



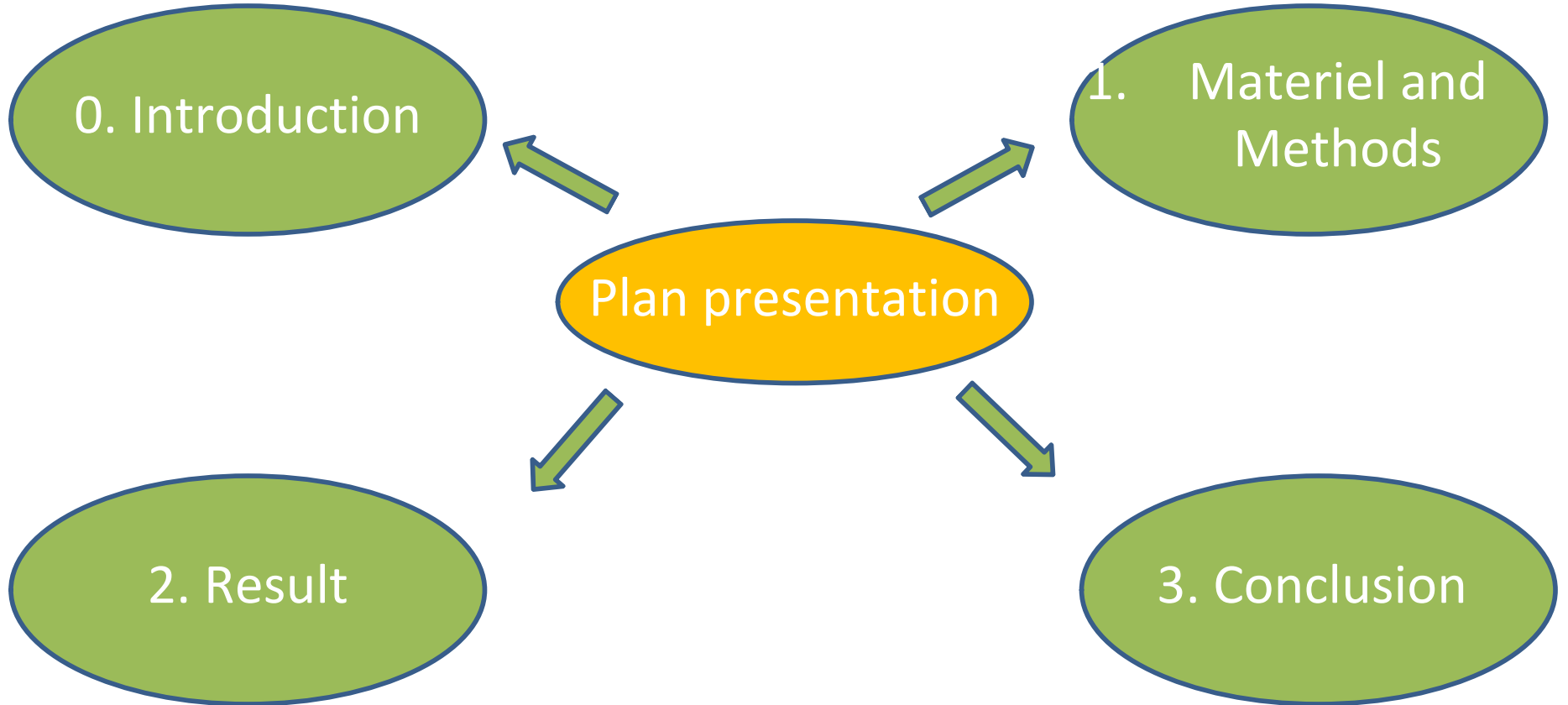
2ND AFRICAN ORGANIC RESEARCH CONFERENCE (AFROREC)

Theme:
Strengthening Organic and Agroecological Farming in Africa through Innovative Research

