



**The Interaction**  
**between *Phytophthora palmivora***  
**and Rubber Tree (*Hevea brasiliensis*)**

**PSU Collaborative Research Fund**

by

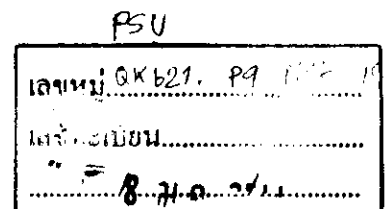
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## Abstract

Inoculation of resistant(R) and susceptible(S) *Hevea* leaves with *Phytophthora palmivora* induced foliar necrosis and biosynthesis of scopoletin (Scp), considered as a *Hevea* phytoalexin. The necrotic lesions appeared as early as 24 hr. after infection and the Scp accumulation in spore droplets was highest around 48 hr. Scp concentration was 2.5-folds higher in the resistant than in the susceptible clone at 72 hr. after inoculation. A fungitoxic effect of Scp on mycelial growths were shown in bioassays, the  $I_{50}$  value of *Phytophthora palmivora* was relatively the same as of *Phytophthora botryosa* and was much lower than those found with another leaf pathogens of rubber tree, *Corynespora cassiicola* and *Colletotrichum gloeosporioides*. Two proteins linked to pathogenesis, beta-1,3-glucanase and chitinase were determined after fungal infection. Both enzymes, as compared to their controls, were induced in BPM-24 (R) clone higher than in RRIM600 (S) clone. However, an evolution of chitinase activity was higher correlated to resistance than that of glucanase activity. Lignin in resistant leaves formed not only more rapidly but also thicker than susceptible ones. Therefore, the lignin deposition on *Hevea* cell walls was also associated with resistance to *P. palmivora*. Even though *Hevea* coordinates these weapons to form a potent arsenal against the invading of the fungus, the differences between clones in necrotic size and Scp accumulation are the most practical parameters for classification of *Hevea* R/S clone with respect to *P. palmivora*.