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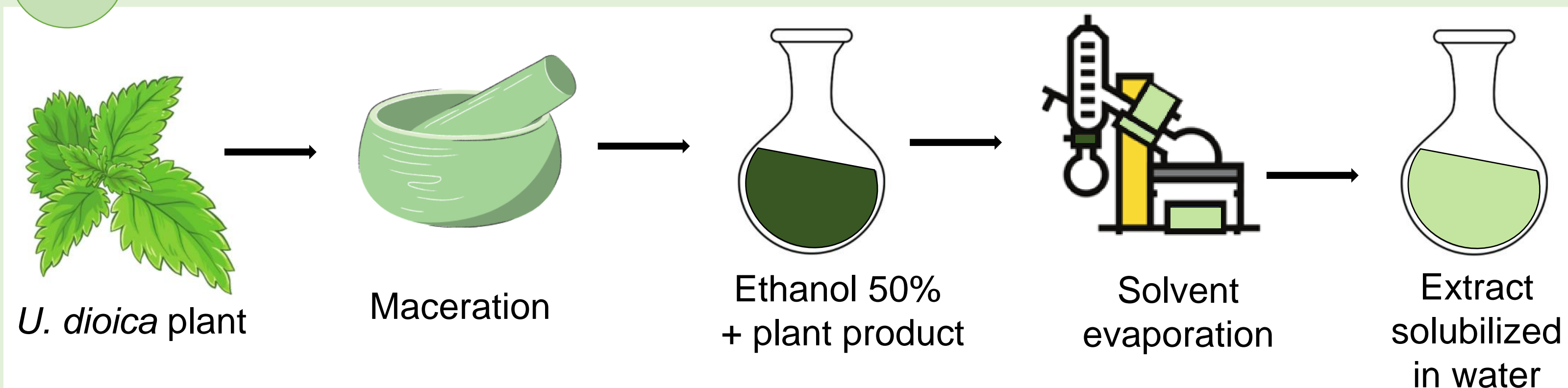
INTRODUCTION

Synthetic fungicides are used to control plant pathogenic fungi responsible for damaging important crops. These fungicides are non-biodegradable and accumulate in the soil, water and plant, being toxic to non-target organisms present in the environment [1]. The drug resistance that emerged to synthetic fungicides is a huge concern as well as food security and human and environment safety. Therefore, an interest is growing in investigating eco-friendly and sustainable alternatives as plant extracts with strong antifungal activity [2]. Plant extracts are a rich source of secondary metabolites (e.g. alkaloids, coumarins, flavonoids, saponins, etc.) constituting a cheaper, locally available, non-toxic and biodegradable option [3].

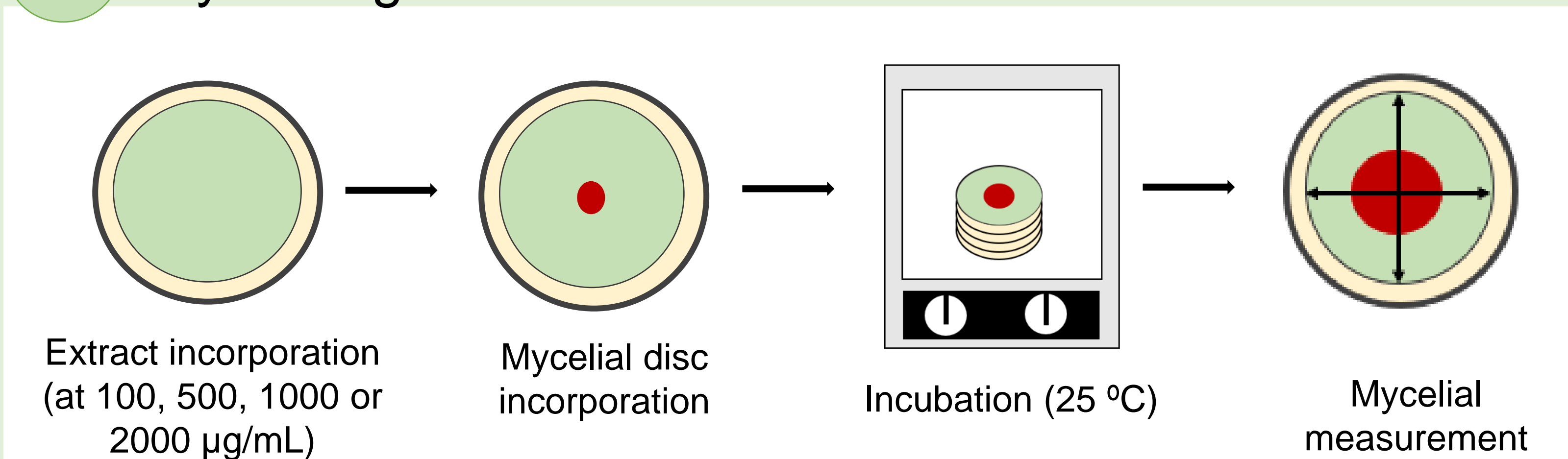
The aim of this work was studying the antifungal properties of *Urtica dioica* aqueous extract against *Colletotrichum acutatum*, *Colletotrichum gloeosporioides*, *Colletotrichum godetiae*, *Colletotrichum nymphaeae*, *Diplodia corticola* and *Phytophthora cinnamomi* in order to develop a potential sustainable alternative to synthetic fungicides.