24-25 November 2025
in Egypt

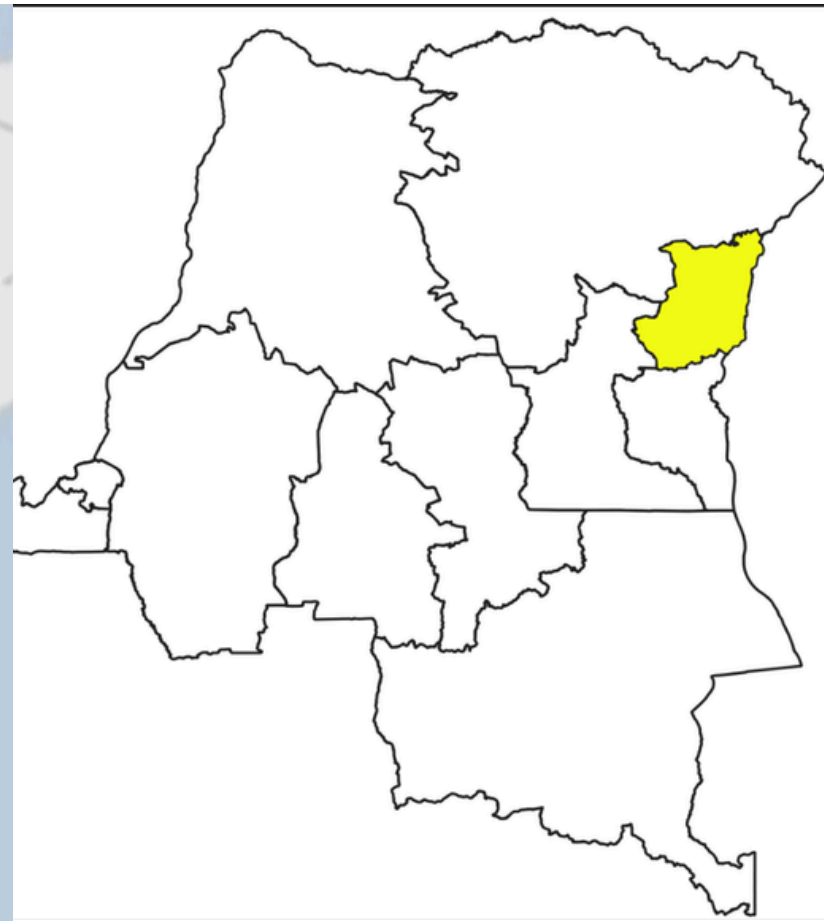
Plant Extracts as Ecological Sterilants for Farm Tools Contaminated with Banana and Potato Wilt Pathogens in the East African Countries

