

EXPLORING THE ANTIMICROBIAL POTENTIAL OF PLANT ESSENTIAL OILS AS PREVENTIVE OR CURATIVE AGENTS AGAINST *PSEUDOMONAS SYRINGAE* PV. *ACTINIDIAE*

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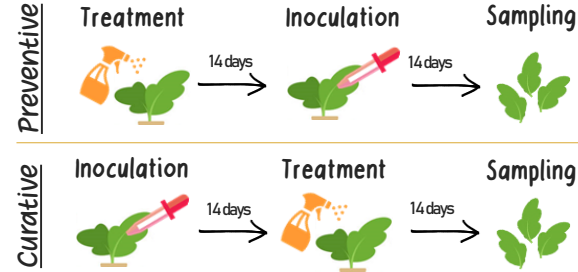
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METHODS



Micropropagated *A. chinensis* 'Hayward'

Psa3 strain 7286

Plant essential oils:

- Anise
- Basil
- Cardamom
- Cumin
- Fennel
- Laurel

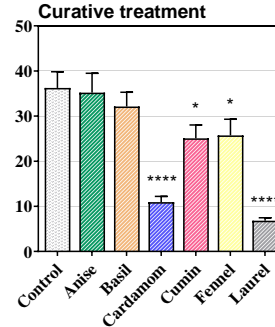
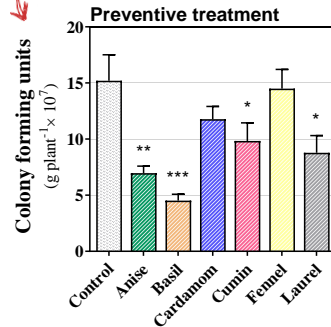
INTRODUCTION

- ✓ The kiwifruit bacterial canker (KBC), caused by *Pseudomonas syringae* pv. *actinidiae* (Psa), is a quarantine disease that leads to decreased yield and often to plant death.
- ✓ Current control strategies mainly rely on the application of copper-based compounds, which show limited success in later stages of the disease and may pose environmental hazards.
- ✓ Plant essential oils (PEOs) have been tested as an environmentally friendly alternative to inhibit Psa in *in vitro* conditions, but additional studies are needed to better evaluate their potential in mitigating plant infection.

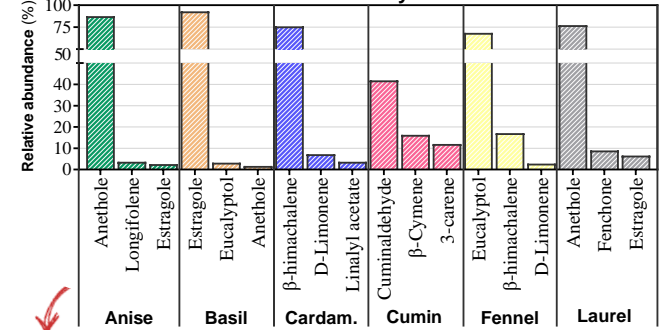
RESULTS AND DISCUSSION

PEOs applied as a **preventive treatment**, significantly decreased Psa endophytic population by at least 35% (cumin) and up to 70% (basil).

PEOs as a **curative method** significantly decreased Psa population by 93% in laurel, 85% in cardamom, 46% in fennel, and 27% in cumin.



PEOs chemical characterization by GC-MS



Anise and laurel were rich in anethole (87.7% and 77.4%), basil in estragole (93.0%), cardamom in β-himachalene (75.9%), cumin in cuminaldehyde (41.9%), and fennel in eucalyptol (68.6%).

CONCLUSION

Given the distinct features of the tested PEOs regarding their use as preventive or curative agents against Psa, deepening the understanding on the role of their constituents and mode of action would lever their used in disease management.

PEOs from **cumin** and **laurel** showed both preventive and curative capacity against Psa, highlighting the distinct **biochemical mechanisms** underlying PEOs mode of action.