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TRICHODERMA FUNGI AND THEIR POTENTIAL PROPHYLACTIC BENEFITS TO TERMITES

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Organisms have developed mutualistic interactions in which they may benefit from both the presence of their symbionts and the substances produced by them. Termites are social insects that depend on symbionts to mediate inhibition of opportunistic microbes. We found species of fungi from the genus *Trichoderma* inside termite nests and individuals, and we hypothesized that they may interact. As *Trichoderma* is a mycoparasite able to produce fungistatic substances, termites could potentially benefit from the presence of the fungus inside the nest. Here, we evaluated the occurrence of *Trichoderma* in the termite *Cornitermes cumulans* and whether this fungus shows inhibitory effects against the entomopathogenic fungus *Metarhizium anisopliae*, an entomopathogen widely distributed in soils and used in the biological control of *C. cumulans*. We obtained 107 isolates of *Trichoderma* from 9 nests, isolated from nest walls, termites and the rhizosphere of grasses adjacent to the nests, as well as 7 isolates of *Metarhizium* from soil adjacent to the nests. We sequenced the TEF1 region and identified four *Trichoderma* species: *T. afroharzianum*, *T. harzianum*, *T. koningiopsis* e *T. virens*; and two *Metarhizium* species: *M. anisopliae* and *M. robertsii*. Confrontational *in vitro* assays revealed delayed growth of *M. anisopliae* by after a 12 day incubation period with *T. harzianum*, when compared to the blank agar or other fungi. However, this delayed growth in the presence of *T. harzianum* was subtle and so is insufficient to conclude that it inhibits the development of entomopathogenic fungi inside colonies. We found no evidence of infection by *M. anisopliae* inside nests, since it is rare for a cadaver to remain inside the nest long enough for entomopathogenic fungus to develop. Hence, further investigation is required to determine if *C. cumulans* benefit from the presence of *Trichoderma* within the nest and within the insects themselves.

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