

Oxidant-Mediated Immunity Against an Oral Bacterial Infection in the Disease Vector *Aedes Aegypti* – The Influence of Blood and Its Pro-Oxidant Molecules

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The presence of bacteria in the midgut of mosquitoes antagonizes infectious agents such as Dengue and Plasmodium and acts as a negative factor in its vectorial competence. Molecules with potential to interfere in bacterial establishment in the midgut may be used as tools to reduce disease transmission. We hypothesized that toxic reactive oxygen species (ROS) produced by epithelial cells control bacterial growth in the midgut of *Aedes aegypti*. We used oxidant-sensitive dyes to show that immediately after blood meal ROS signal is greatly reduced and only returns to initial levels in the end of digestion, after mosquito excretion, suggesting that after blood ingestion mosquitoes have to change the way oxygen is handled, to decrease ROS generation and avoid the contact between these species and blood-derived pro-oxidant molecules, such as heme and iron, which could lead to oxidative damage in mosquito tissues. To test if the presence of ROS in the gut of sugar-fed mosquitoes are being used as killing molecules to control the growth of gut microbiota, we fed *Aedes aegypti* in the presence of bacteria, with or without ascorbate. Survival curves revealed that the absence of ROS results in mosquito death, while the presence of ROS enhances its survival, possibly through a direct antagonizing effect on bacterial infection.

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