CORN-BASED FUNGAL FUMARIC ACID PRODUCTION

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ABSTRACT

The ability of the fumaric acid-producing fungal strains *Rhizopus oryzae* ATCC 10260 and ATCC 20344 to utilize corn distillers grains with solubles as a substrate for fumaric acid production were compared. The commercial applications for fumaric acid include its use in foods, beverages, paper sizing and printing inks. After inoculating untreated corn distillers grains with solubles, corn distillers grains with solubles treated by sterilization or corn distillers grains with solubles treated by acid hydrolysis and sterilization with the fungal strains, the solid-state fermentation of the grains occurred for 240 hours at 25°C. Subsequently, the grains were processed and the resultant supernatants were assayed for their fumaric acid contents. It was observed that *R. oryzae* ATCC 10260 and ATCC 20344 produced fumaric acid on the untreated and treated distillers grains. At least a 1.4-fold higher concentration of fumaric acid was produced by ATCC 20344 on the untreated and treated distillers grains than was produced by ATCC 10260. Overall, *R. oryzae* ATCC 20344 was able to produce fumaric acid more effectively than ATCC 10260 on corn distillers grains with solubles as a substrate using solid-state fermentation.