

UDC577.11:577.15

Mitigation of acrylamide content in French fries by using some enzymatic treatments

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Although the presence of acrylamide in foods was detected a decade ago, public concern about this issue, and in general about food health, seems to have increased in recent years. Acrylamide is a toxic human carcinogen present mainly in foods from plant origin and subjected to transformation processes in which temperatures above 120°C are reached, such as frying and baking. Foods that mostly contribute to the intake of acrylamide are: French fries and chips, coffee and coffee substitute, biscuits, bread, pastries, battered and breaded products, breakfast cereals, being children and adolescents the most exposed population. From a chemical point of view, acrylamide

is formed mainly from the reaction, during thermal processing, between asparagine and reducing sugars, as an intermediate product of the Maillard reaction. In the last decade, both health authorities and the scientific community have made great efforts in scientifically establishing limits of toxicity as well as exploring strategies aimed at reducing acrylamide formation. **The purpose** of this paper is framed in this last sense. On the one hand, our work has been focused on using new strategies for acrylamide mitigation, in French fries. The effect of an enzymatic treatment technique, named l-asparaginase, and glucose oxidase, as well as their mixed treatments were studied. In the case of French fries however, the strategy consisted in modifying their composition by adding enzymes, after having tested its potential in model systems.

Keywords: *functional foods, l-asparaginase, glucose oxidase, Acrylamide, French fries.*

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UDC 633.521:[631.52+577]

'Vik 2020': a new industrial hemp variety with a high content of cannabigerol

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Purpose. To create an industrial hemp variety of the Central European ecological and geographical type with a high content cannabigerol and universal application. **Methods.** Breeding (self-pollination, creation of artificial populations, selection), field, biochemical (thin-layer and gas-liquid chromatography of cannabinoid compounds), instrumental and technological assessment of fibre quality, and statistical methods. **Results.** Variety 'Vik 2020' was obtained as a result of creation of artificial populations. The plants are characterized by higher content of cannabigerol ($1.034 \pm 0.0323\%$), and

almost zero of other secondary metabolites, such as cannabidiol, cannabidiol, cannabichromene and psychotropic tetrahydrocannabinol (0.003 ± 0.0011 , 0.018 ± 0.0080 , 0.012 ± 0.0027 , and $0.005 \pm 0.0012\%$, respectively). The trait of cannabigerol content is quite stable within the population and is not correlated with the trait of tetrahydrocannabinol content ($r = -0.23$). According to the results of the competitive variety test, when growing to obtain fibre and seeds, the variety features short height, specifically significantly lower total (206.4 cm) and technical stem length (135.6 cm) compared to the standard variety, significantly higher inflorescence length (70.8 cm), which determine the formation of the significant yield of biomass suitable for pharmaceutical use and high seed yield (0.98 t/ha). The yield of total fibre was the same as in the standard variety (29.0%), but its quality and technological value for primary processing were higher. The vegetation period to the biological maturity

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