

CHARACTERIZATION OF *Metarhizium* spp. SOIL-BORNE ISOLATES BASED ON CONIDIOGENESIS AND UV-B TOLERANCE

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Rhipicephalus microplus is the main tick species that affect cattle, and it is responsible high economic losses in Brazilian livestock. *Metarhizium* species, an entomopathogenic fungi, have been used against agricultural insect pests for decades and seem to be an interesting approach for tick control. Nevertheless, these agents may negatively respond to abiotic factors, such as solar irradiation. Here, we characterize three different *Metarhizium* spp. soil-borne isolates (named LCMS01, LCMS08 and LCMS10) from different regions of the Rio de Janeiro state, as to their macro and micro-morphology, conidiogenesis and tolerance to UV-B irradiation. Inoculum points were made for each isolate in Petri dishes to evaluate the morphological characteristics. Fungal conidiogenesis was evaluated after growth on PDA artificial medium using a dermatological punch. Microscopic characterization was evaluated from microcultures after growth in a humid chamber. UV-B tolerance was assessed in conidia aqueous suspensions or mineral oil-based emulsions. All isolates were exposed to UV-B radiation for 1 hour (6.13 kJ). After irradiation, plates were incubated for 24h or 48h at 27°C in the dark and then relative germination was calculated. A well-known *M. robertsii* isolate (ARSEF 2575) was used as the standard in UV-B tests to validate the assays. LCMS01, LCMS08 and LCMS10 cultures mean diameter were, respectively, 59.01 mm, 71.10 mm and 57.53 mm. LCMS01, LCMS08 and LCMS10 produced an average of 19.61, 7.51, and 14.15 $\times 10^7$ conidia cm^{-2} , respectively. LCMS01 and LCMS10 cultures were olive green, had a powdery appearance and presented a zoned growth and a green reverse. LCMS08 colonies were olive green with a yellowish border, had powdery appearance and zoned growth, with light yellow reverse. Microscopic analysis showed LCMS10 conidia were clustered, forming long chains in cylindrical format, a morphological feature consistent with *Metarhizium* genus. LCMS01 emulsion had the highest relative germination at 24h and 48h after UV-B exposure (76.67% and 83.13%, respectively). In conclusion, LCMS01 was the best isolate tested in the present study. The morphological identification of entomopathogenic fungal isolates, the assessment of their conidial production capacity and the characterization of their UV-B tolerance are key steps to select biological agents with high potential for cattle tick control.

Keywords: entomopathogenic fungi, biological control, cattle tick, germination, adverse abiotic conditions.

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