

POSTER PRESENTATIONS

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Links between moisture-induced metabolic changes in *Brassica napus* seed material and the corresponding virgin oils

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The chemo-sensory properties of virgin rapeseed (*Brassica napus*) oil are crucial for the acceptance of this niche product on the market. Improper storage of the seeds can adversely affect oil quality in terms of chemical and sensory traits. We investigated moisture-induced metabolic changes in the stored material and linked them to chemo-sensory properties of the virgin oils pressed from this material. Seeds were kept moist for one to four days and metabolite profiles of stored material and the resulting oils measured with several complementary analytical platforms. The sensory quality of the oils was assessed by trained testers. Under moist conditions, several amino acids and hexoses accumulated in the seed material within one day. These metabolic changes are probably due to a breakdown of seed storage compounds. Glucosinolates are specialised defensive metabolites of Brassicales. Aliphatic glucosinolates were less affected during moist storage, whereas the concentrations of indole glucosinolates increased. This increase could be due to the higher availability of their precursors, i.e., amino acids and glucose, and probably indicates the transition from mechanical to chemical defence. Moreover, pronounced shifts in the volatile profiles of the resulting virgin oils occurred along with moist seed storage. Specifically, the concentrations of several volatiles increased. These metabolic changes are probably related to the moisture-induced metabolic processes found in the seed material. In parallel, the sensory quality of the oils decreased as indicated by assignments of off-flavor attributes at the expense of characteristic sensory attributes of virgin rapeseed oil. Our results revealed that even short seed storage under moist conditions adversely affects virgin rapeseed oil quality. As the changes are probably irreversible, this study highlights that permanent seed storage under optimal conditions is crucial for the production of high quality virgin rapeseed oil.