Expression of Lipase Genes in *Aedes aegypti* Females in Distinct Feeding Conditions.

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Introduction: *Aedes aegypti* females are vectors of viruses including yellow fever, dengue, chikungunya and zika virus and also some protozoa as *Plasmodium*. Some lipases besides the hydrolysis of lipids can present anti-viral activity. Previously, we characterized the digestive lipase activity on *Aedes aegypti* larvae and female adults fed on blood and on sucrose. The analysis of *A. aegypti* genome allowed the identification of 70 lipase genes. **Methods**: *In silico* analysis, RT-PCR and qPCR test using cDNAs from the midgut of adult females fed on distinct conditions were used in order to evaluate lipase expression. **Results and Discussion**: Phylogenetic analysis evidenced that the lipase genes are distributed in distinct lipase groups suggesting that they have different physiological roles or specificities. From the 70 lipase genes, 8 were correspondent to catalytic active and secreted enzymes and were used in qPCR tests to identify genes exclusively expressed in the midgut. Two genes were exclusively expressed in the midgut; one exclusively expressed on larvae midgut (LypL) and the other one on adult female midgut (LypA). RT-PCR showed that the expression of lipase is not regulated by the quality of food, since the expression of lipase in females fed on sucrose and fed on blood is the same. The analysis of time after feeding and lipase expression evidenced that the expression level is maintained for at least 15 hours. The cDNA from *A. aegypti* females fed on *Plasmodium gallinaceum* infected chicks was submitted to qPCR analysis to evaluate up/down expression of lipases. Lipase expression was not altered between infected or not infected feeding. However the life cycle of *Plasmodium* suggest that the midgut cell invasion would only occur in a second cycle of feeding. A new group of *A.aegypti* females was prepared in order to evaluate these conditions and elucidate lipase expression. Conclusion: Lipase studies in A. aegypti should be expanded.

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