MATERIALS AND METHODS

1 Plant extraction



2 Mycelial growth measurement



RESULTS

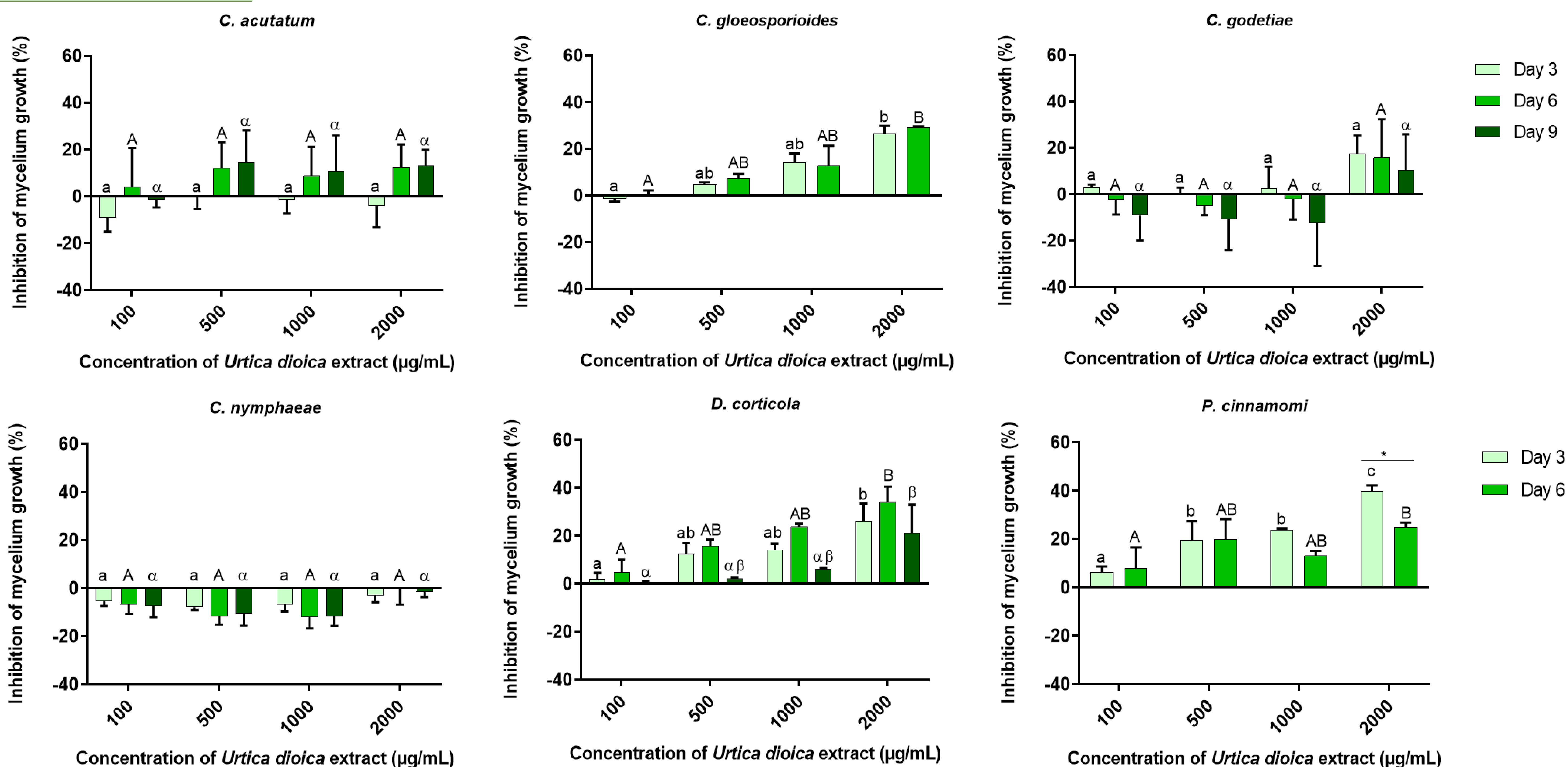


Figure 1. Effect of *U. dioica* on mycelial growth of *Colletotrichum acutatum*, *Colletotrichum gloeosporioides*, *Colletotrichum godetiae*, *Colletotrichum nymphaeae*, *Diplodia corticola* and *Phytophthora cinnamomi* species on PDA medium with incorporation of *U. dioica* extract. Percentage of growth inhibition determined after 3, 6 and 9 days of incubation at different concentrations of *U. dioica* extract, 100, 500, 1000 or 2000 µg/mL. Data are presented as mean of three independent experiments ± SD. One-way ANOVA and Kruskal Wallis test were used for multiple comparisons. Differences were considered statistically significant if $p < 0.05$. Mean values followed by the same letters are not statistically different (lowercase letters for day 3, capital letters for day 6 and Greek letters for day 9). Comparisons between different days of the same concentration are only represented if they are significant.

CONCLUSIONS

- Colletotrichum gloeosporioides* and *D. corticola* are sensitive to *U. dioica* extract;
- Phytophthora cinnamomi* is remarkably sensitive to *U. dioica* extract;
- Sensitivity of *P. cinnamomi* decreases with prolonged incubation, suggesting that the organism adapts to the extract;
- Urtica dioica* is a plant with great potential for creating antifungal products for sustainable agricultural practices.

References

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- Lengai, G.M.W.; Muthomi, J.W. Biopesticides and Their Role in Sustainable Agricultural Production. *J. Biosci. Med.* 2018, 06, 7–41, doi:10.4236/jbm.2018.66002.
- Durgeshlal, C.; Sahroj Khan, M.; Prabhat, S.A.; Aaditya Prasad, Y. Antifungal Activity of Three Different Ethanolic Extract against Isolates from Diseased Rice Plant. *J. Anal. Tech. Res.* 2019, 01, 47–63, doi:10.26502/jatri.007.