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Screening of filamentous fungi strains for L-asparaginase activity

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During the thermal processing of starchy foods, sugars react with L-asparagine forming acrylamide which is known as a human carcinogen. The addition of L-asparaginase which catalyzes the conversion of asparagine to aspartic acid can significantly reduce the levels of acrylamide in starchy food products such as snacks, biscuits, and fried potatoes. In this research, four filamentous fungi strains namely *Aspergillus niger* F.00721, *A. niger* F.00071, *A. wentii* F.00167, and *Penicillium chrysogenum* F.00853 were screened for the production of L-asparaginase. The highest enzyme activity was observed with two strains, *A. niger* F.00721 and F.00071. *A. niger* F.00071 had an enzyme activity peak on the third day, while the overall highest was in the case of *A. niger* F.00721 on the fifth day. These two *A. niger* strains were selected for further studies. The effect of two nitrogen sources peptone and proline was investigated. The highest activity was displayed with *A. niger* F.00721 with 1% proline on the third day. These results are preliminary, but very promising for the production of L-asparaginase for food and pharmaceutical applications.

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EXPERIMENTAL STUDY ON FIGS SUN-DRYING: A TRADITIONAL RENEWABLE, CHEAP AND ENVIRONMENTALLY FRIENDLY TECHNIQUE

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This work aims to investigate the drying behavior of figs and the influence of the process on some quality parameters of dried figs. In this study, the drying kinetics and diffusion coefficients were determined experimentally for the Roshnik fig variety, collected in Berat, Albania. Modeling of drying curves was performed for pre-treated samples with bleaching and K₂S₂O₅ and untreated samples. Dried fig fruits were evaluated for physico-chemical parameters and antioxidant activity. Results showed that the best fitted model of the drying curve resulted in a two-term model, and the diffusion coefficients for all samples ranged from 1.25 to 3.125 x10⁻¹⁰ m²/s. The pre-treatments applied played an important role in the drying rate and enhanced the quality of the dried products, from which the best results were achieved for the pre-treated sample bleached plus K₂S₂O₅. The total polyphenolic content was in fresh fig fruits at 81.66 gallic acid equivalents (GAE) 100 g⁻¹ and ranged in dried fig fruits at 117.88–174.44 mg GAE 100 g⁻¹. The antioxidant activity resulted in 8.87–29.85 mg ascorbic acid equivalents/ 100 g⁻¹. Even under mild drying conditions, a high degradation of vitamin C occurred. This experimental work showed that sun-drying is a sustainable technique and that pretreatment could be beneficial for applications by food processors, providing a shorter drying time and enhancing product quality.

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