minerals [1]. The aim of the study was to investigate the biologically active compounds of sea buckthorn, cultivated on the territory of the Republic of Moldova, subjected to different preservation methods: freezing, dehydration, and lyophilization. 10 sea buckthorn varieties were investigated: C6, R1, R2, R4, R5, AGA, AGG, Mr. Sandu, Seirola and Pomeranskaya. Samples obtained from sea buckthorn frozen at  $-25\text{oC}\pm 2\text{ oC}$ , dehydrated at  $60\pm 2\text{ oC}$  and lyophilized were investigated. Lyophilization was performed on the Gamma 1-16 LSC plus lyophilizer by applying the double chamber method. Sea buckthorn frozen at  $-20\text{ oC}$  was sublimated at a condenser temperature of  $-55\text{ oC}$  and vacuum 1.03 mbar. The extraction was performed in 60% vol. ethanol solution (1:10 ratio) at room temperature. The antioxidant activity of DPPH, the total content of polyphenols, flavonoids, tannins and carotenoids was determined. It was found that the content of bioactive compounds depends on the variety and the preservation process applied. As a result of the tests performed, it was found that freezing is the most efficient method of preserving bioactive compounds. The highest antioxidant activity was attested in the variety Mr. Sandu (frozen sea buckthorn) -  $554.97\pm 7.70\text{ mmol TE}/100\text{ g DW}$  and is 2.8 higher compared to dehydrated and lyophilized sea buckthorn. In the case of the total content of polyphenols and tannins, higher values were registered for the variety R2 (frozen sea buckthorn) -  $1786.44 \pm 15.89\text{ mg GAE}/100\text{ g DW}$  and  $194.08\pm 1.64\text{ mg TAE}/100\text{ g DW}$  respectively. Maximum values in the case of flavonoids were obtained for the Pomeranskaya variety (frozen sea buckthorn) -  $49.75\pm 2.98\text{ mg QE} / 100\text{ g DW}$ , and carotenoids in the Seirola variety -  $145.73\pm 0.92\text{ mg}/100\text{ g DW}$ . But in the sum the highest content of bioactive compounds was attested in the variety R2 and decreases in the order  $\text{AGG}>\text{AGA}>\text{C6}>\text{R4}>\text{Mr. Sandu}>\text{R5}>\text{Seirola}>\text{Pomeranskaya}>\text{R1}$ .

**Keywords:** sea buckthorn, antioxidant activity, polyphenols, flavonoids, tannins, carotenoids.

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### References

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