Effects of food wastes on yellow mealworm Tenebriomolitor larval nutritional profiles and growth performances

ABSTRACT

In this study, nutritional profiles and growth performances of yellow mealworm, Tenebriomolitor larvae (TML) were assessed cultivated using common food wastes i.e. watermelon rinds, broilers' eggshells and banana peels. Nutritional profiles and growth performance of TML were evaluated after 28-day feeding trial. Post-feeding proximate analysis showed significant increment of nutritional contents compared to the control groups; whereby TML demonstrated highest level of crude protein (43.38%±2.71), moisture (9.74%±0.23) and ash (4.40%±0.22) in the group treated with watermelon wastes. On the other hand, TML showed highest level of crude fibre (8.73%±0.05) when treated with broilers' eggshells; and higher level of crude fat (40.13%±4.66) with banana wastes. Nitrogen-free extract (NFE) contents were also noticed higher in the group treated with banana wastes (4.46%±5.30). In terms of growth performance, TML administrated with watermelon wastes demonstrated superior in specific growth rate (2.50%±0.43) and feed conversion efficiency (0.10%±0.01). Interestingly, TML grown with banana wastes showed highest survival rate (97.5%) among all. In short, TML cultivation using watermelon and banana wastes showed a promising result on nutritional fortification and growth enhancement.

Keyword: Food waste; Proximate analysis; Specific growth rate; Survival rate; Tenebriomolitor