

## **THE PHYSIOLOGICAL ROLE OF HEME OXYGENASE IN *Aedes aegypti***

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Heme oxygenase (HO) is responsible for heme breakdown, leading to the formation of CO, ferrous ion and biliverdin IX alpha (BV). This pathway has already been described in several organisms. In mammals HO has been related to many biological processes as apoptosis, inflammation, and vasodilatation. Besides the capacity to ameliorate toxic effects of heme, HO can be protective because BV, one of the products of the enzyme, is a powerful antioxidant. In the mosquito *Aedes aegypti* we have previously characterized an unique heme degradation pathway that results into an alpha biliverdin isomer conjugated to two glutamine residues, thus generating a hydrosoluble bilin pigment. We observed that HO is expressed in many tissues of *A. aegypti*. Furthermore, HO expression is induced in the midgut by blood feeding and in the ovaries during oogenesis. We investigated the antioxidant capacity of AaBV, showing that it is able to prevent protein oxidation by free radicals. This protection occurs in a dose dependent manner, as also observed for biliverdin IX alpha and trolox, well-known antioxidants. We suggest that HO activity can be an important regulator of redox balance in the mosquito midgut.

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