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EVALUATION OF VOLATILE COMPOUNDS FROM Trichoderma STRAINS IN THE BIOCONTROL OF PHYTOPATHOGENS

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In different areas of the Amazon, important structures for conservation and sustainable use can be found, such as the Rio Negro Sustainable Development Reserve (RDS-RN) in Manaus (AM) and the Pico da Neblina National Park (PNPN) in São Gabriel da Cachoeira (AM). Both may be strategic for the isolation of microorganisms with a focus on molecule prospecting; among fungi, the genus *Trichoderma* stands out, recognized for producing volatile organic compounds (VOC's), which are important in the control of phytopathogens and in promoting plant growth[1]. Although ecologically important, the soils of these areas still present gaps in microbial diversity, highlighting the need for further scientific and biotechnological studies. In this context, the present work evaluated three *Trichoderma* strains (CPAA TC66, CPAA EBST18, and CPAA EBST20), isolated from Amazonian soils (PNPN and RDS-RN), regarding VOC's production and inhibition of mycelial growth of the phytopathogen *Agroathelia rolfsii* INPA 2941, aiming to understand their bioactive potential and biotechnological applications. The strains were previously cultivated in PDA medium (potato-dextrose-agar), and 5×5 mm disks of the *Trichoderma* strains and the phytopathogen were inoculated in 60 mm plates. For VOC's assays, the "sandwich" system was used, in which the bases of two plates were juxtaposed: the lower containing *Trichoderma* and the upper the phytopathogen, sealed and incubated at 28 ± 1 °C for five days. Antagonistic activity was quantified by the percentage of mycelial growth inhibition (PGI = [(control – treatment) / control] × 100), in triplicate. Preliminary results indicated high inhibitory activity of the three strains. In the VOC's assay, CPAA TC66, CPAA EBST18, and CPAA EBST20 inhibited the growth of *A. rolfsii* by 80.90%, 78.57%, and 57.14%, respectively. In addition to the reduction in mycelial growth, no sclerotia formation was observed compared to the control. These results suggest that *Trichoderma* VOC's suppress both growth and the formation of resistance structures of *A. rolfsii*, reinforcing the potential of these strains for biotechnological applications in phytopathogen management.

Keywords: *Amazonian Trichoderma, biocontrol, volatile organic compounds (VOC's).*

1-Trichoderma agriamazonicum sp. nov. (Hypocreaceae), a new ally in the control of phytopathogens. Microbiological Research, v. 275, p. 127469, 2023.