INHIBITION OF PHYTOPHTHORA CINNAMOMI CHLAMYDOSPORE BY ACACIA PULCHELLA

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Introduction
In the jarrah forest, the native legume A. pulchella resists P. cinnamomi infection1, and reduces sporangial production2. The effect of this species on chlamydospores of P. cinnamomi was examined in a glasshouse study and in the laboratory using bioassays with root exudates and axenically produced chlamydospores.

Methods
• Soil under glasshouse grown plants of A. pulchella (P. cinnamomi resistant) and A. urophylla (susceptible)3 and the soil without plants (control) were inoculated with P. cinnamomi infected lupin roots. Inoculum was retrieved after 7 days and in planta chlamydospore numbers were recorded as intact, lysed and germinating.
• A. pulchella and A. urophylla were grown aseptically in tubes of sterile poly-propylene beads (Fig. 1). The plants were kept in a growth cabinet illuminated with fluorescent and incandescent lamps with a 14/10 h light/dark regime at 24ºC and fed with a nutrient solution. Root exudates were collected from the Acacias and the control (no plants) for the bioassays.
• Bioassays were conducted with an anoxic chlamydospore suspension4 of P. cinnamomi (isolate 97-16). Numbers of intact, lysed and germinating chlamydospores were counted after 24 h incubation in the root exudates.

Results
• A significantly (P < 0.05) higher number of degenerated chlamydospores (Fig. 2 A & B) were found within the lupin root tissues under A. pulchella plants compared to the intact ones in the soil only control (Fig. 3).
• The bioassays showed a high proportion of germinating chlamydospores (Fig. 4) in A. urophylla exudates, while there was a high proportion of lysed chlamydospores in the A. pulchella exudates (Fig 5).

Fig. 1

Fig. 2 Degenerated chlamydospores

Fig. 3 Intact chlamydospore

Fig. 4 Germinating chlamydospore

Fig. 5 Proportion of intact, germinating and lysed chlamydospores in leachates from aseptically grown A. pulchella, A. urophylla and Sterile mix.

Conclusions
• This is the first evidence of in planta lysis of chlamydospores of P. cinnamomi under A. pulchella. Chlamydospore inactivation is likely to be a contributing factor towards the low inoculum levels of P. cinnamomi under A. pulchella plants.

References
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