

# Detection of a Heat-treatment of Native Edible Rapeseed Oil by Chlorophyll Degradation Products

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Native edible rapeseed oil becomes more and more popular for the consumer, because this product is characterised by a simple processing with extraction of the raw material by a screw press and purification by filtration or sedimentation only, resulting in an oil with a pleasant *seed-like* and *nutty* taste and smell. Sometimes, an additional processing step is used to improve the aroma of the oil by treatment with hot water steam. By this unpleasant aroma compounds should be removed from the oil. To distinguish native rapeseed oil from such treated oils parameters like *trans*-fatty acids, oligomer triglycerides or steradienes are used, but they are time-consuming and not successful in every case. Therefore the search for other parameters is interesting.

The aim of the work was to investigate the applicability of the DGF-method C-VI 15 – Determination of pyropheophytin formed by heat-treatment – on the detection of a heat-treatment of native rapeseed oil.

This is an HPLC method for the determination of the degradation products of chlorophyll A, pheophytin A, pheophytin A' and pyropheophytin A. The formation of %pyropheophytin A/(sum pyropheophytin A + pheophytin A + pheophytin A') and %pheophytin A'/(sum pyropheophytin A + pheophytin A + pheophytin A') was used to follow a heat-treatment of the oil during processing. While %pyropheophytin A/(sum pyropheophytin A + pheophytin A + pheophytin A') in fresh untreated oil was in a range between 8 and 12%, the percentage was remarkable higher in heat-treated rapeseed oil. Unfortunately the percentage also increased during storage of rapeseed oil with about 10% per year. Better results were obtained with pheophytin A', because this parameter decreased during storage only for 2 % per year, but was affected by a heat-treatment with hot water steam at temperatures of 110°C and higher over a period of 30 min. Therefore this parameter seems to be very susceptible for the detection of a heat-treatment of native rapeseed oil during processing. Pheophytin A' and pyropheophytin A were also suitable for the detection of a heat-treatment during drying of the raw material.