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# Investigation of Phenolic Content, Antioxidant Capacity and Pomological Characterisation of Wild Sea Buckthorn (*Hippophae rhamnoides* L.) from the Walnut-Fruit Forest of Kyrgyzstan

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**Abstract**

Sea buckthorn (*Hippophae rhamnoides* L.) is widely used for soil, water, and wildlife conservation and anti-desertification purposes. The natural and climatic conditions of Kyrgyzstan make it possible to grow sea buckthorn in forest areas, particularly in sea and river coasts, in dry-sandy semi-desert sites, and high mountains. Walnut-fruit forests of Kyrgyzstan are unique for their great biological and genetic diversity, and constitute natural plantations of sea buckthorn. In Kyrgyz folk medicine, sea buckthorn is used for gastrointestinal system disorders and healing of burn wounds. Unfortunately, information on biologically active compounds, antioxidant activity of sea buckthorn berries from walnut-fruit forest of Kyrgyzstan in the scientific literature is very limited. This study aimed to investigate the chemical composition (dry matter, sugars, pH, titratable acidity, ash, fibre, vitamin C) and the radical scavenging activity, total polyphenols of sea buckthorn berries for documentation in the national food composition database and comparison with the all available recent studies on sea buckthorn.

The investigated samples of fresh sea buckthorn feature 66.03 g/100 g of moisture content, 1.00–1.13 g/100 g of invert sugars, 1.78–2.12 g/100 g of organic acids, 12.13 g/100 g of fibres, and 1.75 g/100 g of ash content. The moisture content of the studied samples was significantly lower than the moisture content in berries from Europe, but higher than in berries from Pakistan and India. Fresh sea buckthorn contained on average 181.9 mg/100 g of vitamin C and a large amount of total phenolic compounds of 386 mg/100 g fresh weight. The antioxidant activity of the sea buckthorn was high and found as 3.8 $\mu$g/ml, which corresponds to the literature data. The measured physical attributes and chemical composition of these berries are important in promoting the use of these products in the food and cosmetic industries as well as in medicine.

**Keywords:** Antioxidant activity, physical attributes, polyphenols, sea buckthorn, vitamin C

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