Probing the Role of Xanthurenic Acid in the Physiology of *Aedes aegypti*

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**Introduction:** In the midgut of the mosquito *Aedes aegypti*, a vector of dengue and yellow fever, heme and iron are released during the digestion of a blood meal. We previously demonstrated that high amounts of xanthurenic acid (XA), a product of the oxidative metabolism of tryptophan that binds heme and iron, are produced in the digestive apparatus after the ingestion of a blood meal. XA formation does not occur in the White Eye (WE) strain, which lacks kynurenine hydroxylase and accumulates kynurenic acid. Here we studied the importance of XA to the physiology of *Aedes*. **Material and Methods:** Effects on intestinal microbiota were evaluated by CFU counting and isolation, and 16S q-PCR. Degradation of blood proteins was evaluated by SDS-PAGE. Cell death was evaluated by staining with propidium iodide. **Results and Discussion:** Mosquitoes of the WE strain showed reduced ovarian growth and laid less eggs than WT strain. The midgut epithelial cells of the WE mosquito had a marked increase in occurrence of cell death, which was reversed to levels similar to the wild type by feeding the insects with XA supplemented blood, confirming the protective role of this molecule. WE mosquito showed decreased formation of the peritrophic matrix and reduced rate of digestion compared to WT. Bacteria population was increased in the WE strain, both by CFU counting and 16S. We also isolated two different bacteria present in the gut of both strains which growth rate was reduced by XA. **Conclusions:** XA is an important component of the digestive process with major effects on mosquito physiology, acting as an antioxidant that protect midgut epithelial cells and modulating digestion of blood meal. XA also interfering with microbiota growth, possibly by limiting iron availability to microorganisms.

Key Word: Xanthurenic acid, *Aedes aegypti*, Tryptophan metabolism, Physiology, Digestion

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