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Proceeding Paper

Carotenoids in *Cucurbita* Fruits †

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† Presented at the 2nd International Electronic Conference on Nutrients, 15–31 March 2022; Available online: https://iecn2022.sciforum.net/.

Abstract: Carotenoids are important isoprenoids including more than 700 yellow, orange and red pigments; they have been reported to be responsible for numerous benefits on human health. In fact, the need for reliable data on the carotenoid content from food has become increasingly important since the enhanced interest in the link between carotenoid intake and health. These compounds can act as free radical scavengers and antioxidants, while an inverse relationship exists between the dietary intake of carotenoid-rich foods and the incidence of certain cancers, UV-induced skin damage, coronary heart disease, cataracts and macular degeneration; besides, carotenoids with β-ring end groups are precursors for the production of retinoids in animal cells, hence they can prevent xerophthalmia or blindness. Fruits produced by *Cucurbita* genus plants (pumpkins and squashes) are cultivated in almost all areas with an appropriate climate in the world, some of them having a high nutritional value and hosting notable amounts of carotenoids; in many regions, these fruits are important dietary sources of provitamins A in human nutrition especially during winter season, being consumed either raw (in juices or salads) or processed. Carotenoids from *Cucurbita* fruits were the subject of many researches and the reported data were highly variable, since they depend on numerous factors (genotype, environmental conditions, fertilization, degree of maturation, etc.). The present work highlights the carotenoid content from six cultivars available on Transylvanian market, determined using high performance liquid chromatography analysis with diode-array detection; carotenoid identification was based on co-chromatography with authentic standards and by comparison of the visible absorption spectra with those of reference carotenoids, while the quantification of the carotenoids was achieved by the external standard method. Besides, total carotenoids were assessed by visible spectrophotometry. The major carotenoids were beta-carotene (in *Cucurbita* maxima varieties, up to 53 mg/kg) and lutein (in *Cucurbita* pepo varieties, up to 21 mg/kg), these being followed by smaller amounts of neoxanthin, violaxanthin, lactucaxanthin, zeaxanthin, alpha-cryptoxanthin, beta-cryptoxanthin, beta-carotene 5,6-epoxide, alpha-carotene, 9Z-beta-carotene and 15Z-beta-carotene; the maximum total carotenoid content was of 120 mg/kg. The reported values can support future nutrition studies involving carotenoids from plant sources, as well as their use in different functional products..

Keywords: carotenoids; antioxidant; high performance liquid chromatography; pumpkin; squash; *Cucurbita*

Citation: Muntean, E. Carotenoids in *Cucurbita* Fruits. **2022**, *69*, x. https://doi.org/10.3390/xxxxx

Academic Editor(s): Torsten Bohn

Published: date: 15 March 2022

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