Biological, Physical and Chemical Studies on Some Canola Cultivars

By

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(B.Sc. Agric.Sci., Food Industry, Fayoum University, 2010)

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For

My Father's

Soul

Abstract

Vegetable oils are the main source of dietary fat, and have important functional and sensory roles in foods. Canola has now become a global oilseed crop. Traditional canola cultivars contain high amounts of erucic acid and glucosinolates. Therefore, one of the main breeding objectives is reduction of the anti-nutritional components content (erucic acid and glucosinolates) in canola. Due to this fact, the objective of the current study was to evaluate the quality of canola oil from different genotypes (2A, 11A, 7A, Serw 4 and 9A) and to assure their safety for human and animal consumption. In our study, all canola oil genotypes exhibited different physicochemical properties and spectra analysis due to their fatty acid composition. All the oils indicated desirable quality as they had very small percentages of free fatty acids, high values of unsaponifiable matter, and low values for oxidative stability tests which were under the limits allowed in the regulations.

11A, serw 4 and commercial canola genotypes are rich in unsaturated fatty acids namely oleic acid (C18:1), linoleic acid (C18:2; n-2) and linolenic acid (C18:3; n-3) respectively. The different canola oils genotypes had significantly different ($p < 0.05$) levels of erucic acid. 11A and serw 4 canola seed oil genotypes exhibited the lowest contents of erucic acid among all oil samples.

From the present study, it can be concluded that genotypes 11A and serw4 canola oil can be considered as potentially more healthy dietary sources than 2A, 7A and 9A genotypes and could be recommended as a basis for further genotype studies to assess the basis for breeding canola genotypes low in erucic acid. In addition, the genotypes under investigation are good source of unsaponifiable matter. Thus exploiting the capability of these natural sources of powerful antioxidative compounds in highly oxidizable oils-based food can provide valuable foodstuff that can keep their own nutritional value and wholesomeness over longer storage period. However, further research is required before such use can be proposed with confidence.

Key words: Canola, erucic acid, glucosinolates, fatty acid, unsaponifiable matter.