



“Gheorghe Asachi” Technical University of Iasi, Romania



OPTIMIZATION OF BIOMASS AND ENDO-B-1,4-GLUCANASE BY WHITE ROT FUNGI NATIVE FROM ARGENTINA

**Ernesto M. Giorgio*, María I. Fonseca, Andrea L. Morales,
Pedro D. Zapata, Laura L. Villalba**

*Laboratorio de Biotecnología Molecular, Instituto de Biotecnología Misiones “María Ebe Reca”, Facultad de Ciencias Exactas,
Químicas y Naturales, Universidad Nacional de Misiones, Posadas, Misiones, Argentina*

Abstract

A large number of microorganisms are capable of producing cellulases; however, fungi are considered among the most active enzymes producers. Different strains of white rot fungi (WRF) were reported to have a great potential for biotechnological applications and cellulase enzymes is much involved in this effect, especially for bioethanol production. Misiones is included in a forest region characterized by a vast biodiversity, and within this environment, a large number of microorganisms can be isolated, including numerous white rot fungi. In the present work, response surface methodology (RSM) was applied for the determination of biomass and endo- β -1,4-glucanase activity factors dependence from three Argentinean WRF in submerged cultures. RSM was carried out with a Box-Behnken design using 3 variables, temperature (25, 29 and 33°C), incubation time (7, 10.5 and 14 days) and pH (3.5, 4.5 and 5.5) with three central points and 2 replications. The best conditions for enzymatic activity were achieved at maximum level of temperature (33°C), low level of pH (3.5) and intermediate level of incubation time (10.5 h). We have presented here, preliminary studies on biomass and enzyme production of three fungi. Our data show that we have not yet reached the optimal enzyme production conditions, so further experiments are needed to reach optimal conditions.

Keywords: cellulases, response surface methodology, white rot fungi

Received: November 2012; *Revised final:* January, 2014; *Accepted:* January, 2014

* Author to whom all correspondence should be addressed: e-mail: biotecmol2010@gmail.com; Phone: +54 376 4427687; Fax: +54 376 4427687