



“Gheorghe Asachi” Technical University of Iasi, Romania



UTILIZATION OF *Citrus sinensis* WASTE FOR THE PRODUCTION OF β -GLUCOSIDASE BY SOLID-STATE FERMENTATION USING A *Bacillus subtilis* MUTANT

Ruchi Agrawal^{1*}, Alok Satlewal², Ashok Kumar Verma^{1*}

G.B. Pant University of Agriculture & Technology, ¹Department of Biochemistry, ²Department of Microbiology, Pantnagar-263145, U.S. Nagar, Uttarakhand, India

Abstract

The utilization of agro-industrial waste 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. Twelve different agro-industrial wastes were evaluated for extracellular BGL (β -glucosidase) production by a mutant of *Bacillus subtilis* on solid state fermentations (SSF). The *Citrus sinensis* bagasse was found to be the most suitable substrate with highest BGL titer (35 U/gds). Optimum incubation time, inoculum size, moisture content and volume of buffer for enzyme extraction were 72 hr, 40 % (v/w), 10 mL and 20 mL respectively. Supplementation of 1% peptone as nitrogen source yielded maximum BGL (264 U/gds) after 72 hr of incubation. Addition of carbon sources didn't show any positive effect on BGL yield. Results indicated that there is an opportunity for utilising the waste produced after *Citrus sinensis* juice extraction as solid substrate for the production of BGL employing *Bacillus subtilis*.

Key words: *Bacillus subtilis*, β -glucosidase, *Citrus sinensis*, mutant, solid state fermentation

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* Author to whom all correspondence should be addressed: e-mail: drruchiagrwal010@gmail.com, akv72@rediffmail.com; Phone: (091) 5944 233473; (091) 9412981859, Present address: Department of Bioenergy, Indian Oil Corporation Ltd., Faridabad, Haryana, Pin 121007