

## The Importance of Salivary Enzymes in Sunn Pest-Wheat Interaction

Saadati M\*

Department of Plant Protection, Faculty of Agriculture, University of Birjand, Birjand, Iran

\*Corresponding author: Mohammad Saadati, Department of Plant Protection, Faculty of Agriculture, University of Birjand, Birjand, Iran, Tel: 98-561-2254041, E-mail: m-saadati@birjand.ac.ir

Rec Date: February 22, 2015, Acc Date: February 23, 2015, Pub Date: February 26, 2015

Copyright: © 2015 Saadati M. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Editorial

Salivary gland has critical role in beginning of extra oral digestion in hemipterous insects. In this approach of digestion, some of salivary enzymes injects to plant tissue and after liquefying, food materials pumped to gut for final digestion. As a case study, salivary gland of sunn pest was studied by different researches and some of effective enzymes in digestion of proteins, lipids and carbohydrates were reported.  $\alpha$ -glycosidase [1], Protease [2],  $\alpha$ -amylase [3] were some of identified enzymes using prevalent methods. These approaches were focusing on the enzyme purification and then confirmation with optic assays. Nowadays, Proteomics is new opportunity for focusing on the profile of proteins in target tissues. Theses technique not only identified a set of proteome but also prepared important data about proteins interactions. Trypsin [2,4], chymotrypsin [2,4],  $\alpha$ -amylase [3,4], serin protease ssp3 [4] as digestive enzymes; arginin kinase [4,5], phospholipase A2 [4,5], glucose dehydrogenase [4] and vacuolar H<sup>+</sup>-ATP ase [4] as housekeeping proteins were reported from salivary glands of sunn pest using proteomics technique.

As a whole, identification of salivary proteins, introduced new targets for using of inhibitors as biopesticides. Although, the most of salivary proteins in sunn pest is not identified, but new research should be focus on the some important enzyme that affected sunn pest plant interactions. A set of series of different inhibitors with mineral and non-mineral origin were tested against digestive enzyme of salivary gland in sunn pest [6]. The main problem in previous jobs was that there was not accurate correlation between in vitro and in vivo experiments. The correlation value can be used as index to running the future studies.

In practice, identification and investigation of salivary enzymes of sunn pest was the first step to understanding of insect-plant interactions. Although salivary enzymes of insects are necessary catalysts to exploit from plants (in this case: wheat and barley), also they can elicit or suppress defense system of their hosts. Identification

of key enzymes in regulation of insect plant relation increased our chance to finding appropriate enzyme inhibitors and after it may be used as potential disruptors to changed interaction in favor of plant protection programs.

Nowadays, choosing of appropriate target is major challenge in biochemistry of insects. On the other hand, assessment of unwanted risks especially on the non-target organisms should be considered as serious concerns. Using of different inhibitors against salivary enzymes may be practical in near future, but discussion about how do outspread mono or more functional inhibitors and production of genetically modified plant is open by now. The study of salivary enzymes in sunn pest and its effects on the plant tissue is interesting field that needs to be complete in the future.

### References

1. Bandani AR, Kazzazi M, Allahyari M (2010) Gut pH, isolation and characterization of digestive  $\alpha$ -D-Glucosidase of sunn pest. *Journal of Agricultural Science and Technology* 12: 265- 274.
2. Hosseinaveh V, Bandani A, Hosseinaveh F (2009) Digestive proteolytic activity in the Sunn pest, *Eurygaster integriceps*. *J Insect Sci* 9: 1-11.
3. Saadati M, Farshbaf R, Sadeghi H, Golmohammadi Gh (2008) Some properties of alpha-amylase in the salivary gland of *Eurygaster integriceps*. *Mun Ent Zool* 3: 733-743.
4. Saadati M, Farshbaf Pourabad R, Toorchi M, Zarghami N, Komatsu S (2012) Protein patterns in salivary gland of sunn pest, *Eurygaster integriceps*. *Turkish J Entomol* 36:71-80.
5. Bezdi MS, Toorchi M, Pourabad RF, Zarghami N, Nouri MZ, et al. (2012) Proteome analysis of gut and salivary gland proteins of fifth-instar nymph and adults of the sunn pest, *Eurygaster integriceps*. *Arch Insect Biochem Physiol* 81: 105-119.
6. Saadati M, Farshbaf R, Valizadeh M, Yazdanian M (2007) Effects of some mineral compounds on the salivary  $\alpha$ -amylase activity of the sunn pest, *Eurygaster integriceps*. *Turk J Entomol* 31: 163-173.