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Modified Adamek's medium renders high yields of *Metarhizium robertsii* blastospores that are desiccation tolerant and infective to cattle-tick larvae

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Abstract

Blastospores are yeast-like cells produced by entomopathogenic fungi that are infective to arthropods. The economical feasible production of blastospores of the insect killing fungus *Metarhizium* spp. must be optimized to increase yields. Moreover, stabilization process is imperative for blastospore formulation as a final product. In this sense, our goal was to increase blastospore production of two *Metarhizium* isolates (ESALQ1426 and ESALQ4676) in submerged liquid cultures. A modified Adamek's medium was supplemented with increased glucose concentrations and the fermentation time was accelerated by using a blastospore pre-culture as inoculum. Virulence (speed of kill) of air-dried stable blastospores was compared with conidia toward larvae of the cattle tick, *Rhipicephalus microplus*. Our results revealed that blastospore production of *Metarhizium* is isolate- and species-dependent. Glucose-enriched cultures (140 g glucose/L) inoculated with pre-cultures improved yields with optimal growth conditions attained for *M. robertsii* ESALQ1426 that rendered as high as 5.9×10^8 blastospores/mL within 2 days. Resultant air-dried blastospores of ESALQ1426 were firstly proved to infect and quickly kill cattle tick larvae with comparable efficiency to conidia. Altogether, we argue that both osmotic pressure,

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