

The Influence of Processing Conditions on Fatty acids and Triacylglycerol Composition and Oxidative Stability of Pumpkin Seed Oil

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Pumpkin seed oil is an unrefined oil traditionally used in Austria, Hungary, Slovenia and northern Croatia. Its pleasant roasty and nutty aroma is obtained in the process of roasting of ground pumpkin seeds prior to pressing at elevated temperatures. The dominant fatty acid of this oil is essential, linoleic acid (35.6–60.8%), which gives pumpkin seed oil a high polyunsaturated to saturated fatty acids ratio, making it a good contribution to a healthier nutrition. Acknowledging that increased temperature is one of the main propagators of oxidation processes in oils, the aim of this work was to determine the influence of roasting process on the fatty acids and triacylglycerol composition and the oxidative stability of pumpkin seed oil. Furthermore, as the pumpkin seed oils present in the market derive from pumpkin seeds with husk and naked pumpkin seeds (Styrian), the influence of the seed type on the analysed parameters was also determined.

Oil samples for analyses were obtained by processing of two pumpkin seed types (husk and naked) in three different ways. Roasted seeds were pressed at about 120°C, while non-roasted seeds were pressed at about 80°C and cold pressed (press was cooled with the water heat exchanger) at about 40°C.

Pumpkin oils produced from husk pumpkin seeds had higher content of oleic and lower content of linolic acid than the oils produced from naked pumpkin seeds. The dominant triacylglycerol in oils obtained from both pumpkin seed varieties was 1-oleoil-2,3-dilinoleil-sn-glycerol (OLL), however oils from husk pumpkin seeds had higher content of triacylglycerols containing mainly linoleic acid. Regarding the processing conditions, results have shown a slight decrease of linoleic acid and triacylglycerols with the higher content of unsaturated acids in the oils from both seed varieties produced at the higher processing temperatures. Oxidative stability measured by Rancimat was higher in oils produced from naked seeds and in the oils produced at higher processing temperatures.