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Bioactive constituents of wood rot extract of tea, *Camellia sinensis* L.O. Kuntze against alates of low country live wood termite *Glyptotermes dilatatus* Bugnion and Popoff (Isoptera: Kalotermitidae)

P.D. Senanayake[1], K. Mohotti[1] and P.A. Paranagama[2*]

Abstract

[illegible] *Glyptotermes dilatatus* [illegible] *Camellia sinensis*. Potted stumps are formed due to the attack of wood rot fungi in pruned stems. The objective of the present study was to investigate the response of LCLWT to extracts of rotted and healthy stems of susceptible tea cultivars, TRI 2023 and TRI 4042 and tolerant cultivars, TRI 2027 and TRI 4049 and isolate the LCLWT attractive fractions of tea stem extract. Since pieces of rotted stem of both susceptible and tolerant tea cultivars were more attractive to the alates than that of healthy stems, effects of EtOAc extracts of rotted and healthy stems of four tea cultivars were compared on behavior of the alates. The results revealed that the alates positively responded to extracts of rotted tea stems of four tea cultivars than that of healthy tea stems. Therefore hexane, chloroform and aqueous methanol fractions of two extracts of rotted stems were tested against alates using orientation bioassays. Results revealed that the hexane fr[illegible] attractive th[illegible] fractions. The results of bioassay guided fractionation of the hexane fraction using column chromatography revealed the presence of two bioactive sub-fractions suggesting non-polar compounds in rotted tea wood are more attractive to *G. dilatatus* than other sub-fractions. These two fractions can be used to develop a trapping mechanism to strengthen present IPM program of LCLWT.

Keywords: *Glyptotermes dilatatus*, *Camellia sinensis*, Semiochemicals, Rotted tea stem, Healthy tea stem

Background

Tea [illegible] are categorized into three agro-ecological regions, according to the elevation, [illegible] grown (<[illegible] m amsl), medium grown (6[illegible]–1220 m amsl) and high grown (>1220 m amsl) tea. It has been estimated that the total land area of the low grown tea is 42.2 % of the total tea growing area in the country. The contribution of low grown tea to the national production of made tea is approximately 60 % from the total production (Anonymous 2011). Low country live wood termite (LCLWT) *Glyptotermes dilatatus* Bugnion and Popoff (Isoptera: Kalotermitidae) is an economically important one of the major insect pests of low grown tea plantations in Sri Lanka (Sivapalan and Senaratna 1961). It has been estimated that yield loss due to LCLWT damage was 3000 kg of made tea/ha when 50 % infestation stand for 10 years (Senas 1977).

Tea plant is cultivated for harvesting 'two leaves and the bud' and therefore it is pruned periodically to maintain the vegetative growth. Pruned stems undergo die-back and [illegible] such as *Fusarium oxysporum* (Nectriaceae), *F. solani* (Nectriaceae), *Gliocladium roseum* (Bionectriaceae), *Lasiodiplodea theobromae* (Botryosphaeriaceae) and *Myrothecium roridum*

*Correspondence: priyanwakinac@yahoo.com; Priyani.paranagama1@gmail.com
[2] Department [illegible] Sri Lanka
Full list of [illegible] available at the end of the article

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