Effects of Protein Kinase B (PKB/Akt) and Glycogen Synthase Kinase-3 (GSK3) Knockdown in *Aedes aegypti* Mosquitoes

Novelli, D.G.¹; Abreu, L. A.²; Rezende, G. L.³; Logullo, C⁴.

¹,²,⁴ Setor de Entomologia Molecular, Unidade de Experimentação Animal- RJ and ³LQFPP- CBB, UENF

*Aedes aegypti* mosquitoes are important disease vectors in tropical and subtropical areas, notably for Dengue and Yellow Fever. Insulin signaling pathway (ISP) was described in *A. aegypti* as highly conserved, in comparison with other vertebrate and invertebrate models. Moreover, ecdysteroids production is stimulated by ISP in *A. aegypti* ovary and suggests an important role in egg maturation process. Protein Kinase B (PKB/Akt) and Glycogen Synthase Kinase 3 (GSK3) are both components in ISP, and Akt activity is classically associated with cell survival, cell size and metabolism. GSK3 is inhibited once phosphorylated by Akt, and participates in glycogen synthesis regulation. In this work Akt and GSK3 knockdown was performed in *A. aegypti* mosquitoes by specific dsRNA (dsAkt or dsGSK) injection in females. Gene silencing was confirmed by qPCR analysis in ovaries for both enzymes, but just for GSK3 in carcass. We analyzed the effects in oviposition and a decrease in egg numbers was observed only for dsAkt injected females. Additionally, Akt transcripts were considerably lower in eggs from Akt silenced females, strongly suggesting the occurrence of transovarian silencing in *A. aegypti*. On the other hand, GSK3 transcripts in eggs laid by females injected with dsGSK3 were not altered. These results indicate that Akt may probably play an important role for oogenesis and more experiments are necessary for understand about it role in embryogenesis.


Supported by: FAPESP, CNPq and CAPES