Phytophthora infection and resultant cellular changes in *in vitro* grown tissues of *Hevea brasiliensis*.

by

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Abstract

Phytophthora meadii is a fungal pathogen which is responsible for four common diseases in *Hevea brasiliensis* (rubber), namely black stripe, abnormal leaf fall, pod rot and shoot die back. In the project, the pathogen was isolated from different rubber growing regions of the country and was studied under laboratory conditions. The studies include the observation of colony morphology on Lima Bean Agar (LBA), growth rate of the fungus at different light and temperature regimes, sporangial morphology and dimensions, the establishment of a growth curve and separation of compounds in the fungal extract using Thin Layer Chromatography (TLC). The pathogen was studied in order to understand its growth and behaviour, as well as to detect any possible differences that could be present within a species.

In vitro culture of *Hevea brasiliensis* was carried out first by establishing a suitable surface sterilization technique. Thereafter, callus tissue was produced using tender stem explants. The cell structure of the callus tissue was recorded and cell suspension cultures were established using a suitable liquid medium. Streptomycin was used as a sterilient in the cell suspension cultures.

The final objective of this project was to see the effect of the fungal extract on cell suspension cultures of *Hevea brasiliensis*. The interaction between the two components was studied at different concentrations of the fungal extract and finally a relationship was established between the pathogen and *in vitro* grown host tissue.

The results of this study can be used in the future to identify a specific virulence factor in the fungal extract and bring about a resistance in the host towards the pathogen.