A Combination of nNeem and Clove in the Form of Cream Against Tetraponera rufonigra

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Tetraponera rufonigra, also known as the bi-colored arboreal ant, is one of the most dangerous invasive ant species globally. Phospholipase from its stings lead to severe anaphylaxis in which deaths may follow. The usage of synthetic insecticides such as hydramethylnon ant bait and borax ant poison has threatened aquatic life while exposure to humans will cause severe health problems. Therefore, this research proposes Tetraponera Magic Cream (TMC) a combination of neem (Azadirachta indica) and clove (Syzygium aromaticum) which are abundant in nature as an effective, eco-friendly, and safe cream-based insecticide against T. rufonigra. GC-MS analysis identified eugenol from clove as an active compound in TMC whereas HPLC analysis detected azardichtin in both neem oil and neem powder. The tested TMC consisted of neem ranging from 10 to 100 %, mixed with a fixed amount of clove at varying proportions. Results showed that percentage mortality increased with increment of neem concentration. All T. rufonigra workers were effectively eliminated within 24 hours at 70-100% concentration of neem. The effect of (full neem_full clove) on the mortality of T. rufonigra at 24 hours (100.000±0.000)% was significantly higher than (zero neem_full clove) (20.000±5.774)%, (p=0.000, 1-way ANOVA), demonstrating the importance of presence of neem towards the mortality of T. rufonigra. Combination of neem and clove in the ratio of 25:3 was discovered to be optimum in eliminating T. rufonigra. This study shows that TMC is a novel, effective and eco-friendly cream-based insecticide that could benefit humanity and the environment.

Awards Won:

Second Award of $2,000