

Effect of Different Concentrations of Heme on the Growth of Bacteria Isolated from the Midgut of *Aedes aegypti*

Mota, G.P., Silva, N.D., Machado, S.H., Ribeiro, J.P., Rodrigues, R.C.C., Berbert-Molina, M.A., Lemos, F.J.A.

Laboratório de Biotecnologia, Centro de Biociências e Biotecnologia, Universidade Estadual do Norte Fluminense Darcy Ribeiro, Rio de Janeiro, Brasil.

Introduction: The mosquito *Aedes aegypti* is vector of diseases such as dengue, yellow fever, chikungunya fever and zika, which represents a great threat to public health worldwide. The females mosquitoes feed primarily on blood. A part of the heme released during blood digestion binds to the peritrophic matrix and remains in the intestinal lumen, which helps to reduce the oxidative effects of free heme. Our research group has been isolated and characterized microbiota associated with the epithelium of the midgut of the insect, and data suggest that microbial activity may contribute to neutralize the toxic effects of heme. **Objectives:** The work aimed to investigate the ability of some of these bacterial species, *Pseudomonas putida*, *Chryseobacterium gleum*, *Pantoea* sp., to growth in media containing heme, using submerged fermentation assays, in order to investigate the effective role of microbiota as auxiliary against oxidative stress generated by heme. **Material and Methods:** Bacterial isolates were grown in shake flasks at 30 °C and 110 min⁻¹ using CASO media supplemented with 5 to 100 µM of heme. Cell growth was evaluated by optical density. *C. gleum* was also assayed by plate count on solid medium containing 0.5 or 1.0 mM of heme. **Results and Discussion:** All isolates demonstrated the ability to heme uptake as iron source for growth in media with increasing heme concentrations. There was also evidence that at 100 µM, heme improves the growth rate and total cell production. On solid media, there was a significant inhibition of growth of *C. gleum* by such heme concentrations. **Conclusions:** The data indicate the possibility of these bacterial species to tolerate the toxic effects caused by heme during blood digestion in *A. aegypti*.

Keywords: *Aedes aegypti*, Gut Microbiota, Heme.

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