Production of *Beauveria bassiana* chitinolytic enzymes in different fermentation processes

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Chitinases (EC 3.2.1.14) are hydrolases that catalyze the cleavage of glycosidic bonds between N-acetyl-glucosamine residues linked by β-[1-4] type bonds in chitin. These enzymes are of vital importance in the infection process and are directly linked to the pathogenicity of the fungal isolate. Secreted cuticle-degrading enzymes are crucial to the infection process, degrading the external protective barrier and allowing the fungus to reach the interior of the insect's body. Chitinases from *Beauveria bassiana* are important virulence factors that contribute to their pathogenicity against arthropods. These chitinases act synergistically with other enzymes such as proteases and lipases to degrade the cuticle of insects and other animals. In this degradation process, the action of proteases exposes the chitin fibers present in the epicuticle. When the fungus reaches the procuticle, it begins to secrete chitinase. For this reason, the aim of this study was to evaluate the production of extracellular chitinases from commercial isolates of *Beauveria bassiana* in different fermentation processes. Various culture media were established to evaluate the production of chitinases from commercial isolates of *Beauveria bassiana* (IBCB 66 and ESALQ PL63). Within the liquid fermentation conditions, the culture media were evaluated: SDY broth, YPG culture medium, synthetic, and soluble starch with yeast extract and the solid media condition were evaluated: rice supplemented with milk whey (10%w/v) and a 1:1 (w/w) of chrysalis flour to rice chrysalis flour with rice. The results showed that the SDY broth medium obtained a value of 0, 90 U/mg, and with a significant difference ($p<0.01$) for the value of chitinase specific activity in comparison to the other culture media evaluated, as well as in relation to IBCB 66. In conclusion, the evaluated media cultures may be a strategy for the production of extracellular enzymes such as chitinases, which could be used in agriculture due to their characteristics as a virulence factor of pests.

Key words: entomopathogenic fungi, chitinase, fermentation process.

Produção de enzimas quitinolíticas de *Beauveria bassiana* em diferentes processos de fermentação

As quitinases de *Beauveria bassiana* contribuem no fator de virulência pois atuam em sinergia com outras enzimas para degradar a cutícula de insetos. O objetivo do estudo foi avaliar a produção das quitinases de diferentes isolados comerciais de *B. bassiana* em processos fermentativos. Foram estabelecidos diferentes meios de cultura para avaliar sua produção a partir de isolados de *B. bassiana* (IBCB 66 e ESALQ PL63). Os isolados apresentaram diferença significativa para produção da quitinase pelo *B. bassiana* ESALQ PL63 usando o caldo SDY em comparação com os meios avaliados, assim como o isolado de *B. bassiana IBCB 66*.

Palavras-chave: fungos entomopatogênicos, quitinase, processo de fermentação.

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