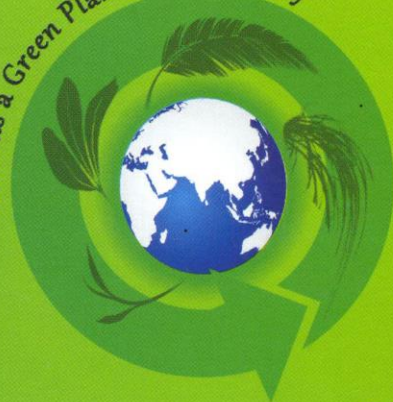


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Evaluation of the Response of Low-country Live-wood Termite, *Glyptotermes dilatatus* Bugnion & Popoff (Isoptera: Kalotermitidae) for Semiochemicals Present in Rotted and Healthy Stems of Tea Cultivars

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ABSTRACT

Low-country live-wood termite (LCLWT), *Glyptotermes dilatatus* Bugnion & Popoff is attractive to rotted stump of tea plant, *Camellia sinensis* L.O.Kuntze and colonise inside the rotted stump. LCLWT damage is significant owing to its economic crop loss and spread in almost all low-grown tea areas. However, the concealed habit of the pest limits pest management methods leaving no efficient methods to control this pest at present. Objectives of the present study are to evaluate behavioural responses of *G. dilatatus* to semiochemicals of healthy and rotted stems of tea. The responses of alates of *G. dilatatus* were evaluated against pieces of healthy stems, rotted stems and leaves of susceptible tea cultivars, TRI 2023 and TRI 4042 and tolerant cultivars, TRI 2027 and TRI 4049 using choice chamber bioassay. The results revealed that the rotted stems of TRI 2023, TRI 2027, TRI 4042 and TRI 4049 were more attractive to alates, and the percentage responses obtained were 61 ± 5.14 , 60 ± 5.41 , 54 ± 1 and 58 ± 2.23 respectively. The extracts of the rotted and healthy stems of TRI 2023, TRI 4042, TRI 2027 and TRI 4049 were tested against alates, and the percentage responses obtained for rotted-stem extracts were 86 ± 1.8 , 53 ± 3.6 , 80 ± 1.7 and 67 ± 1.7 respectively. The results revealed that the alates strongly responded to the extracts of the rotted stems than to the extract of healthy stems of both susceptible and tolerant cultivars. Therefore, the extracts of the rotted stems of cultivars, TRI 2023, TRI 4042, TRI 2027 and TRI 4049 were partitioned using hexane, chloroform and methanol, and they were tested against the alates of *G. dilatatus* in orientation bioassays. The hexane fractions of the rotted stem of each cultivar were more attractive than the chloroform and methanol fractions. Therefore, the hexane fraction of the cultivar TRI 4042 was further separated using the silica gel column and three sub-fractions were identified as attractive fractions indicating the non-polar compounds in rotted tea stems are attractive to *G. dilatatus*. Hence, these three fractions could potentially be harnessed as semiochemicals for alates of *G. dilatatus*.

Keywords: Alates, *Camellia sinensis*, *Glyptotermes dilatatus*, Healthy tea stem, IPM, Low-country live-wood termites, Rotted tea stem, Semiochemicals