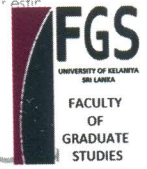


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Attractive effect of volatile extracts of tea stems, *Camellia sinensis* L.O.Kuntze on *Glyptotermes dilatatus* Bugnion and Popoff

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Low country live wood termite (LCLWT), *Glyptotermes dilatatus* Bugnion and Popoff is one of the major insect pests of low grown tea. They first colonize in rotted stumps which are formed due to the invasion of wood rot fungi through pruned stems of tea plant, *Camellia sinensis* L.O.Kuntze and continue their feeding to healthy wood. LCLWT damage is significant owing to its economic crop loss and spread in almost all low grown tea areas. However, concealed habit of the pest limits pest management methods leaving no efficient methods to control this pest at present.

Response of *G. dilatatus* to different parts of tea plant including pieces of healthy stems, rotted stems and leaves were investigated using the choice chamber bioassay to determine the most attractive part of tea plant using termite susceptible cultivars, TRI 2023 & TRI 4042 and tolerant cultivars, TRI 2027 & TRI 4049. The results showed that the alates of *G. dilatatus* were more attractive to rotted stems than the healthy stems and the leaves irrespectively resistance or susceptibility of tea cultivars.

Therefore volatiles of rotted and healthy stems of tea cultivars were extracted using steam distillation method and response of *G. dilatatus* to each volatile extract was evaluated using 'y' shaped olfactometer separately in order to investigate the attractive effect of volatile constituents of tea cultivars to termite alates. The results revealed that the alates of *G. dilatatus* were more attractive to the volatiles of rotted stems obtained from four tea cultivars than that of the healthy stems. Analysis of volatile extracts of rotted stems using GC-MS indicated that the presence of 96 compounds in four tea cultivars. Among them fifteen compounds were found in all four tea cultivars and n-Hexadecanoic acid and 9,12-Octadecadienoic acid (Z,Z) were identified as the two major common chemical constituents of four tea cultivars. Analysis of volatile extracts of healthy stems indicated that the presence of 55 compounds in tea cultivars. Among them 4 compounds were common in all four tea cultivars. When compared the chemical constituents present in volatiles of healthy and rotted stems, it was found that only two compounds, 1,2 Benzene dicarboxylic acid, mono (2-ethylhexyl) ester and n-Hexadecanoic acid were common in the both groups. The reason for different chemical constituents in volatiles of rotted tea stem could be due to the metabolites produced by the fungi inhabited in wood rot.

Keywords: *Glyptotermes dilatatus*, Healthy stems, Olfactometer, Rotted stems, Volatile extracts

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