

# **Exploiting the behavior of malaria vectors for the application of entomopathogenic fungi**

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A study was carried out to exploit the behaviour of wild *An. gambiae* s.l. mosquitoes to interrupt malaria transmission using the entomopathogenic fungus, *Metarhizium anisopliae* IP 46 disseminated through OBS and cattle / shelters. The fungus *M. anisopliae* IP 46 was applied to OBS baited with organically produced CO<sub>2</sub> and cattle (zooprophyllaxis) / shelters. The subsequent infection rate, survival and fecundity of mosquitoes attracted to these tools were assessed. Fungal suspensions ( $3.6 \times 10^1$  conidia/m<sup>2</sup>) were sprayed on a black cotton cloth lining both entry slits (eave baffles) and panels arranged inside the OBS. Mosquitoes attracted to, entering and resting in the OBS were collected, counted and morphologically identified. Infection rates were determined within 5 — 6 days post incubation of mosquito cadavers, and survival of infected mosquitoes was monitored for 22 — 41 days. A relatively higher concentration of a fungal oil-formulation ( $5 \times 10^1$  conidia/m<sup>2</sup>) was sprayed on calves and their shelters, so that mosquitoes could be contaminated with the fungus either while feeding on treated calves or when resting on the walls after blood meals. Both fungal delivery techniques resulted in the infection of large proportions of outdoor, host-seeking malaria vectors. Fungus infected mosquito's experienced reduced cumulative daily- survival rate. Inside OBS, at least 86% fungal infection was recorded in exposed mosquitoes, of which 95 % died within 14 days post exposure. Fungus exposed mosquitoes were 2.5 times likely To die OIR----2.32-2.65) compared to the control group. When the fungus was applied on cattle and their shelter, > 71% of exposed mosquitoes died within 1> days post exposure. and majority (70 — 90) % visible fungal growth. Exposed blood fed mosquitoes were less susceptible to fungus infection but had reduced fecundity. It was concluded that, the *M. anisopliae* IP46 can significantly reduce the survival rate and fecundity of a large proportion of wild *An.gumhuw* s.l., and that the entomopathogenic fungus disseminated through ()BS or cattle I shelters in rural settings where people coexist with livestock may exert a substantial impact on the vector population and thus on malaria transmission.