

ABSTRACT

Utilization of non-conventional feedstuffs such as edible cockroaches to replace fishmeal in poultry feed has potential to increase productivity in chicken. The aim of this study was to generate knowledge on production and utilization of German cockroach (*Blattella germanica*) as an alternative feed protein for increased chicken production. The specific objectives in this study were; to determine the development and survival of *Blattella germanica* reared on organic wastes as substrates; to determine the chemical composition of *B. germanica* at the nymph and adult stages; to assess growth performance and; carcass characteristics of chicken fed on diets with *B. germanica*. Completely randomized design was used to collect data in all experiments, one-way ANOVA was used to analyze data in R 4.1.2, and comparison on proximate composition of nymph and adult cockroach was by Chi-square for objective two. In objective one nymph German cockroach were fed on four substrates; spent-brewers-grain (SBG), wheat pollards (SWP), *Caridina nilotica* (SCN), and 2SBG:2WB: CN (SC) as treatment. For objective three and four, grower chicks were fed on four diets with German cockroach (BGM) as replacement of fishmeal (FM) such that; TA (12.5% BGM + 87.5% FM), TB (37.5% BGM + 62.5% FM), TC (50% BGM + 50% FM), TD (0% BGM + 100% FM). The development and survival of *B. germanica* on different substrates was significantly different ($p < 0.05$) among the nymphs. SC substrate recorded highest mature weight, overall performance index and survival that was 90.25 mg, 197.35, 96% respectively. Nutritionally, only the crude fat was significantly different ($p < 0.05$), fats were higher in nymph than adult cockroach while crude protein was similar with an average of 57.46 %. In the feeding trial, Feed intake, weight gain and feed conversion ratio of birds fed on treatments diets with BGM did not differ significantly from the control (TD). Similarly, the weight of thighs, drumstick, liver, breast, and wings was not different from the control. A sensory evaluation also revealed that colour, smell, flavour, juiciness and overall acceptability was not significantly different ($p > 0.5$). Current study concludes that SC is suitable in rearing German cockroach whereas replacing fishmeal by 50% in chicken diets does not affect growth performance, meat quality, and sensory attribute of meat. Stakeholders in poultry value chain should embrace production and use of cockroach as feed for chicken improved productivity.