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## Carotenoids of Traditional Foods from Black Sea Area Countries and their relation with Immune Response

A. Sanches-Silva<sup>1</sup>, T. G. Albuquerque<sup>1</sup>, P. Finglas<sup>2</sup>, F. D'Antuono<sup>3</sup>, A. Trichopoulou<sup>4,5</sup>, E. Vasilopoulou<sup>5</sup>, I. Alexieva<sup>6</sup>, N. Boyko<sup>7</sup>, C. Costea<sup>8</sup>, G. Dubtsov<sup>9</sup>, K. Fedosova<sup>10</sup>, O. Hayran<sup>11</sup>, Z. Kilasonia<sup>12</sup> and H. S. Costa<sup>1</sup>

<sup>1</sup>Department of Food and Nutrition, National Institute of Health Dr. Ricardo Jorge, I.P., Lisbon, Portugal, <sup>2</sup>Institute of Food Research, Norwich NR4 7UA, <sup>3</sup>Campus of Food Science, Cesena, University of Bologna, Italy, <sup>4</sup>Hellenic Health Foundation, Athens, Greece, <sup>5</sup>Department of Hygiene, Epidemiology & Medical Statistics, Medical School, University of Athens, Greece, <sup>6</sup>University of Food Technologies, Plovdiv, Bulgaria, <sup>7</sup>Faculty of Medicine, Uzhhorod National University, Uzhhorod, Ukraine, <sup>8</sup>The Bucharest Academy of Economic Studies, Bucharest, Romania, <sup>9</sup>State Educational Institution of the High Professional Education "Moscow State University of Food Productions", Russian Federation, <sup>10</sup>Department of Nutrition, Odessa National Academy of Food Technologies, Odessa, Ukraine, <sup>11</sup>T C Yeditepe University, Istanbul, Turkey, <sup>12</sup>Elkana, Biological Farming Association, Tbilisi, Georgia

Carotenoids are colourful compounds which provide photoprotection of plants and participate in their photosynthesis. Particularly  $\beta$ -carotene may enhance the human immune response. Some epidemiological studies have suggested an association between carotenoids intake and reduced incidence of some forms of cancer, which might be related with the antioxidant properties of carotenoids, namely by their ability of reducing reactive oxygen species (ROS) damages in cell membranes. Moreover, carotenoids may also influence the activity of redox-sensitive transcription factors and the production of cytokines and prostaglandins. Carotenoids were extracted from Black Sea Area Countries (BSAC) traditional foods with a mixture of hexane/ethanol, 4:3 (v/v). In all samples, a procedure with and without saponification step was applied. Separation and quantification was performed by Ultra High Pressure Liquid Chromatography (UHPLC). Chromatographic separation was performed with a UPLC<sup>®</sup> BEH guard-column (2.1  $\times$  5 mm, 1.7  $\mu$ m particle size) and a UPLC<sup>®</sup> BEH analytical column (2.1  $\times$  50 mm, 1.7  $\mu$ m particle size). Mobile phases were (A) ultrapure water; (B) acetonitrile/methanol (containing ammonium acetate)/dichloromethane (75:20:5, v/v/v). The flow-rate was 0.5 mL/min. From the 28 analysed traditional foods for carotenoids content,  $\alpha$ -carotene was quantified in 7. The highest level was found for rodopian dried beans, followed by vegetable okroshka.  $\beta$ -carotene was quantified in 53.4% of the analysed traditional foods from BSAC. The sample with highest  $\beta$ -carotene content was plums jam followed by kale soup and nettles sour soup. Once more, as it was expected, the group that most contributes for  $\beta$ -carotene intake is the vegetable and vegetables based foods followed by fruit or fruit based foods. Wild plum sauce was the sample that presented the highest  $\beta$ -cryptoxanthin content (63.8  $\mu$ g/100 g of edible portion). Lycopene was quantified in about 43% of the analysed traditional foods from BSAC. The foods with highest lycopene content were watermelon juice, Ukrainian borsch and sautéed pickled green beans. The analysed traditional foods from BSAC can be considered good sources of bioactive compounds, although it was found a great variability on the content of carotenoids. Due to the putative health benefits of these compounds, the consumption of those with higher content of bioactive compounds should be encouraged and promoted.

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