THE CONTENT OF BIOLOGICALLY ACTIVE SUBSTANCES AND ANTIOXIDANT ACTIVITY IN PUMPKIN POMACE OF DIFFERENT VARIETIES

Aliona GHENDOV-MOȘANU[1]*, ORCID: 0000-0001-5214-3562
Mariana RAILEAN[1], ORCID: 0000-0001-6511-2909
Olga DESEATNICOVA[1], 0000-0003-4801-8173
Natalia SUHODOL[1], 0000-0002-5609-5139
Carmen SOCACIU[2], ORCID: 0000-0002-7352-5057
Adela PINTEA[2], ORCID: 0000-0002-9914-2070
Rodica STURZA[1], ORCID: 0000-0002-9552-1671

[1]*Technical University of Moldova, 168 Stefan cel Mare Bd., Chisinau, Republic of Moldova*
[2]*University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Manastur Street, 3–5, 400372 Cluj-Napoca, Romania*

*Corresponding author: Aliona Ghendov-Moșanu, aliona.mosanu@tpa.utm.md

The correlation between nutrition and health is a problem that is currently being given special attention. Many of the diseases that make victims nowadays, have their origin in metabolic imbalances caused by nutritional deficiencies. For research, 2 varieties of pumpkin grown in the Republic of Moldova - "Crown Prince" and "Butternut" were selected, from which the pomace was obtained after squeezing the juice. Pumpkin pomace being agro-industrial waste presents an important source of biologically active substances (carotenoids, polyphenols, antioxidants, etc.), which can be recommended for the manufacture of novel foods. The aim of the study was to investigate the total content of carotenoids, polyphenols, individual carotenoids, and antioxidant activity in pumpkin pomace of various varieties. The pomace was dried at 50 ± 1 °C to a humidity of 9.0±0.2%. The total content of carotenoids and polyphenols were determined using the spectrophotometric method with an UV-VIS Spectrophotometer. HPLC analysis of carotenoids was performed on Shimadzu LC20 AT high performance liquid chromatograph with a SPDM20A diode array detector. Antioxidant activity was determined using the method DPPH.

The highest total content of carotenoids and polyphenols was determined in pumpkin pomace of the ”Butternut” variety. In the ”Crown Prince” variety, the total content of carotenoids and polyphenols was less by 19.34% and 33.8% respectively. It is known that there is a correlation between the content of biologically active substances and antioxidant activity, in the pomace of the variety "Butternut" was found the highest value of antioxidant activity. The individual carotenoid profile was determined in unsaponified and saponified extracts. Significant amounts of all-*trans*-*β*-carotene were identified in unsaponified extracts from the pomace of the varieties "Butternut" and "Crown Prince". Lutein has been identified in different amounts. *β*-cryptoxanthin and *cis*-*β*-carotene were identified only in the pomace of the variety "Butternut", and *α*-carotene - in the variety "Crown Prince". Esters have also been identified in unsaponified extracts. In the case of saponified extracts, the amount of individual carotenoids has increased considerably due to the hydrolysis of esters with the formation of free carotenoids. Thus, it was found that pumpkin pomace of different varieties is characterized by different content of biologically active compounds and antioxidant activity.

Keywords: *pumpkin pomace, varieties, biologically active substances, antioxidant activity*

Acknowledgments. This work has been developed in the framework of and supported by COST Action CA15136 EUROCAROTEN.