

## B-16 Effect of tea stem saponins on Ambrosia fungus

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Pencil thick stems of tea, *Camellia sinensis*, are attacked by shot-hole-borer (SHB) *Xyleborus fornicatus* which introduces the symbiotic fungus *Monacroporium ambrosium* into tea stems. Ambrosia fungus serves as a source of sterols for insect development and maturation. Saponins are known to bind with sterols and polyphenols, making sterols unavailable for the insect. Saponin-sterol binding may block the transfer of nutrients through the cell membranes.

Crude tea saponin mixture was isolated by soxhlet extraction of dried powdered tea stems with methanol followed by partitioning with n-butanol. Crude tea saponins (CTS) free of caffeine were isolated by column chromatography. Water soluble saponins (WSS) were prepared by stirring CTS with distilled water followed by centrifuging. CTS was treated with polyvinylpyrrolidone (PVP) in a solution of 10% methanol in water at pH 3.5 to obtain the PVP treated saponins (PVPS). The effect of CTS, WSS and PVPS on mycelial growth and sporulation of ambrosia fungus was tested at a concentration of 200 ppm in Czapek-dox culture medium.

A significant decrease in mycelial weight was observed when the culture was treated with crude (CTS) or water soluble (WSS) saponins. CTS contains polyphenols which may interfere with the action of saponins. WSS showed a higher saponin action probably due to removal of insoluble phenolic components. CTS treated with PVP increased the mycelial growth. A comparison of the mycelial weights of PVP control and PVPS suggested that the action of saponin component of PVPS is compatible with that of WSS. Spore count of culture filtrates showed that the presence of CTS, WSS, PVPS and PVP on the sporulation of ambrosia fungus is not significant.