

Phosphooxylipins, New Keys to *Arabidopsis thaliana* Defense Against *Botrytis cinerea*.

Reine Enan¹, Manon Genva¹, Gaelle Race¹ and Marie-Laure Fauconnier¹

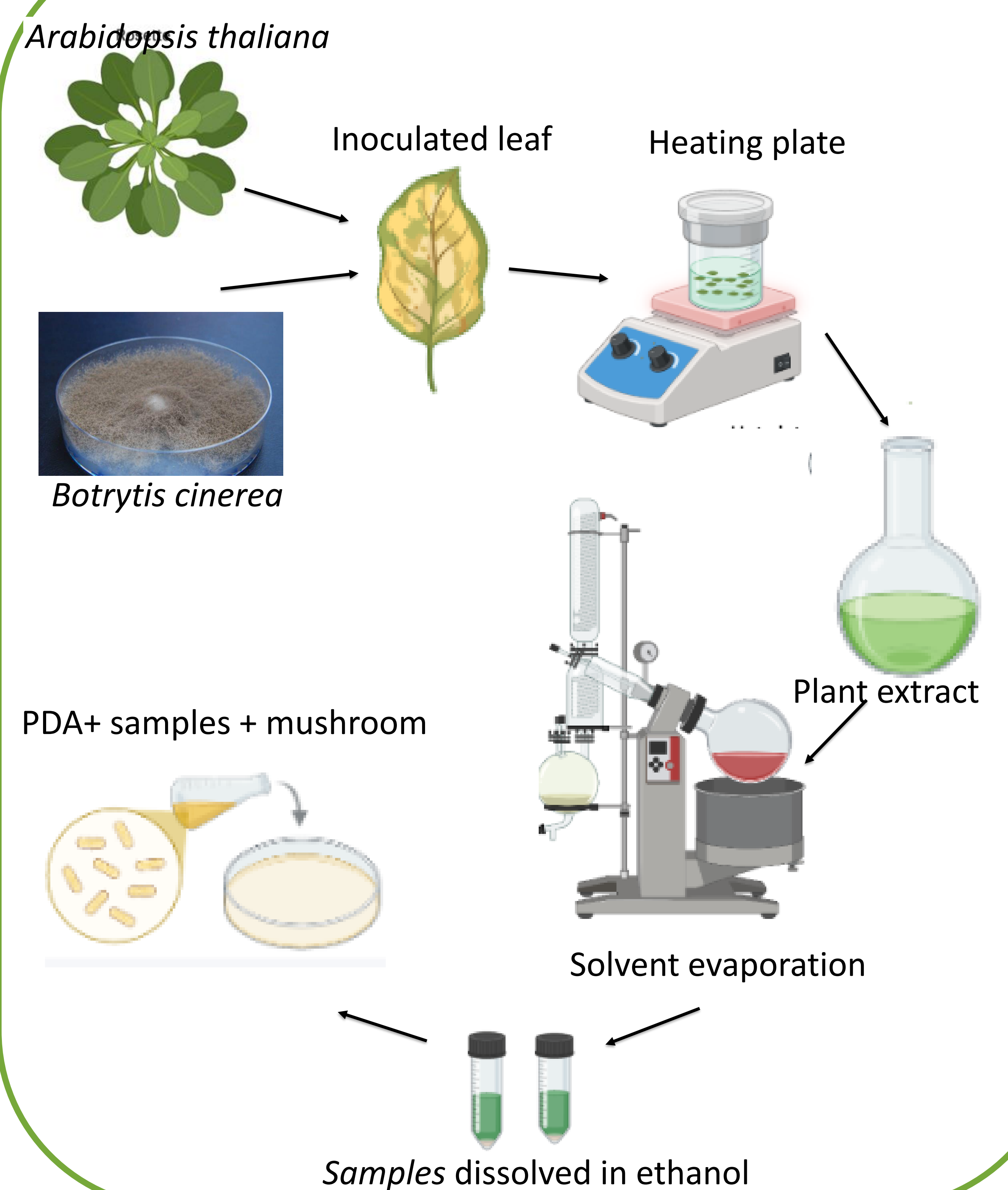
¹Laboratory of Chemistry of Natural Molécules, Gembloux Agro-Bio Tech,
Passages des Déportés 2, 5030 Gembloux, Belgium



