

Autophagy in The Ovarian Follicular Atresia in The Insect Vector *Rhodnius prolixus*

Pereira, J.C.T.; Masuda H., Ramos, I.B.

Instituto de Bioquímica Médica, Centro de Ciências da Saúde, Universidade Federal do Rio de Janeiro, UFRJ, Rio de Janeiro, RJ, Brasil.

Rhodnius prolixus is an insect vector that uses blood feeding to obtain nutrients and to produce oocytes. During oogenesis a massive storage of macromolecules is delivered to the oocytes by receptor-mediated endocytosis, resulting in a typically complex cytoplasm packed with organelles containing yolk macromolecules. Once fertilized, the eggs are placed in the environment holding all the macronutrient storage required for embryo growth, and part of this storage is mobilized by an unknown degradation mechanism. Autophagy is a process by which cells degrade cytoplasmic components through a lysosomal pathway in a regulated manner. In our lab, we study autophagy as a mechanism for the macronutrient mobilization that takes place at early development using the insect *R. prolixus* as a model. Oocyte atresia is a mechanism for resorption of developing oocytes in response to immune challenges in order to divert the nutrient resources invested in oocyte formation to the infection response. It involves a rapid and massive degradation of the oocyte reserve macromolecules, still at oogenesis, and reutilization of its products by the organism. We used Wortmannin, 3-MeA and Rapamycin as autophagy modulators to characterize possible phenotypic changes in the oocyte formation and resorption. Injections of Wortmannin (370 µM) in vitellogenic females resulted in no changes in oviposition, but a decrease in 40% of egg viability was observed. Rapamycin (180 µM) injections also resulted in 70% decrease in the eggs viability. In a different approach, we also injected vitellogenic females with Zymosan-A to trigger an immune response two days after blood feeding. Three days later, as expected, the immune challenge resulted in the resorption of oocytes and we intend to test those atresic oocytes for the presence of autophagy markers such as ATG8-II and p62. Polyclonal antibodies against RpATG8 and RpP62 were raised and the anti-sera are currently being tested.

Key words: Autophagy; Follicular Atresia; *Rhodnius prolixus*.