Biochemical characteristics of chitinase enzyme from Bacillus sp. of Kamojang Crater, Indonesia.

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Abstract

Chitinase and chitindeacetylase are enzymes capable of degrading chitin into chitooligomers and chitosan. The chitinases characterized and purified in this study were extracted from the acidophillic Bacillus sp. isolated from Kamojang Crater West Java Indonesia. When grown in liquid media containing colloidal chitin, the optimum chitinase activity of the acidophilic isolate was reached after 4-5 days of incubation. The optimum temperature and pH of the chitinase and chitin deacetylase were found at 37 degrees C and pH 5. When incubated at pH 5, the activity of chitin deacetylase was increased; after 3 h, the activity was 1.5 times of the control. The enzyme was stable at pH 4, after 2 h incubation, the activity was still 80% of the control. The chitinase and chitin deacetylase activities were not influenced by Mg(++) nor Ca(++), Ni(++) and Cu(++) inhibited the chitinase activity, while chitin deacetylase activity was not affected by Cu(++) addition. When 1 mM of EDTA was added, the enzyme activity was reduced 40 to 50%.