

Mass Spectrometry Congress 2019: Assessment of natural biorational extracts from ipomea carnea (jacq.) Against spodoptera littoralis (boisd.) - Mamdouh I Nassar - Cairo University, Egypt

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The cotton leaf worm, *Spodoptera littoralis* (Boisd.) is a highly polyphagous insect that causes serious damages to more than 112 plant species belonging to 44 different families in Africa. The toxic effect of *Ipomea carnea* extracts against fourth instar larvae of *Spodoptera littoralis* was evaluated under laboratory conditions. Based on LC50 and LC90 values, *Ipomea carnea* extracts were recorded (24.622 and 164.947 ppm respectively) for the most potent one (acetic extract) followed by hexane (232.677 and 15377.590 ppm respectively) and finally the alcoholic extract which doesn't reveal any toxicity until five days post treatment. Ultra structure sections were made for the epithelial cell of midgut and muscles for 4th instars larvae treated with LC25 and LC50 of acetic extract of *I. carnea* which caused vacuolization in the cytoplasm, degeneration of organelles and destruction of the plasma membrane according to the ultrastructure studies on *S. littoralis* larvae.

Ipomoea carnea is a species of morning glory. This flowering plant has heart-shaped leaves that are rich green and are 6 to 9 inches long. It can be easily grown from poisonous seeds and it can be dangerous to livestock; the toxicity is linked to the swainsonine produced by the endophytes and to the bioaccumulation of selenium species in the leaves but especially in the seeds. The stem of *I. carnea* can be used to make paper. The

plant also has medicinal value. It contains a component identical to marsiline, a sedative and an anticonvulsant. A glycosidic saponin has also been purified from *I. carnea* with anticarcinogenic and oxytoxic properties. A selection of *I. carnea*, 'Inducer', has been used as a rootstock to induce flowering of sweet potato cultivars which, on the other hand, are reluctant to produce flowers. refers to *I. leptophylla*.

Spodoptera littoralis, also called African cotton budworm or Egyptian cotton budworm or Mediterranean brocade, is a species of moth in the family Noctuidae. *S. littoralis* is found widely in Africa, Mediterranean Europe and countries of the Middle East. It is a highly polyphagous organism which is a pest of many plants and crops. As a result, this species has been labeled as an A2 quarantine pest by EPPO and has been warned as a highly invasive species in the United States. The devastating effects caused by these pests have led to the development of biological and chemical control methods. This butterfly is often confused with *Spodoptera litura*. The Egyptian cotton budworm is one of many species in the genus *Spodoptera* and the family Noctuidae. The family Noctuidae was named by a French zoologist, Pierre André Latreille, in 1809 and the genus Noctuidae was named by a French entomologist, Achille Guenée, in 1852. Many species of the genus *Spodoptera* are known to be insect pests.

Synonyms of *S. littoralis* include *Hadena littoralis* and *Prodenia littoralis*. Due to the similarities between many insect pests, there have been noted incidents of many species which are almost identical to *S. littoralis*. For example, *Spodoptera litura* or cotton budworm is often confused with *S. littoralis* because the larvae and adult stages of two species are almost identical. However, Viette demonstrated that they were two different species, as *S. litura* resided mainly in Asia, Australia and the Pacific Islands.

The adult butterfly has a size that varies from 15 to 20 mm and a wingspan of 30 to 38 mm. The forewings of the species are gray-brown in color and have an ocellus constructed by oblique white lines. The hind wings are generally much paler and have gray margins. *Spodoptera littoralis* is often confused with *Spodoptera litura* due to the similar larvae and adult physical appearances. A bright yellow band along the dorsal surface of the larvae is characteristic of *S. litura*. However, due to the variability of the markings, the only sure way to tell the two species apart is to compare the genitals. Specifically, the ductus and ostium bursae are known to be the same length in *S. littoralis* females, but different in *S. litura* females. Likewise, *Prodenia ornithogalli* has been reported to be an American representative of *S. littoralis* because the forms of the two species are extremely close and related.

The African cotton budworm is native to Africa and also resides in most parts of Middle Eastern countries like Israel, Syria, and Turkey. Specifically, the species' natural habitat is F5 (EUNIS code), which is semi-arid and subtropical habitats in pre-Saharan Africa. This species has also been found in southern and Mediterranean Europe, mainly

in Spain, France, Italy and Greece. As the African cotton budworm is cold prone, the species' natural range is limited in areas of northern Europe such as the United Kingdom. The optimum temperature for the species' reproductive potential is around 25 °C, so areas with lower winter temperatures or fluctuating temperatures exhibit a limited species distribution. Studies have shown that temperatures above 40 °C or below 13 °C show increased mortality. The combination of high temperature and low humidity is detrimental to the survival of the species as temperatures above 40 °C or below 13 °C tend to increase the mortality rate. As a result, *S. littoralis* resides in regions where temperature fluctuations are rare to feed on various host plants, in which females lay eggs and larvae mainly grow. Species distribution occurs primarily through trade when eggs or larvae are found on ornamentals or imported crops. Adult butterflies are often distributed by the wind but are also carried by other species. Adult butterflies also fly.

There are many recorded species and families of plants on which the *S. littoralis* larvae feed. Specifically, the range of host plants that *S. littoralis* feeds on covers more than 40 different plant families and at least 87 different plant species. Larvae of *S. littoralis* prefer to feed on young leaves, young shoots, stems, capsules, buds and fruits. Some of these host plants are also known to affect larval growth.

Biography:

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He is the Dean Faculty of Science, Cairo University; Vice Dean of Postgraduate studies and Research; Visitor exchange of International Program member staff, University of Maryland College Park, USA and Environmental System Service (ESS), Beltsville Maryland USA. He did his PhD Degree (Channel system) in University of Maryland College Park, USA and Cairo University, Egypt. He is the author of 10 Biological Scientific books published at German Share House Lambert 2015,

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