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Some aspects of the life histories of *Ephestia cautella* (Lepidoptera: Pyralidae) and *Tribolium castaneum* (Coleoptera: Tenebrionidae) infesting herbal tea and a method to control them using a lethal temperature that does not affect flavour

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Ephestia cautella (Tropical warehouse moth) and *Tribolium castaneum* (rust red flour beetle) are two of the common stored product pests which cause considerable damage to cereals, dried fruits and other plant parts, resulting in weight losses and contamination of the stored products. These two insect species have been reported in a particular herbal tea, which is a mixture of shredded *Hibiscus* buds, Rose hips and Camomile exported by a Sri Lankan tea firm.

In this study, completion of the life cycles of these two species in the herbal tea was observed and a heat treatment that does not affect the flavour of the tea was developed for their control. The development times from egg to adult of both *E. cautella* and *T. castaneum* in the herbal tea at room temperature and the lowest temperatures above room temperature that cause 100% mortality of all stages of both species were determined.

The mean longevity of adult *E. cautella* was 10.8 ± 0.663 . No mortality of *T. castaneum* adults occurred during the study carried out over a period of 3 months. The mean egg incubation periods of *E. cautella* and *T. castaneum* were 2.9 ± 0.18 and 6.0 ± 0.149 days respectively; the mean larval periods for *E. cautella* and *T. castaneum* were 52.5 ± 0.833 and 48.5 ± 0.500 days respectively; The mean pupal periods of *E. cautella* and *T. castaneum* were 9.2 ± 0.2 days and 7.2 ± 0.277 days respectively.

The lowest lethal temperature above room temperature, which caused 100% mortality of all stages of both *E. cautella* and *T. castaneum*, was 53°C under experimental conditions. However regression analysis gives the values of 53°C for *E. cautella* (p value = 0.000, R-Sq = 0.934) and 54°C for *T. castaneum* (p value = 0.000, R-Sq = 0.909). 55°C will ensure the complete control of both species.