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## Comparison of different quality parameters of rapeseed oil from whole and corresponding seeds after removal of the shell


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In addition to extra virgin olive oil, virgin rapeseed oil is a very popular product for the consumer due to its favorable fatty acid composition and its unique rapeseed-like taste and smell. In general, virgin rapeseed oil is produced by simple screw pressing of the whole seeds followed only by filtration or sedimentation of the resulting oil. Sometimes the black shell is removed from the seeds before pressing and only the yellow cotyledons are pressed with a small part of the shells. It is assumed that this procedure will improve the quality of the oils in comparison to the usage of the whole seeds. Whole seeds contain between 16 and 20% shells which consist of about 10% oil and high amounts of fiber, but also waxes on the surface of the hulls, and secondary plant ingredients such as tocopherols and phytosterols. The removal of the shells is proposed to eliminate compounds that impair the taste and smell, the stability and the overall quality of the oil.

The aim of the present work was to investigate whether removal of shells from rapeseed really results in measurable differences between oil from whole and dehulled rapeseed. Furthermore the questions should be answered whether removing of the shell results in qualitative better oil and if parameters could be defined, that enable to differentiate between the two types of oil.

Removal of the shell from rapeseed was achieved by squeezing the seed with the help of a roller chair and removing most of the shells by air separation. As parameters fatty acid and tocopherol composition, oxidative stability and the profile of the phenolic compounds of oil from whole and dehulled seeds of the same batch were investigated. In addition, the untargeted analysis of methanolic extracts obtained from the oils was performed by uHPLC-qToF-MS. Statistical tools such as ANOVA, Principal Component Analysis (PCA) or Linear Discriminate Analysis (LDA) were used on basis of the analysed compounds to detect differences between the two classes of oil.