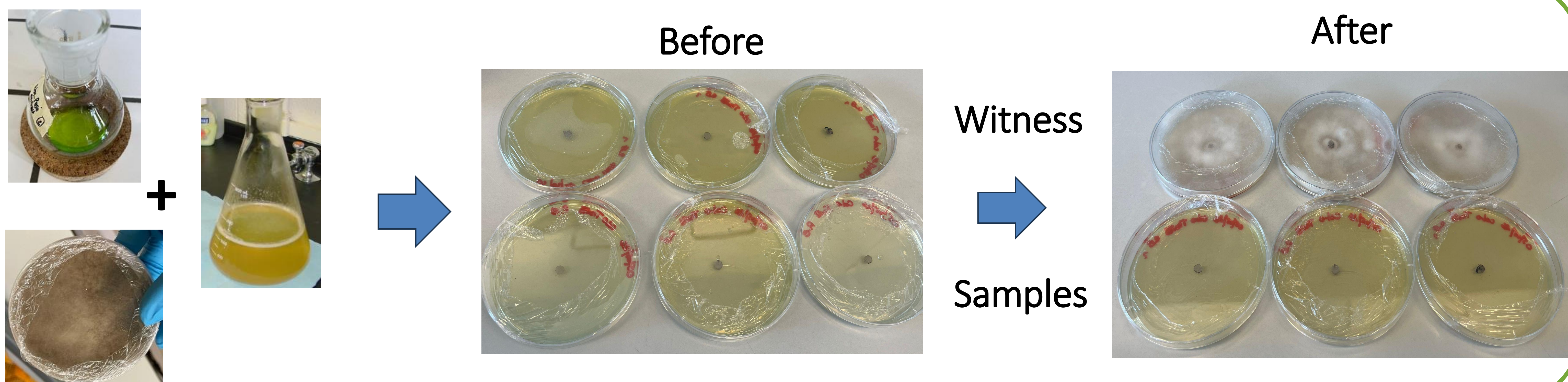
Introduction

To respond to stress, plants have implemented defense strategies, of which an important response is the production of oxylipins (Yang and al., 2007). Plant oxylipins include a wide diversity of oxidized secondary metabolites, among which are the phosphooxylipins, that refers to oxidized unsaturated fatty acids esterified in membrane phospholipids (Deboever and al., 2020). Interestingly, studies reported an accumulation of these lipids in *Arabidopsis thaliana* under stress conditions such as wounding and bacterial infections (*Pseudomonas syringae*). Some studies (Vu and al., 2012) conducted on the *Arabidopsis thaliana* infection by *Botrytis cinerea* have also highlighted the upregulation of certain genes, and notably these implicated in the formation of enzymes involved in the biosynthesis of esterified oxylipins. It is therefore of interest to investigate the production and the biosynthetic pathway of these molecules during infection with *Botrytis cinerea*, the causal agent of gray mold. To verify the actual production of molecules capable of stopping fungal growth, antifungal tests were conducted.

Method



Result



Conclusion

These results show that the treated samples effectively contain antifungal compounds. A better understanding of these natural defense mechanisms offers promising perspectives for the development of biocontrol strategies or the breeding of more resilient varieties. By deciphering how plants mobilize lipid resources to curb gray mold, this research contributes to the emergence of more sustainable crop protection.

References

Vu, H. S. et al. Plant Physiol. 158, 324–339 (2012).
Deboever, E., Deleu, M., Mongrand, S., Lins, L. & Fauconnier, M.-L. Trends Plant Sci. 25, 22-34.
Wenyu Yang and al. 22 juin 2007, JBC volume 282, Pages 18116-18128(2020).

Acknowledgements

The authors wish to thank the Laboratory of Chemistry of Natural Molecules, Gembloux Agro Bio-Tech, University of Liège.