

## The Active role of fatty acid amino acid conjugates in nitrogen metabolism in *Spodoptera litura* larvae



*Spodoptera litura* on Chinese cabbage

Since the first fatty acid amino acid conjugate (FAC) was isolated from regurgitant of *Spodoptera exigua* larvae in 1997 [volicitin: N-(17-hydroxylinolenoyl)-L-glutamine], their role as elicitors of induced responses in plants has been well documented. However, FAC biosynthesis by caterpillars is seemingly a paradox since some FAC-induced volatile emission in plants attracts the caterpillar's natural enemies. Manifestly, the FAA's must play a critical role in caterpillar metabolism or they would have been eliminated through evolution. Results of a collaborative study between the Naoki Mori lab at Kyoto University and the Tumlinson lab at Penn State, CCE strongly suggest that FACs play an active role in nitrogen assimilation in Lepidoptera larva and that glutamine containing FACs in the gut lumen may function as a form of storage of glutamine, a key compound of nitrogen metabolism.

Naoko Yoshinaga, Takako Aboshi, Hiroaki Abe, Ritsuo Nishida, Hans T. Alborn, James H. Tumlinson, and Naoki Mori, **Active role of fatty acid amino acid conjugates in nitrogen metabolism in *Spodoptera litura* larvae**, Proceedings of the National Academy of Sciences 105: 18058-18063 (2008).