Escuela Superior



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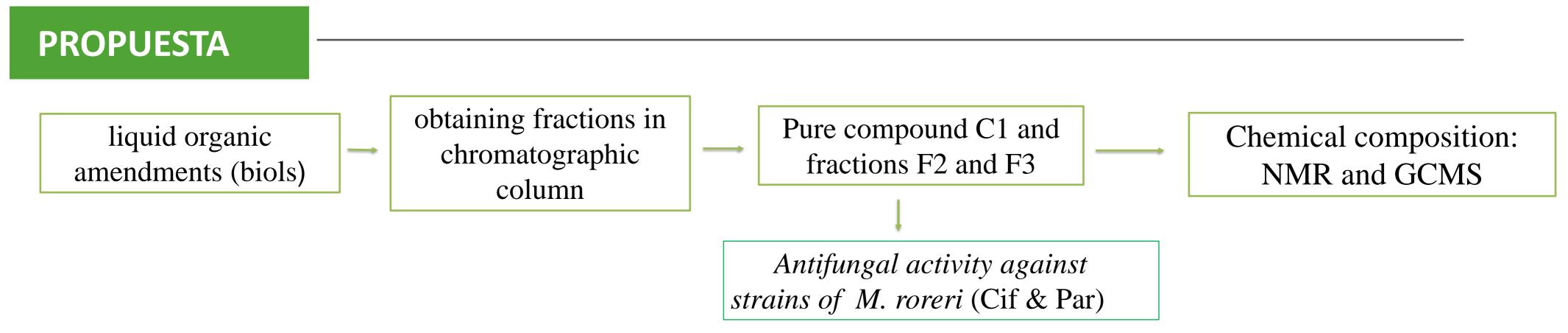
Bioactive compounds against *Moniliophthora roreri* (Cif & Par) identified in locally produced liquid amendments (biols)

PROBLEMA

The use of liquid organic amendments (bioles) is a common practice for farmers due to the multiple benefits in the management and production of their crops, including the control of pests and diseases, such as the fungus *Moniliophthora roreri*, responsible for production losses of 20 % to 30%, the use of fungicides to control it can be expensive and have environmental risks

OBJETIVO GENERAL

Analyze the chemical composition of the pure compound C1 and the fractions F2 and F3 of local bioles produced in two provinces of Ecuador and its antifungal activity against Moniliophthora roreri (Cif & Par)



This work incorporates the use of Gas Chromatography coupled to Mass Spectrometry (GC-MS), Nuclear Magnetic Resonance (NMR) in the chemical characterization of C1, F2 and F3 and evaluates the in vitro antifungal activity of these samples against *Moniliophthora roreri* strains, using the agar diffusion method. Significant differences between treatments were analyzed with non-parametric Kruskal-Wallis, Dunn and Wilcoxon tests, using a 95% significance level. Analyzes were performed with R 3.6.2 and Infostat 2018