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Godefroid Monde



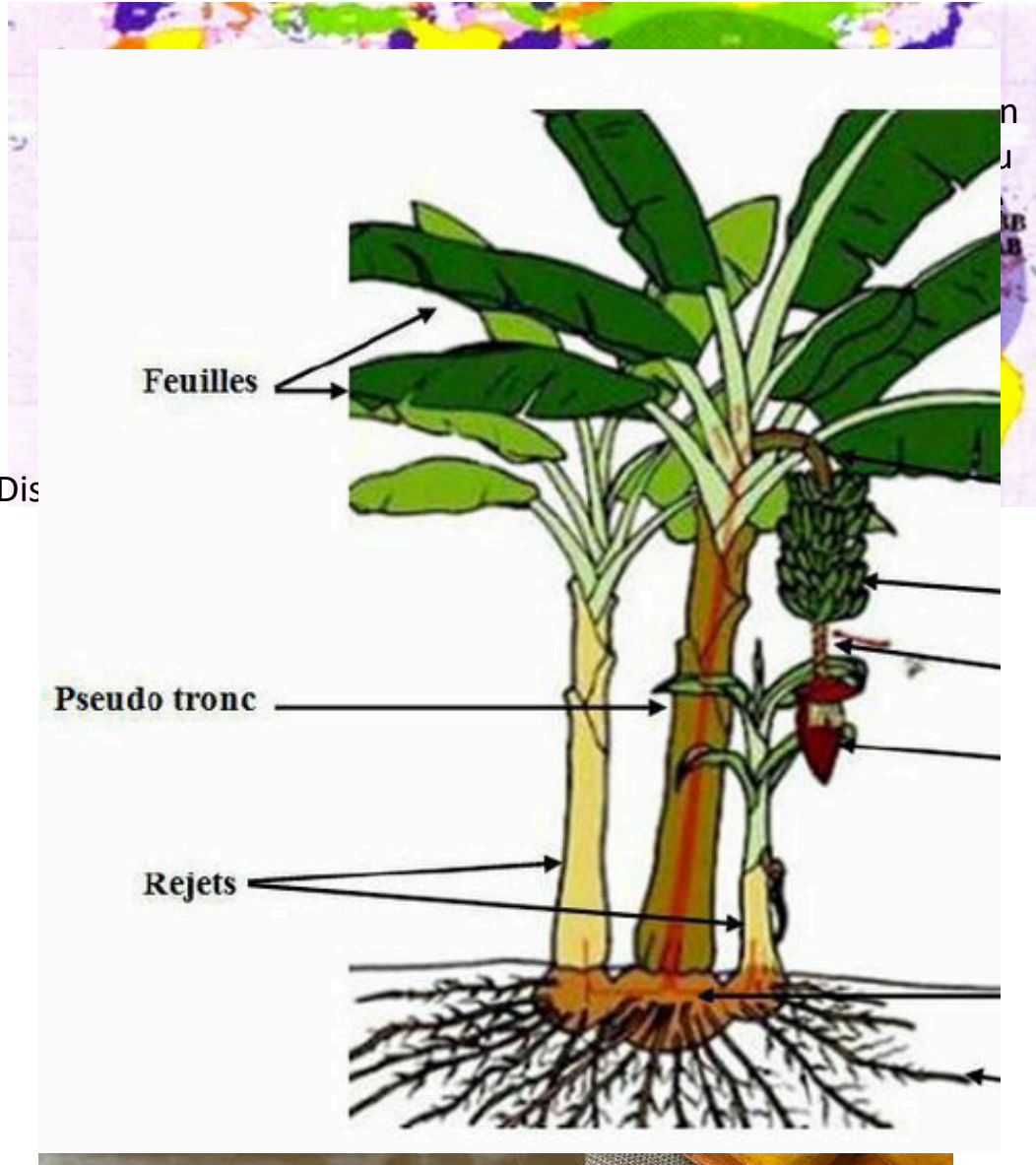
0. INTRODUCTION

Research Location



0. INTRODUCTION

Food preference



Up to 600 Kg/pers/year



Up to 300 Kg/pers/year

0. INTRODUCTION

Challenges for banana and potato production: Wilt bacteria



Figure 1. 3. : Symptoms of BXW :
Mukeshambala *et al*, 2024 et Blomme *et al.*, 2017



Symptoms of potato wilt : Mukeshambala *et al*. 2024



0. INTRODUCTION

Disease transmission



Farms tools 52%
(Hasham, 2013)

Lost caused by bacterial wilt 50 to 100 % (Muthoni, 2014; Felix *et al.*, 2010)

INTRODUCTION

Traditional practice in human, animals and plants disease



Euphorbiaceae, Myrtaceae et Asteraceae, (Kasrina & Zukmadini, 2021 ; Sharma *et al.*, 2022 ; Saber *et al.*, 2023)

0. INTRODUCTION 6/6

- **Objectif**

To identify effective plant extracts for disinfecting (sterilizing) contaminated tools under *in vitro* conditions

1. Materials & Methods

Medicinal plants used

“*C. frutescens* L.”, “*D. stramonium* L.”, “*E. globulus*”, “*E. heterophylla* L.”, “*G. parviflora*”, “*M. glaziovii* M.”, “*R. communis* L.”, “*P. aquilinum* L.”, “*P. nigrum*”, “*Z. officinale*” and “*Z. pustulata* G.”

