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POTENTIAL OF CAMELINA FOR INNOVATIVE FOOD APPLICATIONS THROUGH PLANT BREEDING

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Camelina sativa, an ancient oilseed crop from *Brassicaceae* family, has gained attention for its potential in food technology. Archaeobotanical analyses reveal it was the only oilseed cultivated in Serbian archaeological sites from 3rd to 6th CE. Camelina is recognised for its unique fatty acids profile, being low in erucic acid, which makes it applicable as food and feed. On top of that, camelina is rich in polyunsaturated fats, particularly alpha-linolenic acid (up to 50%). Camelina's main use was in biofuels, although camelina holds promise for food industry. Research conducted at the Serbian Institute of field and vegetable crops (IFVCNS) focuses on enhancing camelina's traits to meet the growing demand for sustainable and nutritious food sources. By advancing camelina's breeding, we seek to optimise key attributes such as increased oil and protein content, improved oil quality with favourable fatty acid profiles, and reduced levels of anti-nutrients. These improvements aim to position camelina as valuable ingredient in the food industry. To assess stability of seed yield and oil content, we evaluated two promising camelina lines (L1, L2) across 12 diverse environments (E1-E12). Our results indicate significant variations in performance based on sowing time, with spring-sown lines generally outperforming winter-sown ones. While environments E1-E6 excelled in oil content (40-46%), E10 showed the lowest oil production (29%). Environment E5 emerged as the optimal location for high and stable seed and oil yield. As partner of the CARINA project consortium, IFVCNS is at the forefront of exploring innovative uses of camelina. Our high-quality camelina seed and biomass will be exploited for active compounds extraction. Polysaccharides from camelina cake are being evaluated as stabilizing agent for formulations in food-supplements, pharmaceutical and cosmetic industries. New methods for polysaccharides extraction that are more energy-efficient and operate without chemical solvents are tested in frame of this project.

Keywords: *Camelina sativa*, camelina oil, food supplement, polysaccharides

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