

Black Solider Fly Larvae (*Hermetia illucens*) as a Substitute for Fish Meal for Commercial Broilers: A Conceptual Research Design

E.W.D.M. Ellawidana^{1*}, R.K. Mutucumarana², M.P.S. Magamage², and
H.A.D. Ruwandepika²

¹*Faculty of Graduate Studies, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka*

²*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka*

**ewdmellawidana@gmail.com*

In Sri Lanka, meat industry plays a key role in livestock sector where chicken meat contributes about 70%. However, economically, meat production would allocate nearly 80% of total cost of production especially in terms of crude protein for the animal feed causing profit chains to be in pressure. In this context, Black Soldier Fly (*Hermetia illucens*) Larval (BSFL) meal has been identified as one of the exceptional protein sources to substitute for some key protein ingredients in animal feed. Black soldier fly larval meal comprises around 42% crude protein and 29% crude fat with an excellent amino acid profile. No studies have been conducted locally so far, to assess the potential of substituting BSFL for one of the major imported protein sources, fish meal. Basically, the objectives of the proposed study are to assess the nutritional composition and the Apparent Metabolizable Energy (AME) of BSFL reared on kitchen waste and to assess the maximum inclusion levels of BSFL in broiler diets. The BSFL will be reared on kitchen waste in a BSFL based compost bin. Substrate and the pre-pupae samples will be subjected to analyze for the nutritional composition in duplicates. AME of BSFL meal will be estimated by using acid insoluble ash (AIA) as an inert marker, with 80, 21-day old commercial broilers using a pre-formulated reference diet, 5%, 10% and 15% BSFL substitutions of reference diet. Feed samples and excreta samples will be analysed for gross energy and AIA. To assess the maximum inclusion level of BSFL in broiler grower and finisher diets, nine isoenergetic energetic and isoproteic diets containing full-fat and defatted BSFL at 0%, 2.5%, 5%, 7.5% and 10% will be used to feed 324 birds. The nutritional composition of each diet, weekly feed intake, body weight gain, feed conversion ratio and mortality will be determined. Forty-two days old broilers will be subjected to analyze the meat characteristics for number of sensory properties by 30 untrained panelists using a predesigned questionnaire. A cost benefit analysis will be carried out in terms of feed cost per kg live weight gain to find out the most economical inclusion level.

Keywords: *Broiler, Black soldier fly larvae, Crude protein, Fishmeal*

Acknowledgement: *This research was funded by AHEAD/RIC grant*