



Research Paper

ALLETHRIN AND PRALLETHRIN BASED MOSQUITO COIL EMISSION INDUCES TOXICITY AND ALTERS THE HAEMOLYMPH PROTEINS AND COCOON TRAITS OF *BOMBYX MORI*

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ABSTRACT

Burning of mosquito repellent coil is not uncommon in our daily life to safeguard from mosquito vector borne diseases. But, the effect of continuous, long term exposure to such insecticidal vaporizer environment, from the point of human health, is still on debate. Surprisingly, the personnel involved in silkworm (*Bombyx mori* L.) rearing for production of silk-cocoons is still uninformed on the safety of its use inside the rearing room. This study is first of its kind to examine the impact of mosquito coils of two popular commercial brands viz., Mortein nature guard and Allout, on silkworm growth, larval haemolymph proteins, silk-cocoon formation and economic traits by exposing larvae of CSR₂ and PM x CSR₂ breeds to mosquito coil smoke for 12 h daily, from day 1 of first instar until spinning. Consequently, there was a decline in the growth of larvae of treated lots of CSR₂ and PM x CSR₂ against their respective control batches. More importantly, a protein with molecular mass of 82 kDa, which is identified as key storage protein, was down regulated that resulted in development of deformed moths in CSR₂. In addition, the cocoon characteristics and yield were also more affected in the larvae of CSR₂ than PM x CSR₂ exposed to allethrin and prallethrin based mosquito coil emission. Thus, our investigation pertinently revealed that although both the type of mosquito coil emission was found toxic, allethrin based smoke induced more toxicity than prallethrin and between two silkworm breeds, CSR₂ exhibited higher sensitivity than PM x CSR₂. Accordingly, we suppose that farmers actively involved in silkworm rearing should be cautious while using mosquito coils in the rearing house to protect them from the mosquito bite causing infectious diseases, that might lead to cocoon crop loss.

Key words: Allethrin, *Bombyx mori*, cocoon, mosquito coil, prallethrin, protein.