

TITLE: ANTIFUNGAL ACTIVITY OF SYMBIOTIC *Burkholderia* sp. ISOLATED FROM THE ANT *Camponotus renggeri* INFECTED BY ENTOMOPATHOGENIC FUNGI

AUTHORS: SOUSA, M.R.¹; FERREIRA, R.C.D.¹; CASTRO, L.G.Z.¹; FONSECA, E.O.²; PIRES, J.C.²; SOBCZAK, J.F.²; HISSA, D.C.¹

INSTITUTION: ¹Laboratório de Recursos Genéticos, Departamento de Biologia, Universidade Federal do Ceará (AVENIDA HUMBERTO MONTE, 2977, CAMPUS DO PICI, BLOCO 909, CEP 60455-000, FORTALEZA – CE, BRAZIL); ²Laboratório de Ecologia e Evolução, Universidade da Integração Internacional da Lusofonia Afro-Brasileira (RUA JOSÉ FRANCO DE OLIVEIRA, S/N CEP 62790-970 REDENÇÃO – CE, BRAZIL)

ABSTRACT:

Antifungals are compounds with great relevance in the pharmaceutical industry, for their use in the treatment of fungal infections. Since eradication of fungal infection is often lengthy and difficult, there is a need for novel and more effective antifungal drugs. For years, microorganisms have been the source for many bioactive compounds, being especially important in the antibiotic area. Symbiotic bacteria comprise an interesting resource for novel compounds, as many bioactive molecules found in macro-organisms have been lately found to be actually produced by endo-symbiotic bacteria. Taking this into account, the present study aimed to evaluate the antifungal activity of a bacterial strain isolated from an ant *Camponotus renggeri*, collected in Baturité – CE, Brazil, that was contaminated by the entomopathogenic fungi *Ophiocordyceps unilateralis*. A bacterial isolate that produced fungal inhibition zone was further cultivated in Potato Dextrose Broth medium, at 150 rpm for 1 day at 30°C. Then, the isolate was evaluated for antifungal activity against *Fusarium* sp., *Pestalotiopsis* sp., *Mucor* sp., *Coprinellus* sp. and *Trichoderma* sp. in Potato Dextrose Agar, positive activity was confirmed by the production of a hyphae growth inhibition. Microscopic characterization was performed by Gram staining method and molecular identification was performed based on the sequence of 16S rRNA. As the results, the antagonism test showed growth inhibition of *Fusarium* sp., *Pestalotiopsis* sp., *Mucor* sp. and *Coprinellus* sp. The bacterium was identified as short rod Gram positive and molecularly identified as *Burkholderia* sp. There are many reports of bacterial species of the genus *Burkholderia* associated to animals and plants that exhibit antifungal activity, which makes them interesting for many biotechnological applications. Also, further studies are needed to investigate the ecological relation between *Camponotus renggeri* and *Burkholderia* sp., as the bacterium may be playing ant protection role against entomopathogenic fungi.

Keywords: Antifungal, *Burkholderia* sp., antagonist, symbiotic bacteria, entomopathogenic fungi

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