ESTIMATION OF APPARENT METABOLIZABLE ENERGY (AME) IN BLACK SOLDIER FLY LARVAE (Hermetia illucens L.) FULL-FAT MEAL FOR BROILER CHICKENS

E.W.D.M. Ellawidana[1], R.K. Mutucumarana[2], H.A.D. Ruwandeepika[2], M.P.S. Magamage[2]

[1]Faculty of Graduate Studies, Sabaragamuwa University of Sri Lanka
[2]Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka
ewdmellawidana@gmail.com

Abstract - Broiler production plays a vital role in human protein supplementation. Ever increasing cost and supply chain issues of key poultry feed ingredients, especially the protein sources have demoted the profit margins of the poultry industry. Therefore, the industry is always encouraged to seek alternative crude protein (CP) sources like Black soldier fly (Hermetia illucens L.) larvae (BSFL) meal for its sustainability. The purpose of this study was to determine the nutritional composition of BSFL and the apparent metabolizable energy (AME) value of BSFL meal fed to broiler chickens prior incorporating into feed formulation. The proximate composition, minerals, and fatty acid profile of BSFL full-fat meal produced from kitchen waste as a substrate were evaluated. Eighty, 21-d old unsexed Cobb-500 broiler chickens (BW±SD: 665.8 ±14.3 g) were assigned randomly into 16 battery cages (04 replicates, five birds/replicate). A maize-soybean meal-based diet was partially substituted by pre-analyzed BSFL meal at rates of 5%, 10%, and 15%, respectively. The birds were fed in a completely randomized design for 7 days, with a 4-day adaptation period. Excreta were collected for three days from day 25 to 28. The results revealed that the BSFL meal comprised 34.4% CP and 47.3% ether extract (EE) when analyzed. The approximate AME of the BSFL full-fat meal fed to broilers was 15.66 MJ/kg. The BSFL full-fat meal can be used sustainably in feed formulation and has the potential to replace more expensive feed ingredients.

Keywords: Apparent metabolizable energy; Black soldier fly larvae; Broiler; Crude protein; Nutrition