

## 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.



Foto: Se hace camino al andar. Celeste Dea. 1er puesto. Concurso fotográfico SAMIGE 20 años.

## CHARACTERIZATION OF STRAINS ASSOCIATED WITH TELIOPORES OF *Thecaphora frezzii*

Figueroa, Ana Cristina<sup>1</sup> - Diaz, María Soledad<sup>1</sup> - Zeballos, Maximiliano<sup>2</sup> - Nome, Claudia<sup>3</sup> - Soria, Néstor<sup>4</sup> - Beltramo, Dante<sup>5</sup> - Alasino, Roxana<sup>1,5</sup>

- 1) Unidad de Biociencias, Centro de Excelencia en Productos y Procesos de Córdoba (CEPOCOR) - Santa María de Punilla - Córdoba - Argentina.
- 2) Genética molecular, Fundación para el Progreso de la Medicina - Córdoba - Argentina.
- 3) Laboratorio de Microscopía, IPAVE-INTA - Córdoba - Argentina.
- 4) Cátedra de Biotecnología, Facultad de Ciencias de la salud, Universidad Católica de Córdoba - Córdoba - Argentina.
- 5) Consejo Nacional de Ciencia y Tecnología de Argentina (CONICET) - Córdoba - Argentina.

Contacto: [anacristinacf9@gmail.com](mailto:anacristinacf9@gmail.com)

*T. frezzii* teliospores survive in soil and produce peanut smut. This pathogen causes significant losses in peanut crop, an important player in the Argentine economy, which exports 90% of production. The study of this pathogen and potential strategies of control are topics of great relevance in our country. In previous studies, bacterial strains were isolated by sequential washes of teliospores and antagonism assays were carried out against *T. frezzii* hyphae. One bacterial strain exhibited in vitro antifungal activity. The objective of this work is the characterization of bacterial strains associated with *T. frezzii* spores, with potential use in biocontrol. Teliosporas were extracted from carbonaceous pods previously disinfected. The spores were washed with sterile water and divided into two fractions. One fraction was incubated with NaCl 2 M to break electrostatic interactions. Metagenomics analysis was performed on both aliquots (by INDEAR) to identify the flora associated with the spores. On the other hand, the strains isolate in vitro were characterises by MALDI Tof, while the strain with antifungal activity against to *T. frezzii* hyphae was further characterized by complete mRNA sequencing and partial sequencing of *gyrB* and *ccpA* genes, comparing with NCBI NIH database. Additionally, teliospores were examined by transmission electron microscopy (TEM). Metagenomics analysis identified 11 strains to "bacterial order" level, that were present in teliospores. After washing with sodium chloride, the bacterial flora was enriched in the "enterobacterial order". Of the six strain in vitro isolated, only one strain was identify to genus level through MALDI-Tof, while four were classified as "probable genus" and one could not be identified. Complete sequencing of 16S and selected genes allowed the characterization of bioactive strain as *Bacillus pseudomycooides*. TEM images showed bacteria both around and even inside the spores. There are numerous types of bacteria associated with teliospores of *T. frezzii*; washing with chloride reduces the percentage of all strains and increases one. After washing *Bacillus pseudomycooides* was observed, which has demonstrated an inhibitory effect on

the in vitro growth of hyphae. This bacteria can reside on surfaces or even within the spores. This could explain why the order to which *Bacillus* belongs was not found in the metagenomic analysis. Additional studies are required to relate this strain to the teliospore germination rate and to determine its bioactive metabolites to evaluate its potential use as a biocontroller.

Palabras clave: Biocontrol – peanut smut - *Bacillus* - genus