Polypodiaceae /



Pteridium aquilinum



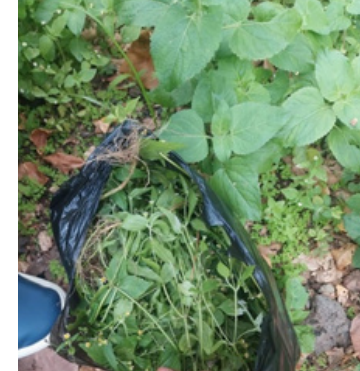
C. frutescens



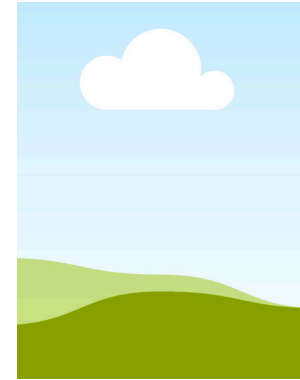
D. stramonium



E. globulus



G. parviflora



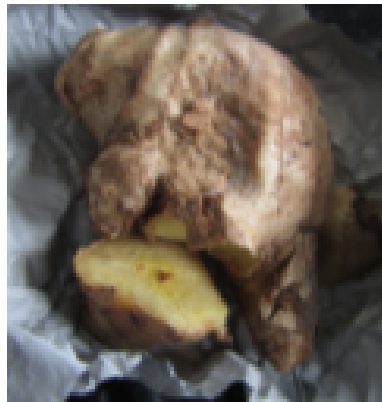
M. glaziovii



E. heterophylla



R. communis



Z. officinale



Z. pustulata



P. nigrum

1. Materials & Methods

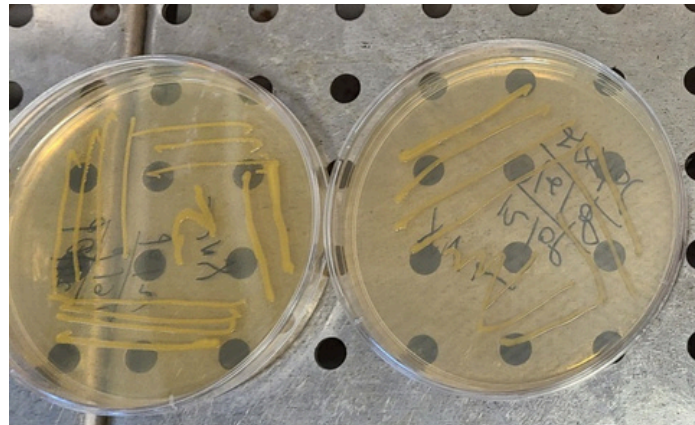
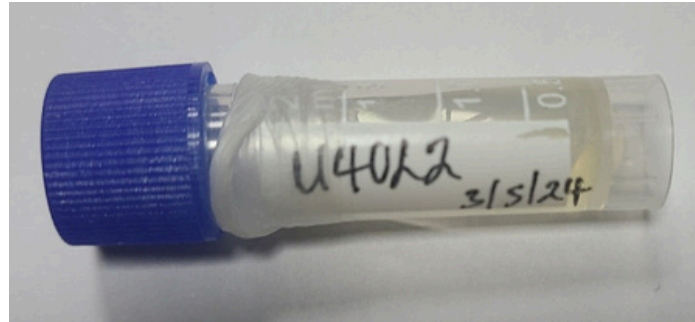
Inoculum preparation



