

SUGAR DIGESTION IN NEO-TROPICAL ANOPHELINE MOSQUITOES. A NEW PATHWAY TO VECTOR CONTROL?

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Mosquitoes obtain sugars mostly from the nectar of flowers. These carbohydrates provide an important source of energy for flight, also contributing to increase longevity and fecundity. It was previously shown that sugar digestion occurs mainly in the midgut *Anopheles aquasalis* mosquitoes and not in the crop as it was believed. Moreover, it was revealed that a sugar-free diet increases the mortality rate in these females, even if they frequently feed on blood. In the current work we were looking for α -glucosidases (enzymes which hydrolyze sucrose) coding genes. Furthermore, it was desirable to test the importance of these enzymes for mosquitoes life maintenance. Three midgut-specific α -glucosidase cDNA fragments were firstly identified and sequenced (*Aqglu1*, *Aqglu2* and *Aqglu3*). Real-time PCR analysis revealed that these genes are expressed in different levels in all mosquito evolutive stages. However, gene expression after sugar meal was studied only in adults. *Aqglu1* and *Aqglu3* expression was boosted after the ingestion of sucrose, the first one in the anterior midgut, and the second one in the posterior midgut, suggesting that they probably perform different roles on sugar digestion. Moreover, the injection of α -glucosidase specific double-stranded RNAs led to an increase on the mortality of injected females, suggesting that this path can be further exploited for vector control.

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