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Antioxidant properties, phenolic and mineral composition of germinated
chia, golden flax, evening primrose, phacelia and fenugreek

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ABSTRACT

Seeds and sprouts are of considerable interest due to their numerous pro-health benefits. The aim of this study was to investigate the effect of germination on the mineral composition (performed by flame absorption atomic spectroscopy), total phenolic content, antioxidant activity, as well as phenolic profiles (before and after alkaline hydrolysis by high-performance liquid chromatography) of chia, golden flax, evening primrose, phacelia and fenugreek seeds. Generally, significant ($p < 0.05$) changes in the individual minerals composition of the seeds, improvement of their antioxidant properties, as well as increase in levels of individual phenolic compounds was found after seeds germination. Alkaline hydrolysis allowed to release free forms of phenolics and to confirm (chromatographically) their significantly higher amounts when compared to the nonhydrolyzed fraction. Gallic, protocatechuic, caffeic, p-coumaric, ferulic and sinapic acids, as well as quercetin and kaempferol were identified in analyzed seeds and sprouts. Sprouts exhibited better nutritional values than their un-germinated forms.

Keywords: seeds, sprouts, minerals, antioxidant activity, phenolics, alkaline hydrolysis, HPLC

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