

Contribution of different Bacteria on the Formation of Volatile Compounds during Storage of Rapeseed

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The sensory quality of virgin rapeseed oil is strongly influenced by the presence and absence of volatile aroma-active compounds that are formed as result of oil oxidation but also by degradation of seed constituents such as lipids or proteins during improper seed storage. Since oil is a very good aroma carrier volatile compounds formed during seed storage are co-extracted with the oil during pressing.

Rapeseed has a natural settlement of microorganisms that can result in the degradation of seed constituents and may contribute to the oil aroma by products of the metabolism. In the present work bacteria from different rapeseed were isolated and characterized. These bacteria were cultivated on a rapeseed based culture medium and after one week of cultivation 20 bacteria which showed significant sensory conspicuousness were chosen for the further investigation. The selected bacteria were again cultivated on a rapeseed based culture medium in a 20mL head-space vial for five days and then the volatile compounds formed during cultivation were measured by SPME-GC-MS or SPME-GC-FID.

In total 20 volatile compounds were identified developed during cultivation of the bacteria. The number and type of volatile compounds depended on the type of bacteria. A comparison of the volatile compounds formed by different bacteria on rapeseed based culture medium showed no similarities with volatile compounds found in sensory bad rapeseed oil. From this it can be assumed that bacteria most likely are not responsible for sensory defects of most virgin rapeseed oils.