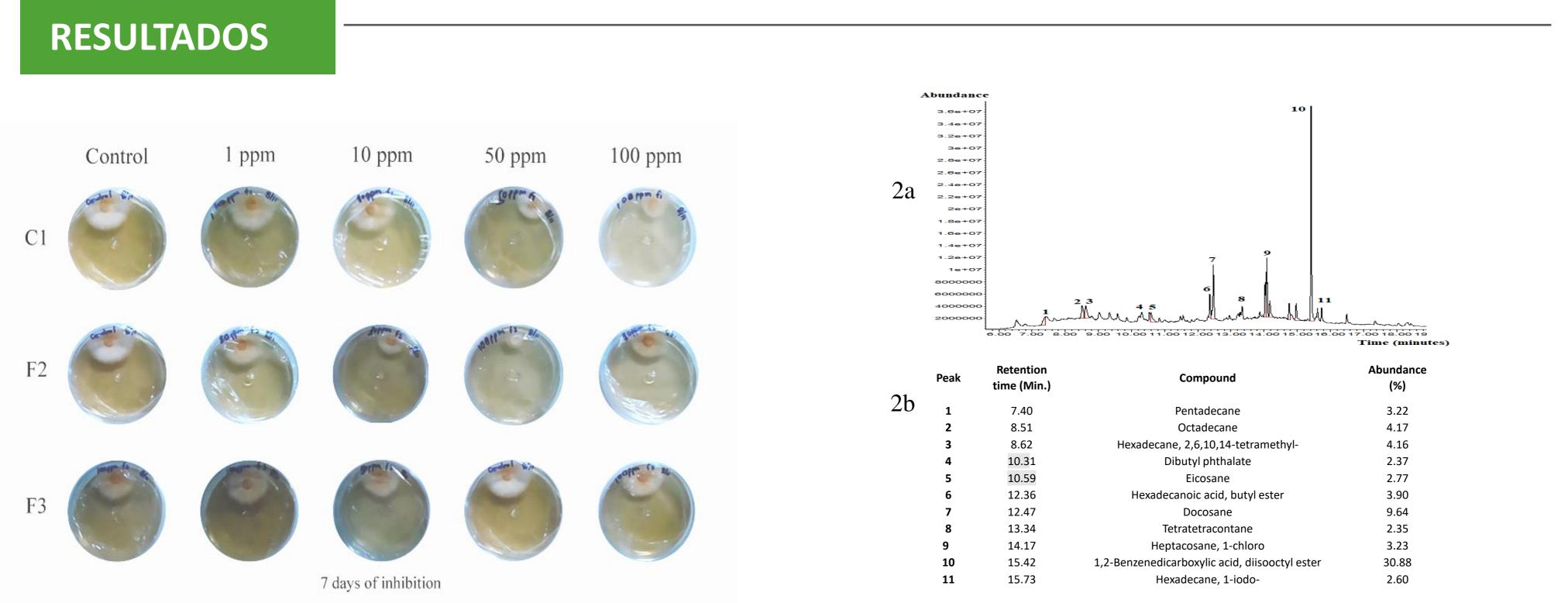


Figure 1. Inhibition of mycelial growth of *M. roreri* in PDA media with different compounds (C1, F2 and F3) evaluated 7 days after inoculation

Figure 2a and 2b. Analytical gas chromatogram and identified compounds of the F2 fraction (60:40 ethyl acetate/methanol). In the x axes was expressed the time of each compound

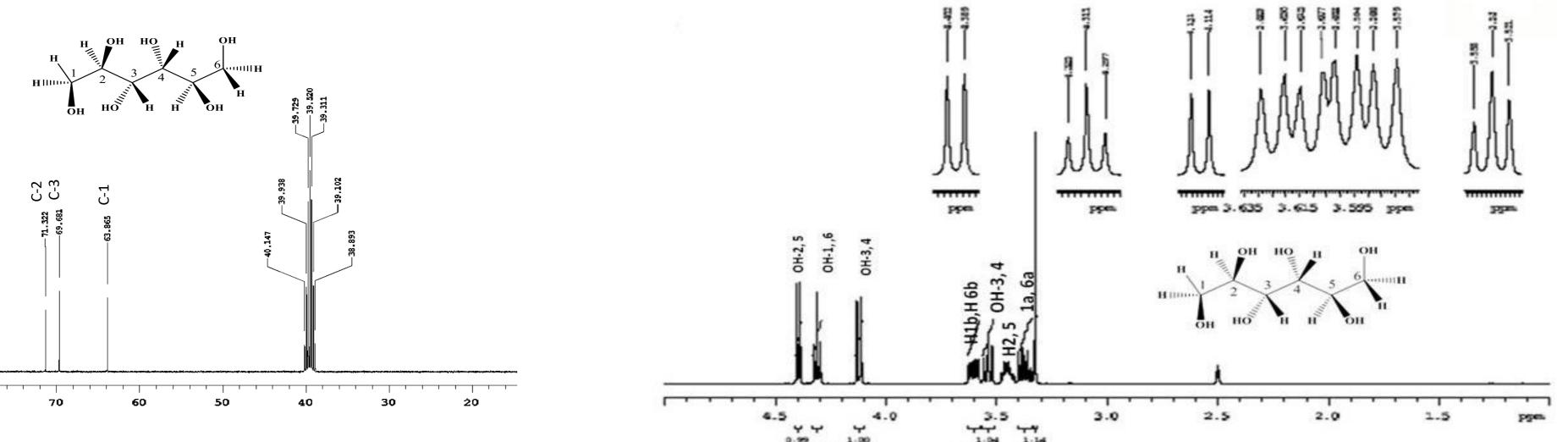


Figure 3. 13C-NMR spectrum (DMSO, 100 MHz) of (2R, 3R, 4R, 5R)-Hexane-1,2,3,4,5,6-hexol (C1)

1-04 1-14 Figure 4. 1H-NMR spectrum (DMSO3, 400 MHz) of (2R, 3R, 4R, 5R)-Hexane-1,2,3,4,5,6-hexol (C1)

CONCLUSIONES

- The activity observed in some liquid organic amendments (Biols), can be related to the presence of secondary metabolites and hydrocarbons with antifungal properties. The high abundance (30.88%) of 1,2-Benzenedicarboxylic acid, diisooctyl ester and the rest of the compounds identified in fraction F2 could be related to the higher inhibitory activity against *Moniliophthora roreri*
- The use of GCMS and NMR can be used to identify compounds with high accuracy for further characterization and serve the purpose of molecule discovery for new applications, either in agriculture or related fields. This report presents a novel method of improving bioles to promote multiple crop growth, using a natural fermentation process that produces bioactive compounds capable of inhibiting the growth of *M. roreri*

AGRADECIMIENTOS

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