

DYNAMICS OF TRANSGENIC ENTERO-BACTER CLOACAE-GFP-DEFENSIN IN ANOPHELES STEPHENSI UNDER LABORATORY CONDITION

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Background: Enterobacter cloacae bacterium is a known symbiont of most Anopheles gut microflora and nominated as a good candidate for paratransgenic control of malaria. However, the population dynamics of this bacterium within An. stephensi and its introduction methods to the mosquitoes have not yet been explored.

Methods: Enterobacter cloacae subsp. dissolvens expressing green fluorescent protein-defensin (GFP-D) was used to study transstadial transmission and the course of time, larval

habitat, sugar, and blood meal on dynamics of the bacterium in the mosquito life stages. The bacterial quantities were measured by plating samples and counting GFP expressing colonies on the Tet-BHI agar medium

Results: The E. cloacae population remained stable in sugar bait at least for eleven days whereas it was lowered in the insectary larval habitat where the bacteria inadequately recycled. The bacterium was weakly transmitted transstadially from larval to adult stage. The bacterial populations increased smoothly and then dramatically in the guts of An. stephensi following sugar and blood meal respectively followed by a gradual reduction over the time.

Conclusion: This study showed that E. cloacae was highly stable in sugar bait and increased tremendously in the gut of female adult An. stephensi within 24 hours post blood meal. Sugar bait stations can be used for introduction of the transgenic bacteria in a paratransgenic approach. It is recommended to evaluate the attraction of sugar bait in combination with attractive kairomones as well as its stability and survival rate in the semi-field or field conditions.