Abstract

Ticks and tick-borne disease cause severe skin damage on livestock mortifying animal health and byproduct for manufacturing industries. Management of ticks by conventional acaricidal is environmentally and economically unaffordable in Tanzania. This study evaluated the effectiveness of a novel entomopathogenic fungi *Aspergillus oryzae* (against three species of ticks (Acari: Ioxididae); *Rhipicephalus appendiculatus*, *Hyalomma anatolicum* and *Amblyomma gemma* by spraying 0.2 mL/tick of $1x10^6$,$1x10^7$, $1x10^8$ conidia/mL of *A. oryzae* and control (water and 0.5% triton x-100) in 35.5ºC and 85% RH repeated at 20.5ºC and 70% RH in the laboratory conditions at Nelson Mandela African Institution of Science and Technology, Arusha. Results showed that at $1x10^8$ conidial/mL, *A. oryzae* caused high mortality rate averaging 88.2%, 72.5% and 67.9% within 6.25±0.75 days, 7.55±0.59 days and 11.9±0.65 days in *H. anatolicum R. appendiculatus* and *A. gemma* respectively whereas in control the highest mortality rate reached 12.5%, 11.0% and 6.5% after 22.50 ±1.2, 24.6 ± 0.9 and 28±2.9 days in *R. appendiculatus*, *H. anatolicum* and *A. gemma* respectively at 20.5^{O}C and 70% RH. It was also revealed that at $1x10^8$ conidial/mL of *A. oryzae* reduced oviposition rate in *A. gemma* whereby 94.8±10.74 eggs/female were laid compared to control that laid 354.15±42.65 egg/female. Again, eggs averaging 166.20±7.5 eggs/female were laid in *H. anatolicum* treated with *A. oryzae* at $1.0x10^8$ conidia/mL compared to control that laid eggs averaging 416.25±21.71/female in cold. This study revealed that *A. oryzae* is effective for control of ticks could be applied in pastoral and protected areas for protection of animals and human.

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