

BIOACTIVE COMPOUNDS OF WHOLE DURUM WHEAT SEMOLINA AND ASSESSMENT OF POTENTIAL ANTI-INFLAMMATORY RELATED ACTIVITY ON HUMAN INTESTINAL CELL LINE

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The increased consumption of whole wheat grains and whole wheat products has been associated with reduced risk of developing chronic diseases, such as cardiovascular disease, type 2 diabetes and colon cancer. These beneficial effects have been ascribed to the presence in whole wheat kernels of bioactive compounds which may vary for total content and composition among different wheat species and wheat varieties. In this work we present the profile of hydrophilic and lipophilic bioactive compounds of whole wheat semolina from five durum wheat elite cultivars.

Whole semolina samples were analyzed to evaluate the total content and composition of phenolic acids (hydrophilic extract) and the total content and composition of carotenoids, tocopherols and tocotrienols (lipophilic extract).

The total phenolic acid content was variable among the cultivars and ranged from 488 $\mu\text{g/g}$ to 1490 $\mu\text{g/g}$ whole flour. Among the detected compounds, ferulic acid was the most abundant, followed by sinapic acid and *p*-coumaric acid.

Total carotenoid content varied from 2.64 $\mu\text{g/g}$ whole flour and 4.75 $\mu\text{g/g}$ whole flour and were mostly represented by lutein and zeaxanthin, while α e β -carotene were present in trace amounts. Three different homologues of tocotrienols were detected (α , β and γ), varying in a range between 18.3 and 28.6 $\mu\text{g/g}$ whole flour, while tocopherols were detected in trace amounts.

Duilio and Svevo cultivars, exhibited the highest content of hydrophilic and lipophilic bioactive compounds, respectively, and were selected to test the anti-inflammatory activity of extracts on human intestinal HT-29 cells. Preliminary experiments were carried out in order to assess the highest not cytotoxic concentration of lipophilic and hydrophilic extracts by using MTT test. Both extracts will be used to assess the anti-inflammatory activity on HT-29 cells stimulated by LPS mitogen, by quantification of IL-8.

This research shows that whole wheat semolina flours of these five cultivars varied significantly in their contents of bioactive compounds and differences in their anti-inflammatory potential might suggest the possibility that durum wheat varieties could be selected based on potential health benefits.