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SELECTION OF *Metarhizium* spp. SOIL-BORNE ISOLATES FROM RIO DE JANEIRO BASED ON THERMOTOLERANCE

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Rhipicephalus microplus ticks may cause serious economical losses in livestock. *R. microplus* infestations are usually controlled using chemical acaricides. Despite technological advances in the pharmaceutical industry, the inappropriate use of these chemicals can contaminate animal products and the environment. The entomopathogenic fungi *Metarhizium* have been studied as an alternative to the chemicals. Unfortunately, bioassays in the field demonstrated that these entomopathogenic fungi, besides considerably less virulent to ticks than insects, need to be highly tolerant to negative abiotic effects such as high temperatures and ultraviolet irradiation. Here, the thermotolerance of different soil-borne *Metarhizium* spp. isolated from different regions of the Rio de Janeiro state were evaluated in aqueous suspensions or oil-based emulsions. Ten *Metarhizium* spp. isolates were obtained from 234 soil samples. Conidial fungal aqueous suspensions and mineral oil-based emulsions were evaluated. All isolates were exposed to 42°C or 45°C for 4 hours. After heat exposure, the oil was removed from conidial emulsions and all plates were incubated for 24h at 27°C; then the relative germination was calculated. Bioassays were repeated three times. Mineral oil protected fungal propagules from the heat stress. LCMS02, LCMS04 and LCMS10 emulsions had the best relative germinations when exposed to 42°C (86,37%, 81,8% and 75,93% respectively). At 45°C, no soil-born isolate, even when formulated, exceeded 1% relative germination, suggesting that probably none of the tested isolates is *Metarhizium acridum*, a highly thermotolerant fungal species. Field temperatures in tropical areas are frequently higher than *Metarhizium*'s optimum growth temperature; despite this, it's possible to reduce somewhat the negative effects of the heat and UV-B by formulating the fungal propagules in protective inert substances such as mineral oil. Accordingly, selection of isolates with high tolerance profiles should be one of the first approaches to developing effective field formulations.

Keywords: Entomopathogenic fungi; biological control; cattle tick; germination; adverse abiotic conditions.
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