

Inhibition of *RpACBP-1* Expression by RNA Interference Affects Lipid Metabolism in *Rhodnius prolixus*

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Acyl-CoA-binding protein (ACBP), a highly conserved 10 kDa intracellular protein, binds long straight-chain acyl-CoA esters with very high affinity, and protects them from hydrolysis, thus functioning as a reserve of these lipids by regulating their availability for a variety of metabolic purposes. *Rhodnius prolixus* ACBP has been identified in a midgut cDNA library and its sequence is stored on Genbank (EU233793). Using a combination of Blastn and GenSeed bioinformatics software, we were able to assemble the corresponding gene in *Rhodnius prolixus* genome. This gene was named *RpACBP-1*. RNA interference technique was used to inhibit *RpACBP-1* expression, and neither mortality nor weight loss were affected. However, this inhibition caused a small reduction on egg laying. Eggs laid by silenced females had ~20% more triacylglycerol when compared to eggs from control females, although there was no difference in total lipid content in the ovary. Furthermore, silenced females showed a 45% reduction in triacylglycerol content in fat body at fourth day after blood meal. The analysis of the already available *Rhodnius prolixus* genome sequences, it was possible to identify at least three other genes coding proteins with acyl-CoA-binding domains. It is possible that, when *RpACBP-1* is inhibited, its metabolic functions are overtaken by the other three genes that were not inhibited. This study brings on some information about ACBP role in insect lipid metabolism, although much more work is still necessary to define its functions. Supported by CNPq, CAPES and FAPERJ.