Tocopherols content of different wheat varieties: differences between refined and whole-wheat flour

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Wheat is an important cereal worldwide that plays an outstanding role in human nutrition [1]. Whole grain consumption has been associated with reduced risk of developing chronic diseases and this health benefit may be due to different phytochemical compounds, including tocopherols [2]. The aim of this study was to identify and quantify the tocopherols present in four different varieties of wheat flours (Cajeme and Marius as soft wheat and Endural and Aldura as durum wheat), comparing whole grain flour and refined flour. Tocopherols were determined by using HPLC coupled to a fluorescence detector (FP-2020, Jasco, Easton, MD, USA). The quantification was based on the fluorescence signal response of each standard, using the internal standard (tocol) and by using calibration curves obtained from commercial standards of each compound [3]. In the present study α-, β- and γ-tocopherols were identified and quantified, while δ-tocopherol was not found in the analysed samples. The refined Cajeme flour was the only exception in which none of the vitamers were detected. In all samples, α-tocopherol was the major compound (0.53 mg/100g and 0.17 mg/100g in Marius whole grain flour and Aldura refined flour, respectively). Total tocopherols content ranged from 0.81 mg/100g to 0.23 mg/100g in Marius whole grain flour and Aldura refined flour, respectively. Tocopherols content was significantly higher (p<0.05) in all whole-wheat flour in comparison with refined wheat flours. Comparing durum wheat flour with soft wheat flour, the present study showed that the content of α-tocopherol is higher in soft wheat varieties. The Relative vitamin E activity (REA) of the analyzed samples ranged from 0.2 mg to 0.7 mg (Aldura refined flour and Marius whole grain flour, respectively), covering up to 5.5% of Nutrient Reference Value (NRV) according to the EU Regulation 1169/2011 [4].

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