

VARIATION OF SEED NUTRITIONAL QUALITY IN A COLLECTION OF CAMELINA SATIVA VARIETIES

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Camelina [*Camelina sativa* (L.) Crantz] is an ancient oilseed crop that has been cultivated until mid-20th century, later on its cultivation declined. Recently, the interest on this crop has been renewed by an increasing demand for new sources of proteins and vegetal oils. Camelina is an annual crop that can be sown in autumn and spring and requires low agricultural inputs; it is resistant to pests and diseases and tolerates drought and low temperature. Seeds are rich in oil and proteins so the crop could be a new and cheap source for both human and animal consumption.

In this study, 17 varieties with different geographic origin (Spain, France, Poland, Germany, Canada, etc) were investigated. Fatty acid profile, oil and protein content, as well as the amount of some antinutritional compounds in relation to sowing time at the same location were quantified.

Oil quantity varied between 308 to 415 g/kg, while protein content of defatted meal ranged between 380 to 490 g/kg. As expected, the oil of all varieties resulted mainly composed of unsaturated fatty acids (UFAs, more than 85%). The predominant one was the n-3 α -linolenic essential fatty acid (ALA) followed by n-6 linoleic fatty acid (LA). In general, ALA content was higher in seeds obtained from fall sowing and among the varieties analysed, the highest amount of ALA was detected in the Spanish variety CCE26 (37,31% in fall sowing). A high variability among the varieties was also found for the erucic acid (C22:1) but it never exceeded the threshold of 4.0% considered safe for human consumption. Regarding the level of the antinutritional compounds, appreciably differences were observed among the

defatted meal of tested varieties. The most abundant compounds were glucosinolates (GLS) and phytic acid (PA).

Variance analysis of all collected data showed that sowing time significantly affected ALA and LA content as well as n-3 and n-6 total amount, while the level of some antinutritional molecules (GLS, trypsin inhibitors and erucic acid) was influenced by the genotype.

In conclusion, our results reveal noticeable differences among the camelina varieties for nutritional and antinutritional components. The varieties analysed confirmed to have peculiar quantity-qualitative traits and the sowing time significantly has affected the seed composition. In particular, autumn-sowing increased n-3/n-6 ratio, thus being considered as optimal sowing period for almost all varieties. Some of the Canadian varieties proved to be an optimal source of healthy oil with high n-3/n-6 ratio, while some of the Polish varieties were identified as a suitable source of seed meal with a lower content of antinutritional components.

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