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

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Abstract : Damage causes by subterranean termites are of major concern today. Termites majorly treated with pesticides 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 subterranean termite. No-choice bioassay was used to assess the termiticidal action of essential oils. Further, gut from each set of treated termite group 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 causes high degree of mortality 90 % average mortality at 10 mg oil concentration (10mg/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 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
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