Abstract

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Eighty-three bacterial isolates were obtained from Egyptian soils, eight of them were belonging to *Bacillus thuringiensis*. Two of these strains were found to be highly effective against the 2nd instar of the cotton leafworm, *Spodoptera littoralis*. These two strains were named as *B.t.*K-1 and *B.t.*K-3. The type of parasporal inclusion bodies, of the two isolates *B.t.*K-1 and *B.t.*K-3, was differentiated by electron microscope. It was found that *B.t.*K-1 produces bi-pyramidal inclusions, whereas *B.t.*K-3 produces cubical inclusions. CryI gene of these two strains, responsible for insecticidal protein, was identified by polymerase chain reaction (PCR) technique.

*B.t.*K-1 and *B.t.*K-3 were used to determine the best nutritional requirements and environmental conditions of sporulation in M.B.S medium. Maximum spore formation was attained, when glucose and yeast extract were used respectively as carbon and nitrogen sources, with a C/N ratio of 1/1, at pH 7.2, and 30°C incubation temperature. Harvested spore yield was used in different formulations (wettable powder, suspension preparation and granules), against the 2nd instar larvae of the cotton leafworm. Granular formulation approved to be the best of these formulations in activity against the larvae and in keeping the viability of the *B.t.* spores till 12 months, post-preparation.

Key words: *Bacillus thuringiensis*, Isolation, Media requirements, Formulation.

Contents