

## LIBERATION OF PHENOLICS FROM SORGHUM SAMPLES USING SOLID-STATE FERMENTATION WITH *RHIZOMUCOR MIEHEI*

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Phenolics are important plant secondary metabolites. These molecules have beneficial effects on the human health through antioxidative, anti-inflammatory, antimicrobial and anticancer properties. However, majority of these compounds are conjugated to plant polysaccharides via ester or glycosidic bonds resulting in a less bioavailable form. Sorghum grain contains considerable amount of bioactive phenolics and the fermentation with cellulolytic and lipolytic fungi can be an eco-friendly strategy for their mobilization. Here, a solid-state fermentation (SSF) approach using *Rhizomucor miehei* as the fermenting organism was tested to liberate phenolics from different sorghum samples. For SSF substrate, grounded sorghum material was mixed with soy flour as nitrogen source, and moistened with distilled water. The growth medium prepared were inoculated with *R. miehei* and incubated at 37 °C for 18 days. During incubation, four flasks were taken on every third day for analytical measurements. Two flasks were extracted with distilled water, and the extracts were used for enzyme activity measurements. Two flasks were extracted with 50% ethanol solution for total phenolic content (TPC) and antioxidant activity (e.g., free radical scavenging capacity and ferric reducing antioxidant power) measurements. Results showed increased lipase and beta-glucosidase activities in the early stages of fermentation, which was generally associated with an increase of TPC. Moreover, the fermentation increased the antioxidant capacities of the sorghum extracts. In conclusion, fermentation with *R. miehei* can support the release of phenolics from sorghum samples. This research was supported by NKFI FK 134886.