

Effects of Essential Oils on the Intestinal Microflora of Termite (*Heterotermes indicola*)

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Abstract : Damage caused by subterranean termites is of major concern today. Termites are commonly treated with pesticides, which have resulted in several problems related to health and environment. For this reason, plant-derived natural products, specifically essential oils, have been evaluated in order to control termites. The aim of the present study was to investigate the antitermitic potential of six essential oils on *Heterotermes indicola*, a subterranean termite. No-choice bioassays were used to assess the termiticidal action of essential oils. Further, gut from each set of treated termite groups was extracted and analyzed for reduction in number of protozoa and bacteria by protozoal count method using haemocytometer and viable bacterial plate count (dilution method) respectively. In no-choice bioassay, it was found that *Foeniculum vulgare* oil caused a high degree of mortality (90% average mortality at 10 mg/0.42g weight of filter paper). Least mortality appeared to be due to *Citrus sinensis* oil (43.33% average mortality at 10 mg/0.42g). The highest activity was verified to be of *Foeniculum vulgare*, followed by *Eruca sativa*, *Trigonella foenum-graecum*, *Peganum harmala*, *Syzygium cumini* and *Citrus sinensis*. The essential oil which caused maximum reduction in number of protozoa was *P. harmala*, followed by *T. foenum-graecum* and *E. sativa*. In case of bacterial count, *E. sativa* oil indicated maximum decrease in bacterial number (6.4×10^9 CFU/ml). It is concluded that *F. vulgare*, *E. sativa* and *P. harmala* essential oils are highly effective against *H. indicola* termite and its gut microflora.

Keywords : bacterial count, essential oils, *Heterotermes indicola*, protozoal count

Conference Title : ICUA 2016 : International Conference on Urban Agriculture

Conference Location : Singapore, Singapore

Conference Dates : November 21-22, 2016