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Invertase production by *Aspergillus* and *Penicillium* and sequencing of an *inv* gene fragment

A. C. Flores-Gallegos[1], F. Castillo-Reyes[3], C. B. Lafuente[1], J. C. Loyola-Licea[2], M. H. Reyes-Valdés[3], C. N. Aguilar[1] and R. Rodríguez Herrera[1]*

[1] Department of Food Science and Technology, School of Chemistry, Universidad Autónoma de Coahuila, Boulevard Venustiano Carranza and José Cárdenas s/n, República Oriente, Saltillo 25280, Coahuila, Mexico.
[2] Department of Metal Mechanics, Instituto Tecnológico de Saltillo, Avenida Universidad and Boulevard Venustiano Carranza s/n, Saltillo 25280, Coahuila, Mexico.
[3] Department of Plant Breeding, Universidad Autónoma Agraria Antonio Narro, Buenavista, Saltillo 25315, Coahuila, Mexico.

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ABSTRACT

Invertase (β-fructofuranosidase) is an enzyme used in the food industry, where sugar mixtures are preferred to glucose because they are sweeter and do not crystallize easily. In this study, a biochemical characterization of five fungal strains isolated from a Mexican semi-desert (*Aspergillus niger* GH1, *A. fumigatus* GS, *Penicillium purpurogenum* GH2, *P. citrinum* ESS, *P. pinophilum* EH2) was carried out. Evaluation of maximal growth of the strains on potato dextrose agar at several temperatures and pH values, as well as the assessment of invertase production using polyurethane foam as a non-biodegradable support, were performed. The highest growth rates corresponded to *A. niger* GH1 (0.2831 mm/h), and *P. citrinum* ESS (0.1931 mm/h). The maximum invertase yield was 81,270 U/L per min, determined for *A. niger* GH1 at 72 h. Oligonucleotide primers were designed for amplification of sequences

* Corresponding author: R. Rodríguez Herrera. Tel.: +52 (844) 4161238. Fax: +52 (844) 4390511. E-mail: raul.rodriguez@uadec.edu.mx

from the invertase gene, InvF 5' ACGTCTGGCTGTCCGGTGAC 3' and InvR 5' ACCGAACCCAAGTACTCAACGCA 3', showing an optimum annealing temperature of 61.6 C. DNA fragments of about 560 bp were obtained and sequenced, corresponding to the putative invertase gene of *Aspergillus*.

Key words: ***Aspergillus*, invertase, invertase gene amplification, *Penicillium*, polyurethane foam.**