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قسم الوراثة

7- *Bacillus thuringiensis* var *aizawai* HD-137 as a potential agent for biological control

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ABSTRACT

Four strains of *Bacillus thuringiensis* were screened for their chitinolytic activity on colloidal chitin. *B. thuringiensis* var. *aizawai* HD-137 with the GenBank accession number HM173355 showed the highest chitinase activity, which was recorded after 2 days of incubation. The optimum condition for high chitinase production was Nutrient Yeast extract Salt Medium, NYSM, with 0.2% colloidal chitin, two days of incubation, pH 6 and 30°C. The novel strain *B. thuringiensis* var. *aizawai* HD-137 is also considered as a powerful phytopathogenic control agent in which it showed inhibition of the mycelial growth of some phytopathogenic fungi, *Alternaria solanai*, *Rhizopus*, *Fusarium solanai* and *Aspergillus flavus*. The clear zones of mycelial inhibition ranged from 12 to 19 mm. The partial nucleotides sequence of chitinase gene from *B. thuringiensis* var. *aizawai* HD-137 showed similarities to the chitinase producing bacteria in the GenBank, and it was more related to *B. thuringiensis* (AB699714, GQ921840 and GQ921842) and *B. himensis* chi60 (AB110081). It is obvious that the *B. thuringiensis* var. *aizawai* HD-137 is considered as a significant biocontrol agent against phytopathogenic fungi.

Keywords: *Bacillus thuringiensis* HD-137, chitinase, antagonism, phylogenetic.

