MICROBIOLOGICAL IMAGE

Progression of the predatory activity of an Argentine strain of *Arthrobotrys oligospora* (Helotiales: Orbiliaceae) on *Panagrellus redivivus* (Rhabditidae: Panagrolaimidae)

Progresión de la actividad depredadora de una cepa argentina de *Arthrobotrys oligospora* (Helotiales: Orbiliaceae) sobre *Panagrellus redivivus* (Rhabditidae: Panagrolaimidae)

Mariano Maestro, Diego H. Sauka*

*Instituto Nacional de Tecnología Agropecuaria (INTA), Instituto de Microbiología y Zoología Agrícola, Argentina*

Received 11 December 2018; accepted 7 March 2019
Available online 2 July 2019

Nematode-trapping fungi constitute a guild of species that develop specialized trapping structures with which they capture and digest nematodes. These traps are not constitutively present, but instead develop in the presence of nematodes; they attract them, adhere to their cuticle and eventually pierce it, extending hyphae inside their bodies.

Due to the fact that many nematode species behave as pests and diseases, groups of fungi with nematode-antagonistic effects are interesting due to their potential uses in biocontrol. Here we describe the progression of the nematode-trapping process by *Arthrobotrys oligospora* Fres. (Helotiales: Orbiliaceae) (isolate INTA10, obtained from soil of an organic tomato farm in La Plata area, Argentina [S 35°06′ W 58°12′]) on the free-living nematode *Panagrellus redivivus* Linn. (Rhabditidae: Panagrolaimidae).

INTA10 was grown on 90 × 15 mm oatmeal agar culture plates in the dark at 24 ± 1 °C until the plate was covered (72 h). Twelve plates were prepared. Approximately 5000 nematodes were inoculated on each plate, and dispersed freely across the culture. Every 6 h after nematode inoculation (t = 6, 12, 18, and 24) three cultures were stained using methylene blue (0.1% w/v) and immediately rinsed with sterile physiological solution, while the remainder of the cultures was allowed to continue its development. Stained cultures were examined using a compound microscope (Leica, DM E) to observe trapping progression (Fig. 1). Developed traps (indicated with arrows, Fig. 1A) with alive, recently caught nematodes were found at t = 6. Fungal colonization inside the nematodes was detected at t = 24, with the presence of blue-dyed hyphae growing inside them (indicated with arrows in Fig. 1B, shown magnified in Fig. 1C).

* Corresponding author.

E-mail address: sauka.diego@inta.gob.ar (D.H. Sauka).

https://doi.org/10.1016/j.ram.2019.03.008
0325-7541/© 2019 Asociación Argentina de Microbiología. Published by Elsevier España, S.L.U. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).
Progression of fungal predatory activity on nematodes

Figure 1  Progression of nematicidal activity of *Arthrobotrys oligospora* INTA10 on *Panagrellus redivivus*. Nematode trapped by adhesive fungal structures (t = 6) (A) (200×). Hyphal growth inside partially decayed nematodes (t = 24) (200×) (B) and (300×) (C). Detail of traps (400×) (D).

Figure 1D shows the multicellular, tridimensional adhesive traps stemming from the mycelium in further detail.

**Funding**

The work was funded by PE INTA PNPV 1135033.

**Acknowledgments**

DS holds a research career award from Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).

**References**