1. Materials & Methods

Inoculum preparation

Inoculum



Yemata et al., 2019
 $0,132 \text{ OD} = 1,5 \cdot 10^8 \text{ UFC}$



Chovez et al., 2012
 $0,1 \text{ OD} = 2 \cdot 10^8 \text{ UFC}$



1. Materials & Methods

Evaluation of the extracts properties



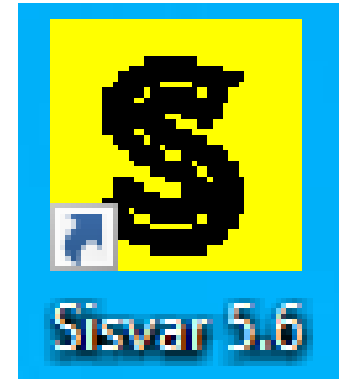
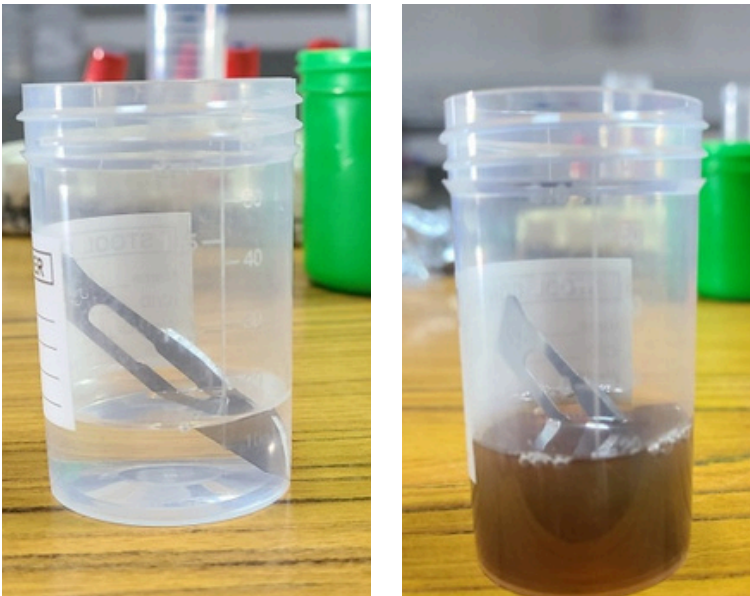
(De Marco *et al.*, 2007)



