

A CASE STUDY

Record of natural incidence of entomopathogens in Gangetic alluvial zone of West Bengal

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ABSTRACT

A survey was conducted to find out the natural incidence of entomopathogens and their pathogenicity in Gangetic alluvial zone. Three major groups of entomopathogens such as fungus, bacteria and virus have been observed and isolated from natural infected insects. Natural occurrence of viral and fungal diseases was much more pronounced, so far as field infestation and laboratory cultures were concerned. Pathogenicity of the viral isolates (V₁, V₂ and V₃) caused 83.33, 91.67 and 56.67 per cent mortality for *S. litura*, *H. armigera* and *S. obliqua*, respectively. Characterizations of pathogenic microbes isolated during the course of investigation were also attempted. It revealed that the entire three isolated viruses belonged to polyhedrosis type. White muscardine fungus named, *Beauveria bassiana* isolated from infected *Spilarctia obliqua* and *Amritodus atkinsoni* resulted 33.67 and 76.67 per cent mortality, respectively. Three different types of bacterial colonies were isolated from disease infected larvae of *Earias vitella*. Pathogenicity test of these isolates revealed only one isolate having 53.33 per cent mortality. But, in case of *Pieris brassicae* among two isolates, only one caused 26.67 per cent mortality. The isolates for both the insects those caused more or less pathogenicity after isolation belonged to single genus *Bacillus*.

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INTRODUCTION

In recent days the term 'Bio-intensive pest management' came in 2000 onwards and it may be a main component of second green revolution in India. One of the important ingredient of BIPM is the biological suppression of insect pests by employing pathogens like bacteria, fungus, virus, protozoa and nematodes as bio-control agents (Dutky, 1959) designated as 'microbial control' (Steinhaus, 1949).

There are so many records of natural occurrence of these entomopathogens in India. Green muscardine fungus on *Pyrilla* sp. was reported as insect pathogen in India by Kamat *et al.* (1952) and fungus on *Schistocerca gregaria* F by Misra in 1952. Subsequently, *Metarhizium anisopliae* was isolated from *Oryctes rhinoceros* (Nirula *et al.*, 1955). Thereafter, several

reports came in such as *Bt* on *Adisura atkinsoni* M. (Majumder *et al.* 1956), *Beauveria bassiana* Vuillemin and *Aspergillus parasiticus* on *Holotrichia consanguinea* (Rao and Vijayalakshmi, 1959), *Serratia marcescens* on *Spodoptera litura* (Pandey and Rangarajan, 1967), *Marmis* sp. on *Antigastra catalaunalis* D. (Patnaik and Das, 1969), nuclear polyhedrosis virus (NPV) on *Spodoptera litura* (Ramkrishnan and Tiwari, 1969) and *Bt* on *Spodoptera litura* (Rangaswami *et al.*, 1970). Oblisami *et al.* (1969) launched systemic survey of crop pests in Chennai and Mysore to study the incidence of microbial diseases. In this direction, Battu *et al.* (1971) carried out a survey work in Punjab during 1969-70. The pathogens isolated were non-spore forming bacterium, *Streptococcus faecalis* from *Spilosoma obliqua* W, *Pieris brassicae* L and *Spodoptera litura* F., spore forming bacterium, *Bacillus*