

## Study of Antennal Glands Role on Osmoregulation of Crayfish (*Astacus leptodactylus*)

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### Abstract

The Osmoregulation is one of the active mechanisms in crayfish that is performed by antennal glands, digestive tract and gills. In this investigation, the effect of salinity shock on the variations of antennal gland cells in narrow-clawed crayfish (*Astacus leptodactylus*) was studied. Salinity experiment treatments were 4, 6, 8, 10 and 12gr/l with 3 replicates with control group. The specimens were gradually transferred from freshwater to salt waters. After 72 hours, all the crayfishes were suddenly transferred from freshwater to saltwater in order to make salinity shock. For histology studies, antennal glands samples were taken from the crayfish before and after salinity shock and immediately fixed in Bouin solution. 5 $\mu$  sections of sectioned were prepared and stained by Hematoxylin-Eosin general staining method, then, they were studied with Micrometer and light microscopic. In histological study of antennal glands, with increasing the salinity, the antennal glands cells size decreased. In contrast, after salinity shock, the size of antennal glands cells was increased to 59.12, 62.18, 70.13, 77.66 and 79.18  $\mu$  in 4, 6, 8, 10 and 12 gr/l, respectively and hyperplasia was clearly observed in treatment specimens. The results of statistical analysis showed significant relationship between environment osmolarity and cells size ( $P < 0.05$ ). These changes indicate the increasing in cell osmolarity, water absorption and consequently increasing of antennal glands cells size in each treatment after shock. The results of the study showed that variations in salinity and osmolarity affect antennal glands cells and through the water uptake or intake body osmolarity is regulated.

Keywords: *Antennal glands, Cell Changes, Salinity, Crayfish, Astacus leptodactylus.*

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