

Effect of cultivation on the antioxidant properties of the rapeseed phenolic extracts

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Phenolic acids are the main group of phenolic compounds in rapeseeds and canola seeds. Antioxidative properties of extracts of phenolic acids from rapeseed and canola are significantly important from the nutritive and technological point of view. Examination of these properties was a subject of many publications and scientific reports. However, the information of the influence of cultivation condition on the antioxidant capacity of rapeseeds are limited.

Material of the investigation were three cultivars of rapeseed: California, Castilla, and Nelson F1. The seeds were cultivated using normal (N), intensive (I), and economical (E) technology. From the defatted plant material, phenolic compounds were extracted with 80% (v/v) methanol. Phenolic compounds present in the crude extracts showed antioxidant and radical scavenging properties as revealed following studies using FRAP, ABTS, and DPPH methods. The content of phenolic compounds in the extracts was determined using the Folin & Ciocalteu's phenol reagent.

The content of total phenolic in the crude extracts ranged from 48 mg/g (Castilla - I) to 61 mg/g (California-N). The weak effect of the cultivation condition on the content of total phenolics was observed for California and Nelson F1. Intensification of agricultural technology decreased the FRAP of the extracts of Nelson F1 and the antiradical properties of California against ABTS cation radical. In the case of Nelson F1 the economic method of cultivation increased the antiradical activity of the extract against DPPH radical.