

INVESTIGATION OF TANNASE ACTIVITIES IN MUCOROMYCOTA FUNGI

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Tannases cleave ester and depside bonds present in hydrolysable and complex tannins. In the food- and pharmaceutical industries, these enzymes can be used as clarifying agents and for the green production of gallic acid that is an intermediary compound in trimethoprim synthesis. Although many microorganisms have been characterized for tannase production, Mucoromycota fungi were less studied in this regard. In this work, an attempt was made to screen Mucoromycota fungi for their tannase production, including the analysis of the enzyme production under different fermentation conditions. A total of seven Mucoromycota strains were selected for the analysis, in which tannase activity was tested on agar plates supplemented with tannic acid as an inducer. Strains of *Rhizomucor miehei*, *Mucor corticolus*, *Mucor lusitanicus*, *Rhizopus microsporus* var. *oligosporus* and *Rhizopus oryzae* were able to tolerate the inducer and produce the enzyme in detectable amount. Tannase production of these fungi was further examined in wheat bran-based solid-state and yeast-peptone liquid conditions containing tannic acid as an inducer. Enzyme activity in the ferments was measured using the methanol-rhodanine spectrophotometric assay. The tannic acid proved to be an excellent inducer of tannase production in both systems. Among the tested fungi, the *R. microsporus* var. *oligosporus* resulted in the highest tannase activity in the solid-state fermentation tests, while the *R. miehei* was excellent tannase source in the submerged fermentations. Our results highlighted Mucoromycota fungi as potential tannase producers for future investigations. This research was supported by the grants NKFI FK134886, TKP-2021-EGA-28 and NTP-NFTÖ- 22-B-0095.