ATG6 DURING OOGENESIS AND EARLY DEVELOPMENT OF THE INSECT VECTOR RHODNIUS PROLIXUS

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In insects, embryo development occurs inside the egg, away from the maternal organism. Thus, all nutrients necessary for the embryo cells to proliferate are previously stored in the oocytes during oogenesis. These nutrients (mostly yolk proteins) are stored into organelles called yolk granules, and are degraded in a regulated manner during early embryogenesis in order to supply de embryo with fundamental molecules. Autophagy is a cellular mechanism widely conserved that leads to the degradation of intracellular organelles and complexes through a lysosomal pathway, with the goal to recycle biomolecules for the cell. The autophagy pathway is regulated by a group of genes called autophagy related genes (ATGs), which act in different steps of the autophagosome nucleation, expansion and fusion with the lysosome. Here, we intend to investigate if the autophagy pathway is active in the major process of yolk degradation that happens during early embryogenesis of the insect vector Rhodnius prolixus. ATG6 functions as part of a complex called Class III phosphatidylinositol-3-kinase, with a role in the nucleation of the autophagosome, and is the only ATG known to participate in other pathways of programmed cell death. Thus, we intend to investigate the location and function of ATG6 in the oocytes and eggs of R. prolixus. The ATG6 ortholog of R. prolixus (RpATG6), was identified and its sequence was analyzed in silico. The four conserved domains of ATG6 were identified and specific primers were designed. The expression levels of RpAtg6 in the oocytes and eggs were assayed by qPCR. So far, our data allowed us to infer that RpAtg6 is expressed in oocytes and eggs and that vitellogenic oocytes have the higher expression levels of RpATG6 (~3 times the levels of previtellogenic oocytes), probably due to the functional role of the follicular epithelial cells.

Key words: Autophagy; Atg6; Rhodnius prolixus.