

PHENOLOXIDASES FROM *RHODNIUS PROLIXUS* FAT BODY,
HEMOLYMPH AND MIDGUT: TEMPORAL EXPRESSION PATTERN AND
REGULATION BY ECDYSONE.

Souza,R.S., Garcia,E.S., Azambuja,P., Genta,F.A.
IOC, FIOCRUZ
raquelsantos@ioc.fiocruz.br

Insect Phenoloxidasas (POs) are involved in sclerotization, healing and immune defense. PO is secreted as an inactive form, prophenobxidase (PPO). Despite its importance, few insect POs were studied. We determined the temporal pattern of PO/PPO production in different tissues of *R. prolixus* nymphs and tested if they are affected by feeding insects with azadirachtin (inhibitor of ecdysone release) or azadirachtin plus ecdysone. During 5th-instar, specific activities (Abs/min.mg protein) of PO (and PPO) range between 0-0.00071 (0.00015-0.00076), 0.001-0.02 (0.01-0.035), 0.00026-0.013 (0.00041-0.11) and 0.0083-0.069 (0.046-0.11) in fat body, hemolymph, stomach contents and tissue, respectively. Posterior ventriculus did not show PO/PPO activities, and azadirachtin did not change the ranges above.

Fat body PPO peaks at 7, 12 and 16 days after blood feeding, with maximum activation at 12 days. Azadirachtin diminishes PPO at 12 and 16 days and makes activation irregular. Hemolymph PPO peaks at day 14 and its activation decreases along days. Azadirachtin makes it to reach maximum levels only after 19 days with an increasing activation pattern. Stomach contents show a very active PPO before feeding, an increasing pattern after blood ingestion with a small peak at 9 days and maximum levels just before molting. Stomach epithelia showed a similar temporal pattern. These patterns suggest that luminal PPO is secreted by midgut cells. PPO activation in stomach contents showed an increasing pattern, (range 10-100%), with higher percentages at the stomach epithelium (25-100%). Azadirachtin supresses some of these peaks, and changes its pattern of activation. Azadirachtin plus ecdysone partially restores expression patterns of PPO and PO, indicating that these activities are related to production of the hormone ecdysone.

Supported by FAPERJ, CNPq and FIOCRUZ

Keywords: *Rhodnius prolixus*, phenoloxidase, ecdysone, azadirachtin