

Promising Antifungal Chitinase from Marine Strain of Bacillus

Authors : Ben Amar Cheba, Taha Ibrahim Zaghloul, Mohamad Hisham El-Massry, Ahmad Rafik El-Mahdy

Abstract : Seventy two bacterial strains with ability to degrade chitin were isolated during a screening program. One of the most potent isolates (strain R2) was identified as Bacillus sp. using conventional methods as well as 16S rRNA technique and submitted in the Gen Bank sequence database as Bacillus sp. R2 with a given accession number DQ 923161. This strain was able to produce high levels of extracellular chitinase. The chitinase of Bacillus sp. R2 hydrolyzed several chitinous substrates preferentially and showed a maximum activity toward the β chitin such as Calmar pen and squid bone chitins with the folds 1.47 and 1.23 respectively. The enzyme also exhibited a substrate binding capacity of more than 70% for squid chitin, shrimp shell colloidal chitin, chitosan and prawn shell chitin. The chitinase showed a moderate antifungal activity against many phytopathogenic fungi such as Aspergillus niger, A. flavus, Penicillium degitatum and Fusarium calmorum. This strain could be a suitable candidate for chitinase production on an industrial scale for using as promising antifungal biopesticide.

Keywords : antifungal activity, Bacillus sp. R2, chitinase, substrate specificity

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020