Tittle

Direct and Indirect Effect of Predators on *Anopheles Gambiae*sensu Stricto

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Abstract

The increased insecticides resistance by vectors and the ecological harm imposed by insecticides to beneficial organisms drawback mosquitoes chemical control efforts. Biological control would reduce insecticides tolerance and yet biodiversity friend. The predatory and non-predatory effects of *Gambusia affinis* and *Carassius auratus* on gravid *Anopheles gambiae* sensu strict and larvae survivorship were assessed. In determining predation rate, a single starved predator was exposed to third instar larvae of *An. gambiae* s.s. in different densities 20, 60 and 100. Six replicates in each of the densities for both predators, *G. affinis* and *C. auratus*, were set up. The larvae densities were monitored in every12 and 24 h. In assessing indirect effects: *An. gambiae* s.s. first instar larvae of three densities 20, 60 and 100 were reared in water from a predator habitat and water from non-predator habitat. Larvae were monitored until they emerged to adults where larval survivorship and sex ratio (Female to total emerged mosquitoes) of the emerged adult from both water habitats were determined. Oviposition preference: twenty gravid females of *An. gambiae* s.s. were provided with three oviposition choices, one containing water from predator habitat without a predator, the second with water from a predator with a predator and the third with water from non-predatory habitat. The number of eggs laid on each container was counted daily. There were 20 replicates for each predator, *G. affinis* and *C. auratus*. Survivorship of *An. gambiae* s.s. larvae reared in water from non-predator habitat was higher than those reared in water from the predator habitats. Many males emerged in water from non-predatory water habitats while more females emerged from predator's habitats water. More eggs laid in tap water than in water from predator habitat and water from predator habitat with live predator. In 24 h, a starved *C. auratus* and *G. affinis* were able to consume 100% of the 3rd instar larvae. The findings from this study suggest that *G. affinis* and *C. auratus* may be useful in regulating mosquito populations in favour of beneficial insects. However, a small scale trial shall be needed in complex food chain system to ascertain the observed predation and kairomones effects.

Keywords

Anopheles gambiae;
Carassius auratus;
Developments *Gambusia affinis*;
Predator;

Kairomones;
Survivorship