

ANTIFUNGAL ACTIVITY OF METABOLITES FROM *Bacillus* spp. AGAINST *Fusarium oxysporum* USING MICRO DILUTION IN PLATE METHOD

Marco Antonio Tucuch-Pérez
Universidad Autónoma Agraria
Antonio Narro, Departamento de
Parasitología.
México
martp1216@gmail.com

**Francisco Daniel
Hernández-Castillo**
Universidad Autónoma
Agraria Antonio Narro,
Departamento de
Parasitología.
México
fdanielhc@hotmail.com
(Corresponding Author)

Roberto Arredondo-Valdés
Universidad Autónoma
Agraria Antonio Narro,
Departamento de
Parasitología.
México
robqfb@gmail.com

Elan Iñaky Laredo-Alcalá
GreenCorp Biorganiks de
México S.A. de C.V., Centro de
Investigación y Desarrollo.
México
elan_laredo@hotmail.com

ABSTRACT

Fusarium oxysporum is a plant pathogen that causes great losses in tomato crops because affect the vascular system of plants; at present the principal control of this phytopathogen is the chemical control, nevertheless the indiscriminate use of those products have caused resistance and environmental problems. For this reason the use of antagonistic microorganisms like bacteria of the genus *Bacillus* have arised as an alternative sustainable and friendly to the environment. For this reason this research determined the antifungal activity and the minimum inhibitory concentration to 50% (IC₅₀) of crude extracts with metabolites from six strains of bacteria of the *Bacillus* genus (B-AN1, B-AN2, B-AN3, B-AN4, B-AN5 y B-AN6) against *F. oxysporum*, by the micro dilution plate method. The *Bacillus* strains were grown in potato dextrose broth enriched with yeast extract and malt extract, to get crude extracts with metabolites; the concentrations studied were 50.00 %, 25.00 %, 12.50 %, 6.25 %, 3.13 %, 1.56 %, 0.78 %, 0.39 % and 0.20 %. The results showed the strains B-AN3 and B-AN4 corresponding to *Bacillus licheniformis* and *Bacillus subtilis* are which presented the highest percent of inhibition with 100 % to 3.13 % of microbial extract; for the IC₅₀, the lowest IC₅₀ was by the strain B-AN4 with 0.01 %. It concludes that the strain B-AN4 (*B. subtilis*) in this work was the best for control *F. oxysporum* with the lowest IC₅₀ of all; also this work concludes that the micro dilution in plate method is a fast and effective method for studies of substances with antimicrobial activity.

Keywords: *Fusarium oxysporum*, *Bacillus*, antagonistic bacteria, IC₅₀, micro dilution, bio control, antifungal activity.