

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

	Page
1- INTRODUCTION	1
2- REVIEW OF LITERATURE	3
2.1 History of <i>Bacillus thuringiensis</i>	3
2.2 Toxin of <i>Bacillus thuringiensis</i>	3
2.2.1 Protoxin.....	4
2.2.2 δ - endotoxin.....	5
2.3 Samples collection and identification of <i>B.t.</i> isolates.....	6
2.4 Effect of media components and growth factors on sporulation of <i>B.thuringiensis</i>	10
2.5 Improvement of <i>B. thuringiensis</i> formulations.....	12
2.6 Toxicity of <i>B. thuringiensis</i> against the cotton leafworm, <i>Spodoptera littoralis</i>	17
3- MATERIAL AND METHODS	21
3.1 Soil samples for <i>B.t.</i> isolation.....	21
3.2 Identification tests.....	21
3.3 Media used	22
3.4 Maintenance of cultures.....	26
3.5 Standard inoculum.....	26
3.6 Toxicity test.....	27
3.6.1 Cotton leafworm maintenance.....	27
3.6.2 Efficacy of the isolated <i>B.t.</i> on the cotton leafworm <i>S.littoralis</i> (Bioassay).....	27
3.6.3 Evaluation of lethal concentrations (LC) values.....	28
3.6.4 Mortality and LC-values calculations.....	28
3.7 Crystal morphology and electron microscopy.....	29
3.7.1 Scanning microscope.....	29
3.7.2 Transmission microscope.....	29
3.8 Identification of the specific insecticidal protein genes within the tested <i>B.t.</i> preparations using PCR method.....	29
3.9 Enzyme- linked immunosorbent assay (ELISA) for detection of β – exotoxin.....	30

II

3.10 Optimization of media component for <i>B.t.</i> production.....	31
3.10.1 Simple functional correlation between <i>B.t.</i> spore count and optical density.....	31
3.10.2 Effect of nitrogen and carbon sources on spore counts...	32
3.10.3 Effect of C/N ratio on spore counts.....	32
3.10.4 Effect of in-organic salts on spore counts.....	32
3.10.5 Effect of pH on spore counts.....	33
3.10.6 Effect of incubation temperature on spore counts.....	33
3.10.7 Counting of vegetative cells and spores of the isolated <i>B.t.</i> during incubation period.....	33
3.11 Process of recovery for spore-crystal complex of <i>B.t.</i> strains	34
3.12 Formulations and the efficacy of <i>B.thuringiensis</i> strains.....	34
3.12.1 Activity tests.....	35
3.13 Spore viability.....	35
4- RESULTS AND DISCUSSION	37
4.1 Isolation and identification of <i>B.thuringiensis</i>	37
4.1.1 Morphological and growth characteristics.....	37
4.1.2 Microscopic observation.....	37
4.1.3 Biochemical properties.....	38
4.2 Efficacy of the isolated <i>B.thuringiensis</i> against the 2 nd instar larvae of <i>Spodoptera littoralis</i>	40
4.3 Parasporal inclusion bodies.....	42
4.4 Polymerase Chain Reaction (PCR).....	45
4.5 ELISA technique.....	45
4.6 Simple functional correlation between <i>B.t.</i> spore count and optical density.....	47
4.7 Effect of media type on sporulation.....	47
4.7.1 Optimization of media requirements.	50
a- Effect of carbon sources on sporulation of <i>B.t.</i> strains.....	50
b- Effect of nitrogen sources on sporulation of <i>B.t.</i> strains.....	55

III

c- Effect of C/N ratio on sporulation of <i>B.t.</i> strains.....	56
d- Effect of in-organic salts on sporulation of <i>B.t.</i> strains.....	64
4.7.2 Effect of environmental conditions on sporulation of <i>B.t.</i> strains.....	67
a- Initial pH	67
b- Incubation temperature	68
4.7.3 Counting of spores and vegetative cells during incubation period.....	70
4.8 Efficacy of different formulations of <i>B.t.</i> spore-crystal complex against the 2 nd instar larvae of <i>S. littoralis</i>	77
4.8.1 Efficacy on clover leaves.....	77
4.8.2 Efficacy on castor bean leaves.....	79
4.9 Spore viability.....	85
5- SUMMARY.	89
6- REFERENCES.	93
ARABIC SUMMARY.	