

**Characterization of perylene in tropical environment : comparison of new and old fungus comb for identifying perylene precursor in *Macrotermes gilvus* termite nests of Peninsular Malaysia.**

ABSTRACT

This is the first record on the distribution of perylene in new and old fungus combs of termite nest (*Macrotermes gilvus*) in order to determine perylene source in tropical environment. Twenty four samples of new and old fungus combs, inner and outer nest walls, fresh and decomposed bark, decomposed stem, soil, and soil-wood interface were collected in order to test of two hypotheses; i) Perylene is produced in the termite's hindgut (*M. gilvus*) and ii) Perylene is present only in new fungus comb of *M. gilvus* termite nests. For one Station (Station A) the profile of perylene concentration was the following order: fungus comb > outer nest wall  $\geq$  Soil-Wood interface  $\geq$  decomposed stem  $\geq$  decomposed bark  $\geq$  Inner nest wall > Soil. For the other Station (i.e. B) the profile was new fungus comb > inner nest wall > old fungus comb  $\geq$  outer nest wall  $\sim$  Soil. The perylene concentration was found up to 21-54 times higher in fungus comb as compare to the rest of the samples in Station A. whereas, the perylene concentration was 85-400 times higher in new fungus comb as compare to the remaining samples in Station B, this can be due to the production or accumulation of perylene in these nests. On the other hand, smaller termite nests (Stations C and E) no perylene was detected, due to the fact that the new fungus comb was not found in those nests. The results confirmed the following hypotheses; perylene occurs only in new fungus comb and may be attributed to the high concentrations of aromatic rings of lignin in new fungus comb.

**Keyword:** Perylene; Termite; New fungus comb; Old fungus comb; *Macrotermes gilvus*.