

## **PHYSICO-CHEMICAL CHARACTERISTICS OF LIPOPHILIC EXTRACTS OF ROSEHIP (*ROSA CANINA*) AND HAWTHORN (*CRATAEGUS*) FRUITS**

Violina POPOVICI\*, ORCID ID: 0000-0001-5393-118

Rodica STURZA, ORCID ID: 0000-0002-9552-1671

Aliona GHENDOV-MOSANU, ORCID ID: 0000-0001-5214-3562

*Technical University of Moldova, Faculty of Food Technology, Chisinau, Republic of Moldova*

\*Corresponding author: Popovici Violina, violina.popovici@toap.utm.md

A lot of bioactive compounds can be found in local plant sources, including antioxidants, phenolic compounds, carotenoids, anthocyanins and tocopherols etc. Carotenoids are a class of pigments soluble in fats responsible for the characteristic colors of fruits and vegetables. Natural pigments play an important role in maintaining health and preventing diseases. Carotenoids and phenolic compounds contribute to the nutritional value of food and affect their main quality characteristics.

The chlorophyll  $\alpha$  and  $\beta$ ,  $\beta$ -carotene, lycopene and zeaxanthin content was determined spectrophotometrically. It was found that the lipophilic extracts of rosehip and hawthorn are characterized by a rich content of carotenoids. The content of chlorophyll  $\alpha$  varies between 0.85 - 3.30 mg/L and chlorophyll  $\beta$  varies between 1.12 - 4.82 mg/L. The amount of  $\beta$ -carotene varies between 6.41 - 17.04 mg/L, lycopene varies between 7.37 - 18.09 mg/L, and zeaxanthin varies between 7.18 - 19.08 mg/L. Polyphenols are secondary metabolites characterized by one or more hydroxyl groups that bind to one or more aromatic rings. Impressive amounts of polyphenols have been identified in plant sources. The total polyphenol content for hawthorn extract is  $888.92 \pm 12.0$  mg GAE/100 g plant; for rosehip extract:  $305.35 \pm 12.0$  mg GAE/100 g plant. The content of phenolic compounds shows that the studied berries can be considered a very good source of bioactive compounds compared to other fruit species. Antioxidant compounds such as phenolic compounds, polyphenols, carotenoids, flavonoids inhibit free radicals and the mechanism of oxidation itself. Berries are considered very rich in antioxidant compounds. The antioxidant potential of lipophilic extracts was estimated using the free radical DPPH. It has been found that lipophilic extracts are characterized by high antioxidant capacity, ranging 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 capacity from the studied extracts and powders from native berries.

This research demonstrates the possibility to use lipophilic extracts in the functional food products production. An important fact is the possibility to use natural antioxidants obtained from local berries in order to substitute the synthetic additives and to ensure a longer shelf life for the food products.

**Keywords:** *antioxidants, bioactive compounds, lipophilic, quality.*

**Acknowledgments.** This work was supported by Moldova State project 20.80009.5107.09 "Improvement of food quality and safety by biotechnology and food engineering", running at Technical University of Moldova.