HMGB1 from *Aedes aegypti*: Cloning, Expression and Function.

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The chromosomal High Mobility Group Box 1 (HMGB1) proteins have been characterized as DNA architectural factors for transcription, DNA repair and recombination. HMGB1 bind to distorted DNA structures, bend and partially unwind duplex DNA. In addition, HMGB1 has been shown to bind structured RNA. HMGB1 also functions to enhance the binding affinity of steroid receptors to their target promoters and to stimulate receptor transcriptional activity. HMGB1 proteins contain two DNA binding motifs, the HMG boxes A and B, as well as a long acidic C-terminus. We have cloned and functionally characterized the *Aedes aegypti* HMGB1 (AaHMGB1). AaHMGB1 contains the two conserved DNA binding motifs, but a short acidic tail. Curiously, AaHMGB1 contains a unique C-terminus rich in glutamine and alanine. We showed that AaHMGB1 was able to sharply bend a 123 bp DNA fragment. AaHMGB1 was also able to promote DNA supercoiling. RT-PCR analysis revealed that AaHMGB1 is expressed throughout the mosquito development, from eggs to adult male and female. In conclusion, we have shown that AaHMGB1 is functionally active and might play important roles in mosquito biology. In this respect, we anticipate that, like its human counterpart, AaHMGB1 might act as an enhancer factor for a steroid receptor such as the ecdysone receptor. In addition, considering that human HMGB1 has been shown to bind to viruses DNA and RNA, we postulate that AaHMGB1 might modulate dengue virus replication.

Key words: HMGB1; *Aedes aegypti,* DNA binding; DNA supercoiling.