

رقم البحث: (2)

عنوان البحث باللغة الانجليزية:

The Differences in the Digestive System and Enzymes between Soldiers and Workers of the Subterranean Termite, *Psammotermes hypostoma* Desneux (Rhinotermitidae: Isoptera)

اسم المجلة – سنة النشر:

Egyptian Academic Journal of Biological Sciences. A, Entomology, 2019, 12(3):49-61

المؤلفين:

Huda R. K. Ali, **Alaa Ropy** & M. A. Batt

الملخص باللغة الإنجليزية:

ABSTRACT

Of eight termite species found in Egypt, the subterranean termite *Psammotermes hypostoma* Desneux is considered as the most important serious pest, which destroy the wooden structures in buildings and other wood products or any material containing cellulose. Therefore, cellulases enzymes are considered the main enzymes in the digestive system of termite. The termite digestive system is considered a target for best control. This report discusses the descriptive variations of alimentary canals for the worker and the soldier, also, the detection of three digestive enzymes; two of them belonging to cellulases enzymes (endo- β -1,4-glucanase, and cellobiase (β -glucosidase) and the third is amylase in guts extracts from the termite workers and soldiers. The workers had higher endo- β -1,4-glucanase and amylase activities, while soldiers had higher cellobiase (β -glucosidase) activity. It is clear that the presence of α -amylase in the digestive system of *P. hypostoma* workers and soldiers means that this species of termite is able to decompose starch, which explains why termites attack grain silos. Effect of temperature and PH on enzyme activity showed that the optimum temperature /PH for workers were 70 °C/ PH6 for endo- β -1,4-glucanase, 50 °C/PH6 for cellobiase (β -glucosidase) and 70 °C/pH 7 for amylase, while, in case of soldiers, optimum temperature/pH were 70 °C/PH6 for endo- β -1,4-glucanase, 40 °C/PH6 for cellobiase (β -glucosidase) and 60 °C/PH 7 for amylase. This work is the first in Egypt concerning the study of the enzymes activities of the digestive system of termite and may be considered an initial step to contribute to control this species of termite by the development of new termiticides.