1. Materials & Methods

Experimental design

(Ocimati *et al.*, 2021)
2 minutes 3 minutes



Completely randomis design

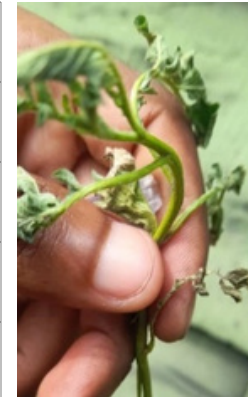
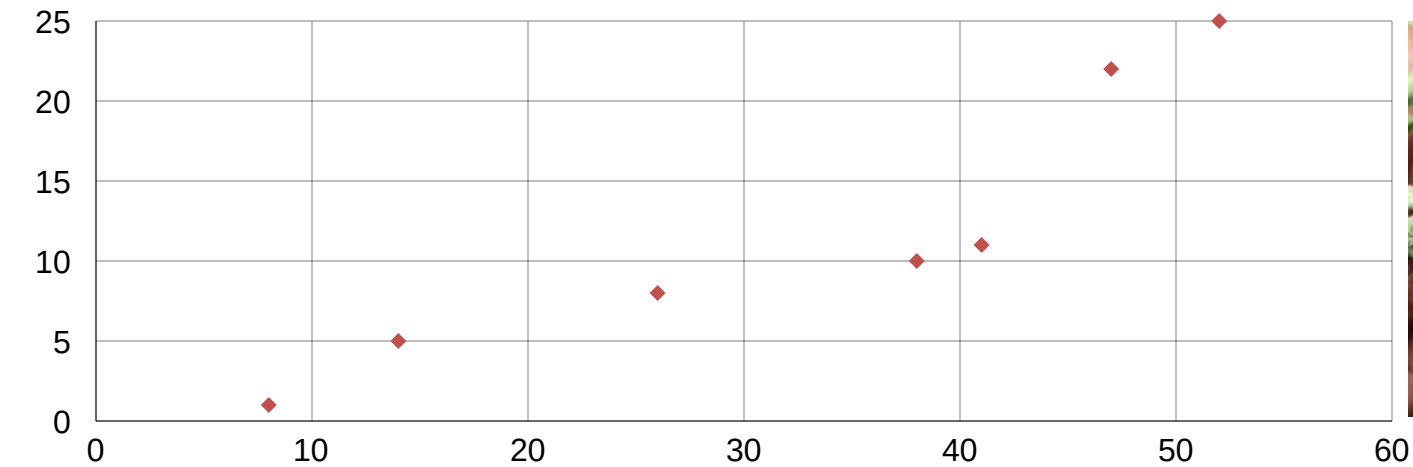
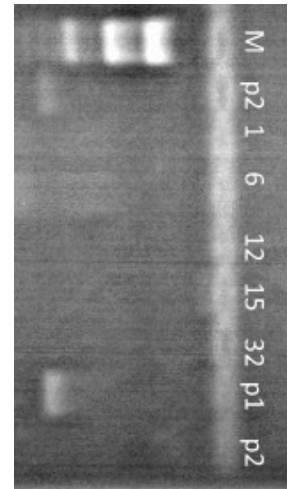
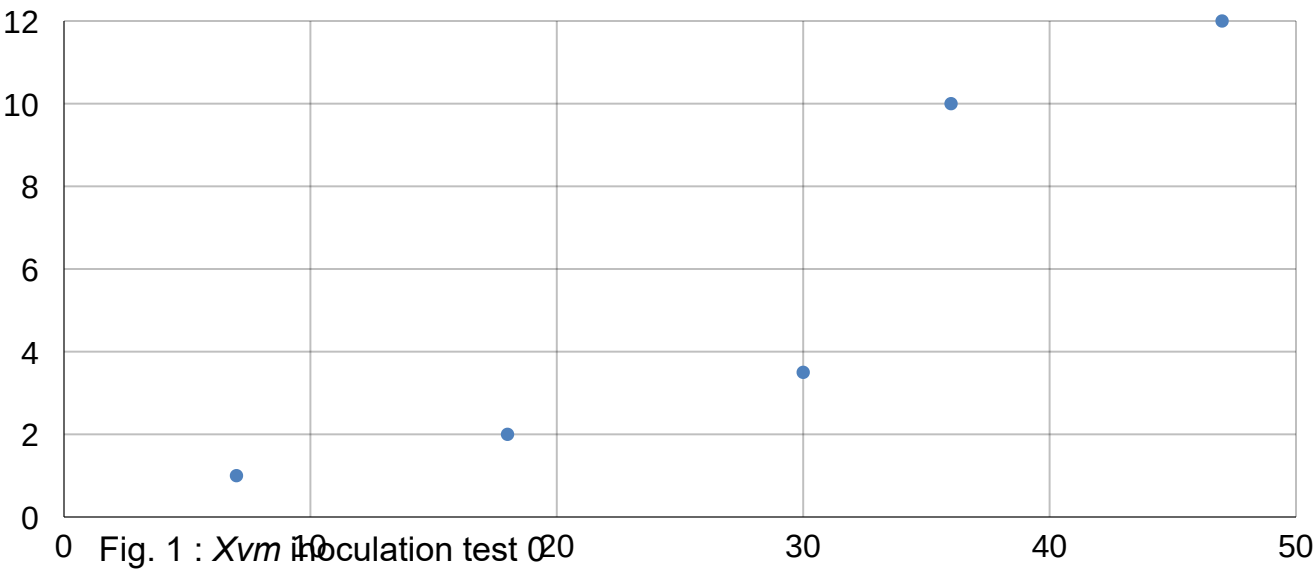
14 Treatments = 12 Extracts + (C⁺ & C⁻) 3

rep ANOVA & Tukey 0.05

Method of: Horner *et al.*, (2024)

