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Isolation and characterization of *Eugenia aromatica* oil extract against tropical warehouse moth *Ephestia cautella* [Lepidoptera: pyralidae] in cocoa beans

Cocoa bean is a raw material used for the production of chocolate and other confectionaries. *Ephestia cautella* is the major pest of dried cocoa beans in storage and synthetic insecticide like organo-chlorides and organophosphates are the major insecticides used to control this pest in storage which further post health hazard to man and his environment. This then necessitate the search for insecticide of plant origins which are bio-degradable and non-toxic to man. This study investigates the contact and fumigant efficacy of the powder and oil extract of *Ephestia aromatica* on the developmental stages of *E. cautella*. Powders of *E. aromatica* were administered at different concentrations (0.5 g, 1.0 g, 1.5 g, 2.0 g and 2.5 g). The oil from *E. aromatica* was extracted with ethanol using soxhlet extractor and redistilled using rotary evaporator and tested as fumigant insecticidal against development stages of *E. cautella* at 0.5 ml, 1.0 ml, 1.5 ml, 2.0 ml and 2.5 ml. Egg hatchability, adult emergence, larvae and adult mortality of *E. cautella* were used as indices of insecticidal activities at 24 hrs, 48 hrs, 72 hrs and 96 hrs post-treatment. Essential oil obtained from the plant was purified using thin layer chromatography and analyzed by Gas Chromatography Mass Spectrometer (GC-MS). Result obtained shown that *E. aromatica* powder and oil completely inhibited egg hatchability and adult emergence both as contact and fumigant. Except the 0.5 g of *E. aromatica* powder that recorded 50.00% larva mortality and 51.67% adult mortality, other treatment concentrations recorded 90-100% larva and adult mortality. At 2.5 ml oil extract tested as contact and fumigant larvicides after 96 hrs recorded 92.98% and 98.23% mortality, respectively. Results from phytochemical analysis of the oil showed that the major components were eugenol (82.044%) and Caryophyllene (11.716%). These findings suggested that *E aromatica* extract could be a potential source of insecticide which may be used for the production of bio-pesticide.

Biography

Akinneye J O is an Associate Professor and has his expertise in the field of applied entomology and in the evaluation of medicinal plant for the control of stored product pest. He has provided new strategies for local farmers for the control of stored product pests. His research interest is focused on the biology and control of lepidopterous pest of stored products. He has 15 years of research, teaching and administration at the Federal University of Technology Akure, Ondo State, Nigeria, where he has supervised many undergraduate and postgraduate students.

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