

Microbial cellulose production by using sugarcane bagasse as culture medium

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Abstract

Cellulase is one of several enzymes produced mainly by fungi, bacteria, and protozoa that catalyze the breakdown of cellulosic, cellulose, and related polysaccharides. Cellulase can break down cellulose molecules into monosaccharides such as beta-glucose, or into shorter polysaccharides and oligosaccharides. The breakdown of cellulose is of considerable economic importance because it helps to convert the main constituents of plants into products for consumption and use in chemical reactions. Cellulase has great potential for biotechnological applications in many industrial fields. Therefore, the demand for cellulase is increasing more often than ever before. Cellulase producing bacteria were isolated from soil and identified as *Pseudomonas fluorescens*, *Bacillus subtilis*, *E. coli*, and *Serratia marcescens*. The *Bacillus pseudomycooides* showed maximum cellulase production in the presence of sugarcane bagasse, peptone and magnesium sulphate at pH 7, 40°C in 72 hours of incubation. The *Bacillus sp.* showed maximum cellulase production in the presence of sugarcane bagasse, ammonium sulphate and Mn²⁺ ions at pH 7.0 within 72 h of incubation. *Streptococcus sp.* showed maximum cellulase production in the presence of wheat bran, ammonium sulphate and K²⁺ ions at pH 6.5 within 96 h. Based on these reports, it can be concluded that bagasse can be the maximum source for cellulase production and that it can be used for industrial purposes to bring high profits and reduce production costs.

Keywords: Cellulase production bacteria, bagasse medium

References

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