2. Results

Bacteria identification



2.Results

Bacterial inhibition (*Xvm*&*RslIB*) by extracts on tools and on agar medium

Table 1: Number of colonies in inhibition of bacteria on sterilized tools

Extract *Xcm* (colonies number) **Extract** *RslIB*(colonies number)

| | | | |
|-----|---------|-----|----------|
| NC | +300 | NC | +300 |
| JIK | 0,00 a | JIK | 0,00 a |
| ZP | +300 | ZO | +300 |
| PA | +300 | ZP | +300 |
| CF | +300 | RC | 28,33 b |
| DS | +300 | PA | 75,00 c |
| GP | 4,33 a | PN | +300 |
| PN | 5,33 a | CF | 78,00 c |
| EG | 0,00 a | GP | 30,33 b |
| EH | 46,33 b | EH | +300 |
| MG | 4,33 a | DS | 77,67 c |
| RC | 11,3 a | MG | +300 |
| ZO | 2,67 a | EG | 0,00 a |
| TC+ | 24,00 b | TC+ | 102,33 c |

The means followed by the letter a with the same letter are not different according to the Tukey test at 0.05

2. Results

Properties of Concentrated Crude Extracts

| Extract | <i>Xcm</i> | | Extract | <i>R. solanacearum</i> | |
|------------|--------------------|-----------------|---------------|------------------------|--------------------------------|
| | Gélose | Outils | | Gélose | Outils |
| | Zone/mm | | Nbre colonies | Zone/mm | Nbre colonies |
| NC | 5.00 a1 | | +300 | NC | 5.00 a1 +300 |
| JIK | 5.00 a1 | 0.00 a1 | | JIK | 5.00 a1 0.00 a1 |
| ZP | 5.00 a1 | | +300 | ZO | 5.00 a1 +300 |
| PA | 5.00 a1 | +300 | | ZP | 5.00 a1 +300 |
| CF | 5.00 a1 | | +300 | <u>RC</u> | <u>7.33 a1 28.33 a2</u> |
| DS | 10.33 a2 | | +300 | PA | 11.33 a2 75.00 a3 |
| <u>GP</u> | <u>13.33 a2a3</u> | <u>4.33 a1</u> | | PN | 11.67 a2 a3 +300 |
| PN | 14.33 a3 a4 | | 5.33 a1 | CF | 13.67 a2 a3 a4 78.00 a3 |
| EG | 14.33 a3 a4 | 0.00 a1 | | <u>GP</u> | <u>13.67 a2 a3 a4 30.33 a2</u> |
| EH | 15.00 a3 a4 | | 46.33 a2 | EH | 14.00 a2 a3 a4 +300 |
| <u>MG</u> | <u>15.33 a3 a4</u> | <u>4.33 a1</u> | | DS | 14.33 a2 a3 a4 77.67 a3 |
| <u>RC</u> | <u>17.33 a4</u> | <u>11.3 a1</u> | | MG | 15.00 a3 a4 +300 |
| ZO | 17.67 a4 | 2.67 a1 | | EG | 16.67 a4 0.00 a1 |
| C+ | 24.00 a5 | 61.67 a2 | | C+ | 28.33 a5 102.33 a3 |

Les moyennes suivies de la lettre a avec même indice ne sont pas différentes selon le test tukey à 0.05

3. Conclusion

- *Eucalyptus globulus* was efficient as positive control in inhibiting both bacterial pathogens
- These findings highlight the potential of *E. globulus* as a promising plant-based disinfectant.
- Research is required to assess its environmental safety, socio-economic feasibility, and technical applicability before recommendation for field use.

Thank you

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