

## Identification and evaluation of semiochemicals of tea stems and LiveWood Termite *Glyptotermes dilatatus* Bugnion and Popoff (Isoptera: Kalotermitidae)

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### **Abstract**

The *Glyptotermes dilatatus*, commonly known as the low country live wood termite, predominantly inhabits decayed wood resulting from fungal infection in pruned stems of the tea plant, *Camellia sinensis*. This study explores the response of *G. dilatatus* to rotted and healthy tea stems of the TRI 4042 cultivar, as well as the initial colonies of termite alates. Additionally, an interim study identifies and evaluates the body extracts of *G. dilatatus*, aligning with the primary research objective. The total chemical composition of initial colonies of *C. sinensis* and *Gliricidia sepium* is compared with that of rotted and healthy tea stems (TRI4042). Utilizing a choice chamber bioassay, the impact of different parts of the tea plant on termite behavior is assessed. Results demonstrate that rotted stem pieces of TRI 4042 are more attractive to alates, with a mean percentage response of  $10.83 \pm 1.32$ , compared to  $4.16 \pm 1.70$  for healthy stem pieces. The analysis of volatile extracts from rotted stems using GC-MS identifies 20 compounds, with four being common in all replicates. Furthermore, termite initial colonies exhibit 42 compounds, with 20 additional compounds compared to healthy and rotted stem pieces. Specific compounds, such as Phenol, 3,5-bis (1,1-dimethylethyl)- C<sub>14</sub> H<sub>22</sub> O, are common in rotted stem pieces and termite initial colonies. In termite alates body extractions, volatile compounds such as n-Hexane, 1-Hexene, 5-methyl, and Eugenol are identified. The specific studies are required to identify the behaviorally responsive compounds and their use for developing management practices.

**Keywords:** Choice chamber bioassay, *Glyptotermes dilatatus*, Termite behavior, Termite initial colonies, Termite body extracts, Tea stems volatiles