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GENETIC AND CHEMICAL COMPARISON AMONG CAMELINA SATIVA VARIETIES

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Camelina sativa (*Camelina sativa* L. Crantz.) belonging to the mustard family, typically contain about 40 % oil in the seeds, 90 % of which is made up of unsaturated fatty acids: about 30–40% fraction of alpha linolenic acid, 15–25% fraction of linoleic acid, 15% fraction of oleic acid and around 15% eicosenoic acid. Genetic studies of the genome of *C. sativa* suggest a polyploid structure being more probably a hexaploid species. In European countries and Russia, camelina was grown as an agricultural crop before the II World War; now the renewed interest on this crop is mainly due to the search for new sources of essential fatty acids, particularly n-3(omega-3) fatty acids to be used in human food and animal feed products. In this work we compared different varieties of camelina grown in different conditions: in experimental field, greenhouse and grow chamber. We characterized the genetic material by SSRs to assess the genetic diversity to assist future breeding programs. In particular we have set up a breeding program aimed at reducing the glucosinolate content in camelina seed because of its toxic effect when present at high levels in seeds used as feed. Glucosinolate are sulphur-containing glucosides, found mainly in Brassicaceae, involved in plant defense. In the last year these molecules have been studied also because of their activities as natural pesticides and their protective effects against cancer, heart disease and chronic inflammatory disease. We are now characterizing camelina seeds for glucosinolate content in order to develop a diagnostic marker based on the analytical determination of the sulfur isotopic signature ($\delta^{34}\text{S}$). Such a marker will allow to easily select genetic materials with different glucosinolate contents without the use of complex and expensive analytical techniques.