



Programmed cell death in salivary glands of *Drosophila arizonae* and *Drosophila mulleri*

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ABSTRACT. Programmed cell death (PCD) in insect metamorphosis assumes a great diversity of morphology and controlling processes that are still not well understood. With the objective of obtaining information about the PCD process, salivary glands of *Drosophila arizonae* and *D. mulleri* were studied during larval-pupal development. From the results, it can be concluded that the type of the PCD that occurs in these organs is morphologically typical of apoptosis (formation of apoptotic nuclei, followed by fragmentation into apoptotic bodies). Histolysis happens in both species, between 22 and 23 h after pupation. There were no significant differences between the species studied. Apoptosis does not occur simultaneously in all cells. Cytoplasmic acid phosphatase activity gradually increases during development, suggesting the existence of acid phosphatases that are only expressed during the apoptotic stage. Twenty hours after pupation, salivary glands already show biochemical alterations relative to nuclear permeability such as acidification, possibly due to the fusion of lysosomes with the nucleus a few hours before apoptosis. Autophagy seems to act together with apoptosis and has a secondary role in cell death.

Key words: *Drosophila*; Programmed cell death; Salivary gland; Development; Acid phosphatase; Acridine orange