

Avicelase Enzyme From Sawdust: Isolation, Production And Optimization

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ABSTRACT

Economical disposal of sawdust is a problem of growing concern to the wood industries as waste. On an industry-wide basis most of sawdust is green and has many uses that able to be converted to useful products such as fuel, chemical feedstock or textiles. Cellulose is a potential substrate to the enzyme that can be produced from the activation of cellulose conversion into monomer. Using microorganisms such as bacteria and fungi as a converter, cellulose can be degraded and converted into reducing sugar with the help of various enzymes including Avicelase enzyme. The utilization of sawdust as a potential substrate for producing enzymes may serve a dual purpose of reducing the environmental pollution along with producing a high value commercial product. Effect of nutritional parameters such as initial pH, carbon and nitrogen sources for Avicelase production from *Bacillus sp.* was investigated. From three different sources of isolates, only one of the most potent isolate was selected from a food source CL5 which has been partially identified and suggested to be *Bacillus* species. Optimum pH-value, carbon and nitrogen sources for Avicelase production found to be 7.0, lactose and KNO₃ were (2.450±0.009 IU/ml) increased up to 3556.7% with sp. act. 1.528 IU/mg; (1.286±0.074 IU/ml) increased up to 1548.7% with sp. act. 0.631 IU/mg and (2.287±0.109 IU/ml) increased to 3313.4% with sp. act. 0.979 IU/mg, respectively.

KEYWORDS: Avicelase production, Waste management, Bacterial isolates, Optimization.