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The Effect of Solid-State Fermentation using *Aspergillus niger* on the Nutritional Composition of Grape Seed, Cherry Kernel, and Maize Seed Mixture

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Abstract

The effect of solid-state fermentation using *Aspergillus niger* strains on the nutritional composition of the mixture of grape seed, cherry kernel, and maize seed was investigated in this study. Fermentation substrate consisting of 40 g of grape seeds, 40 g of cherry kernel, and 20 g of maize was fermented by *A. niger* strains (ATCC 200344, 200345, 201572, 52172). The substrate was enriched with a nutrient medium and sterilized with an autoclave. Each strain of *Aspergillus niger* was inoculated with 10^6 spores into the substrate. Incubation was carried out for seven days at 30 °C. Crude protein, ether extract, ash, nitrogen-free extract, and crude fiber contents of substrate were determined before and after fermentation. Solid-state fermentation using *A. niger* increased ($P<0.001$) crude protein content of the substrate. In addition, the ether extract content of the substrate was increased ($P<0.001$) by *A. niger*. Similarly, *A. niger* increased ($P=0.001$) the ash content of the grape seed, cherry kernel, and maize mixture. However, crude fiber was declined ($P<0.001$) by fermentation using *A. niger*. Similarly, solid-state fermentation decreased the nitrogen-free extract of the substrate. The obtained results showed that solid-state fermentation using *A. niger* can improve the nutritional composition of the mixture of grape seed, cherry kernel, and maize seed.

Key Words: *Solid-state fermentation, Aspergillus niger, Grape seed, Cherry kernel, Corn seed*