

XIX CONGRESO DE LA SOCIEDAD ARGENTINA DE MICROBIOLOGÍA GENERAL

22 al 25 de octubre del 2024

Centro cultural y Pabellón Argentina de la Universidad Nacional de Córdoba, Córdoba, ARGENTINA.



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**ANTIFUNGAL ACTIVITY OF NATIVE ACTINOBACTERIA FROM
MISIONES: PROMISING IN VITRO RESULTS AGAINST
PHYTOPATHOGENIC FUNGI IN YERBA MATE (*Ilex paraguariensis* St.
Hil.)**

Aznar, Silvina S^{1,2}-Vereschuk, Manuela L^{1,2}-Fuentes, María S^{2,3}-Alvarenga,
Adriana E^{1,2}

1) Universidad Nacional de Misiones. FCEQyN. InBioMis. BioTecMol - Posadas - Misiones - Argentina.

2) CONICET - Buenos Aires - Argentina.

3) Planta Piloto de Procesos Industriales Microbiológicos (PROIMI - CONICET) - San Miguel de Tucumán - Tucumán - Argentina

Contacto: silvina.aznar@gmail.com

Argentina is the world's leading producer and exporter of yerba mate, with most production concentrated in the province of Misiones. This crop is vital to the regional economy, and in recent decades, increased demand has led to a significant expansion of cultivated areas, predominantly through monoculture. The intensification of this practice has triggered various phytosanitary issues, such as increased disease development and the spread of pathogens. Traditionally, pest control has relied on chemically synthesized products, which pose risks to both health and the environment. Therefore, sustainable alternatives, such as the use of microorganisms as biocontrol agents, have been sought. In this context, actinobacteria, a metabolically diverse group of bacteria, have the potential to promote plant growth by enhancing nutrient availability and controlling phytopathogens through the production of antimicrobial compounds. The objective of the present study was to evaluate the antagonistic capacity of native actinobacteria from Misiones against phytopathogenic fungi of *Ilex paraguariensis*. To achieve this, 28 actinobacteria isolates from rhizospheric soils of Oberá, Misiones, were tested using a dual plate culture assay, against *Fusarium* sp., *Alternaria* sp., and *Ceratobasidium niltonsouzanum*, with appropriate controls. The assays were conducted in quadruplicate, and pathogen growth was analyzed using ANOVA. Mean comparisons were performed using Fisher's LSD method, both analyses conducted with Infostat software. The percentage of growth inhibition caused by different actinobacteria isolates against the three pathogens was statistically significant. Of the 28 actinobacteria isolates screened, thirteen showed potential (>35% growth inhibition) against *C. niltonsouzanum*, nine against *Fusarium* sp., and seven against *Alternaria* sp. Notably, six strains (OTA 412 (2), OOA 415, OTA 425, OOA 522, OTA 415, and OTA 412) demonstrated more than 35% inhibition against all three pathogens, suggesting their potential as broad-spectrum biological control agents. The highest growth inhibition rates were observed with OTA 412 against *C. niltonsouzanum* (63.48%) and *Fusarium* sp. (48.48%) and OTA 412 (2) against

Alternaria sp. (52.35%), respectively. These results suggest that actinobacteria from Misiones have considerable potential as biological control agents to combat endemic diseases affecting the yerba mate crop. However, additional studies are needed to further characterize these isolates and validate their effects under greenhouse and field conditions, which will determine their viability and potential as indigenous biotechnological products for regional agriculture.

Palabras clave: BACTERIA - BIOLOGICAL CONTROL - RHIZOSPHERE SOIL - YERBA MATE