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GENETIC IMPROVEMENT OF *Bacillus thuringiensis* AS A BIOCONTROL AGENT AGAINST *BiomphaJaria aJexandrina* SNAIL.

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ABSTRACT

Susceptibility of *Bacillus thuringiensis* spores and toxin to UV-C (254nm) of the solar spectrum reaching earth's surface may be responsible for its inactivation and low persistence in nature. Spores of the *Bt israeiensis* (1977 &HD522) were more resistant to UV-C radiation than spores of *at tenebrionfs* (tt4) and the isolated strain (66). Maximum molluscicidal activities were obtained following successive rounds of exposing the 2 strains; tt4 and 66 to UV-C. The mutants obtained designated as 6615c *& tt4/2a* showed 100% mortality of *Biomphalarla a/exandrina* snails, while their parental strains showed 60% & 80% of mortality, respectively. The highly toxic mutants derived from *at.* (66 & tt4) appeared to produce number of crystals more than that of their parental strains. The protein pattems *at* these mutants indicated that they produced polypeptide of 65 KDa *or* its derivatives that caused high toxicity of these mutants. ,.. ~ DNA profile of some mutants was established by using polymerase chain reaction (PCR). 111e PCR screen can identify mutants with altered electrophoretic panerns containing novel genes.

Keywords *BaCillus thuringiensis,* Mutation, *Biomphalaria aiexandrina* snail, UV-radiation.

INTRODUCTION

Bacillus thuringiensis strains and varieties are pathogenic to a number of agricultural and medically important pests. The environmental safety of B. *thuringiensis,* coupled with the nature of toxicity, level of specifiCity for target hosts and relative ease of production has led to the use of *B. fhuringiensis* in many pest control programmes in environmentally sensitive areas (Glare and O'Callaghan, 1998).

B. thuringiensis preparations were used as biocontrol agent against *Biomphalaria alexandrine* snails and cercariae (Osman & Mohamed, 1991 and Weiser, 2001).

Microbial control of agricultural pests and vectors of human diseases by *B.thuringiensis (Bt)* is an important alternative to chemical pesticides (Margatith and Dove, 2000) but the viability of spores and toxicity of crystals included in *(Bt)* preparation rapidly drop under field conditions *(Leong et st.,* 1980). Sunlight -medicated in activation of these preparations, which affects their efficacy and commercial value, is believed to be caused by UV damage to spores and their a-endotoxin (Griego & Spence, 1978 and Jones *et et.,* 1991). Spores of some strains of *(Bt)* have been shown to be highly sensitive