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Cultivation of *Beauveria bassiana* and *Hypsizygus marmoreus* in organic compost for enzyme production to organic matter degradation

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Organic agriculture has been expanding in Brazil, increasing the demand for studies aimed at improving inputs used in crop production, especially those related to plant nutrition and protection. In this context, the use of organic composts inoculated with microorganisms capable of promoting nutrient cycling and solubilization, as well as producing substances that stimulate plant growth and enhance plant defense mechanisms, has gained prominence. This study aimed to evaluate the cultivation, through solid-state fermentation, of the endophytic and entomopathogenic fungus *Beauveria bassiana* and the ectomycorrhizal fungus *Hypsizygus marmoreus* in organic compost, focusing on the production of chitinolytic, proteolytic, and β -glucosidase enzymes. Cultivation was carried out using commercial organic compost supplemented with dehydrated sugarcane bagasse (90% compost and 10% bagasse), moistened to 20% and sterilized at 121 °C for 30 minutes. After inoculation, flasks were incubated at 28 °C for 14 days. Extracellular enzymes were extracted using saline solution, and proteolytic, chitinolytic, and β -glucosidase activities were determined by colorimetric methods using azocasein, p-nitrophenyl-N-acetyl- β -D-glucosaminide, and p-nitrophenyl- β -D-glucopyranoside as substrates, respectively. *Hypsizygus marmoreus* showed higher protease (2.5 U g⁻¹) and β -glucosidase (11.4 U g⁻¹) activities compared to *Beauveria bassiana* (1.6 U g⁻¹ and 6.5 U g⁻¹, respectively), with no significant differences in chitinolytic activity according to Tukey's test at 95% confidence. However, the enzymatic activities observed were low compared to other cultivation methods reported in the literature. These preliminary results indicate that both fungi can develop in the substrate and produce relevant enzymes, demonstrating potential for use in inoculated organic compost.

KEYWORDS: Bioinputs, *Beauveria bassiana*, *Hypsizygus marmoreus*, organic compost

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