

# Analysis of Cruciferin Content in Whole Seeds of *Brassica napus* L. by Near-Infrared Spectroscopy

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## Abstract

Globally, there is an increasing demand for sources of plant-based protein. While *Brassica napus* L. is an important oilseed crop worldwide, there is also interest in improving its ability to serve as a valuable source of plant-based protein. Cruciferin, a seed storage protein that makes up 60% of the protein found in mature seeds of *B. napus*, is of interest for human consumption as a source of protein and as an ingredient in food products due to its functional properties. Existing methods for quantification of cruciferin protein are often time consuming and destroy the seed. This study explored the potential for the measurement of cruciferin protein content in whole seeds of *B. napus* by near-infrared spectroscopy (NIRS), to allow for efficient and non-destructive screening of breeding material. An enzyme-linked immunosorbent assay (ELISA)-based reference method was utilized to assess cruciferin content in a diverse population of *B. napus*. Scanning of whole seed samples produced spectra that were used to develop NIRS calibration equations. Statistical analysis of the calibration results indicated that the NIRS equations developed are poorly suited for prediction of cruciferin content.

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