بیست و دومین کنگره گیاهپزشکی ایران

جمعاً مقالات کنگره

تدوین: رضا طلایی حسنلوی
استاد دانشگاه تهران
nazandehati pyrotrizik, afteh be shahr marun. shahid va keshef haei dadgahi afteh hefze shabbeh ba as haei dohph. misheen va az rabat ruzgar ba as haei dohph. 

Hubner, 1808 (Lepidoptera: Noctuidae) Spodoptera exigua

1380 (Gasterophilus contagiosus)

2632 (Gasterophilus contagiosus)

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Cellular and Humoral responses of Spodoptera exigua against entomopathogenic nematodes, Heterorhabditis bacteriophora and Steinernema carpocapsae.

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Entomopathogenic nematodes Heterorhabditis bacteriophora Poinar and Steinernema carpocapsae Filipjev are the important agents of biological control. Identification of host defense reactions against these agents can affect application of these nematodes. The current study was done to identify cellular and humoral defense reactions of the Spodoptera exigua against H. bacteriophora and S. carpocapsae. Seven individuals of infective juvenile were injected to beet armyworm larvae and defense reactions were addressed at 0.5, 1, 2, 4, 8, 12 and 16 hour post injection. The total hemocyte counts (THC) in injected larvae with S. carpocapsae increased to the maximum amount by 12 hours but it decreased afterward. While the total hemocyte counts in the injected larvae with H. bacteriophora showed the highest value at 4 hours post injection. The immune system of S. exigua larvae could recognize infective juveniles of H. bacteriophora as a foreign agent. By 0.5 hour after injection, 60% of the injected infective juveniles were attached to the hemocytes. After initial step of hemocytes attachment, complete encapsulation and melanization of H. bacteriophora were occurred by 12 and 20 hours after injection, respectively while, S. carpocapsae escapes from immune system of its host. In humoral defense aspect, activities of protease, phospholipase A2 and phenoloxidase were measured. Activity of protease enzyme in the treated larvae with H. bacteriophora and S. carpocapsae were the highest level at 4 h and 12 h post injection. The rate of phospholipase A2 that is produced at pathway of phenoloxidase synthesis, in the treated larvae by H. bacteriophora was almost stationary and but it increased at 12 hour post injection (0.29±0.01). While, the activity of this enzyme in the treated larvae with S. carpocapsae at 2 hour post injection reached to the maximum amount (0.3 pmol/min). Activity of phenoloxidase in the treated larvae by H. bacteriophora 2 hpi reached to the maximum count (1.52±0.05 U mg⁻¹) and then had a fixed process. But the amount of this enzyme reached to the maximum amount (1.83±0.37 U mg⁻¹) by 4 hpi in the treated larvae by S. carpocapsae. The obtained results indicated that cellular responses of S. exigua against S. carpocapsae were weaker than H. bacteriophora. Also protease, phospholipase A2 and phenoloxidase are involved in defense reaction of S. exigua against S. carpocapsae, but their quantity declined later rather than against H. bacteriophora, and although their amount were higher comparing to the corresponded amount in H. bacteriophora treated larvae.

Keywords: Insect pathology, Hemocyte, Protease, Phospholipase A2, Phenoloxidase