

Efficacy of Indigenous Entomopathogenic fungi *Beauveria bassiana* Isolate for the Control *Spodoptera littoralis* (Boisduval) (Lepidoptera: Noctuidae) under Laboratory Conditions

Zahraa J. Khadim¹ and Ali Zachi Abdulqader Alhilfi²

^{1,2}Department of Plant Protection, College of Agriculture, University of Basrah, Iraq.

E-mail: zj823621@gmail.com

Abstract. *Spodoptera littoralis* is a serious threat to tomato production worldwide as it can cause yield losses. The farmers used to use synthetic chemical insecticides to control this pest, which unfortunately selects resistant populations and entails public health risks. The aim of this study was to evaluate of indigenous entomopathogenic fungi *Beauveria bassiana* isolate against different stages of *S. littoralis* life. Results show high significant differences between the three concentrations of suspensions and fungi exudates of *B. bassiana* in addition differences among time of exposure on ratio of eggs hatching of *S. littoralis* the high rate of affected of *B. bassiana* suspension registered at concentration of 1×10^8 and at concentration 75% of *B. bassiana* exudates it was reached 32.28% and 34.15% respectively. The study showed that the mortality on 1st and 6th instar larvae of *S. littoralis* increased as concentration of fungi exudates of *B. bassiana* increased, it had been 20.51%, 24.65% and 33.45% at concentration 25%, 50% and 75% on 1st instar and reached 3.33%, 7.78% and 12.67% on 6th instar of *S. littoralis* larvae respectively. Moreover suspension fungi of *B. bassiana* superior at the concentration 1×10^8 conidia /1ml of distilled water in the mortality of 1st and 6th instar of *S. littoralis* larvae with a mortality rate 35.41% and 15.37% respectively. The results showed eggs and 1st instar of *S. littoralis* larvae more sensitive to suspensions and fungi exudates of *B. bassiana* than the 6th instar.

Keywords. Entomopathogenic fungi, Suspensions, Fungi exudates, 1st and 6th instar larvae.

1. Introduction

Tomatoes are one of the most consumed fruits and vegetables worldwide, as they are rich in dietary fiber, carbohydrates and vitamins, such as A and C as well as elements like boron, phosphorus and manganese [1]. Infected with many diseases and insects, including cotton leafworm *Spodoptera Littoralis* is one of the most widespread agricultural pests in the world, infecting many plant hosts including cotton, tomato, corn, and vegetables. In and causing great economic losses, *S. Littoralis* larvae had ability to attack a variety of plant structures, adversely affecting quality and causing economic losses [2]. Farmers use of conventional insecticides to control this pest led to development of resistance to different active ingredients of insecticides moreover affected on non-target insects, economic and environmental risk [3,4]. The increasing public knowledge of the hazard on human health and environment associated with the continuous use of synthetic insecticides has induced

