

Fatty Acid Elongases (ELOVLS) and Developmental Changes in *Rhodnius prolixus*.

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Introduction: The insect cuticle is covered by a mixture of hydrocarbons (HC) and other fatty acid-related components, with an essential role in insect physiology, survival and chemical communication. Fatty acids are elongated by elongases (ELOVLs) with different substrate specificity. In *Rhodnius prolixus* (Hemiptera:Reduviidae), a major vector of Chagas disease, no information is available on the ELOVL genes that regulate the chain length of their fatty acyl-CoA products, precursors to cuticle HCs. A variation in the relative amount of straight chain HC from C27 to C33 between nymph and adult stages was detected. Although little is known about hormonal regulation on cuticle lipid metabolism, alterations on HC production were reported after juvenile hormone biosynthesis suppression in other insect species. We hypothesize that hormonal changes during metamorphosis might regulate the expression of ELOVL genes, affecting the HC pattern. **Objectives:** Identify the ELOVL genes in *R. prolixus* and analyze ELOVL gene expression during metamorphosis to adult stage. **Methods and materials:** Contig sequences of the *R. prolixus* genome were obtained from VectorBase. Gene identification was made using the software FAT with the consensus sequence of various domains from the Pfam database. To analyze gene homologies, protein sequences were aligned using ClustalW2.0, and dendrograms were constructed using the maximum likelihood method in MEGA6.0 software. The expression of ELOVL genes between IV-stage nymphs and adults was compared by quantitative PCR using specific primers based on the identified sequences. **Results and Discussion:** Several ELOVL genes have been reported in insect genomes, although their functions remain mostly unknown. Ten ELOVL genes were identified, showing high sequence homology with other insect ELOVLs. **Conclusions:** The analysis of the effect of developmental changes on the expression of the identified ELOVL genes will be discussed with special emphasis in those responsible for the formation of very long chain fatty acids precursors to major HCs in *R. prolixus*.

Keywords: *Rhodnius prolixus*, Chagas disease, cuticle hydrocarbons, fatty acid elongases.

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