

POSTER PRESENTATION

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Efficacy of the insect parasitic nematode, *Romanomermis iyengari*, for malaria vector control in Benin West Africa

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Background

The intensive use of chemical insecticides against mosquitoes has led to the development of widespread insecticide resistance. Control of *Anopheles* mosquitoes in malaria-endemic areas of Sub-Saharan Africa has become increasingly difficult [1]. There is an urgent need for malaria control programs to adopt more integrated mosquito management approaches that include sustainable, non-chemical solutions. In this perspective, insect parasitic nematodes specific to mosquitoes [2,3] may be considered as alternatives, to help reduce reliance on insecticides, and concurrently help insecticide resistance management. The present work has tested the effect of the Mermithid nematode, *Romanomermis iyengari*, against *Anopheles gambiae* s.s. *Giles* in laboratory and field conditions in Benin, West Africa.

Materials and methods

The nematodes *R. iyengari* were mass produced and the pre-parasitic juvenile (J2) were used in all laboratory and field experiments. Under laboratory conditions, 2 different concentrations of pre-parasitic nematodes (5 and 10 J2 per larvae) were tested against first to third instar (L1, L2 and L3) larvae of *An. gambiae*. In field, the pre-parasitic nematodes were monthly sprayed into 2 different *Anopheles* natural breeding sites in Cotonou, south Benin; 3500 and 5000 J2 per square meter of stagnant water were released, respectively in site 1 and 2.

Results

Results indicated that in laboratory, 100% L1 larvae died within 24 hours post-infection and 100% of both L2 and

L3 larvae died within 7 days post-infection, regardless of nematode concentration. In field, *Anopheles* larval density 5 days post-application decreased from 35 larvae per liter to 4 larvae, and from 17 larvae to 1, respectively in site 1 and 2. During a whole rainy season in 2011, monthly nematodes spraying resulted in suppression of larval *An. gambiae* in treated sites.

Conclusions

The present study indicated that the Mermithid nematode *R. iyengari* is effective for malaria vector control in Benin, West Africa. *R. iyengari* mass production using local materials is easy. Integrating this nematode into *An. gambiae* management system is therefore possible.

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