

Protein and amino acids digestibility of two Black Soldier fly larvae meal forms in broilers

Alba Cerisuelo¹, Ernesto A. Gómez¹, Amparo Martínez-Talaván¹, Laia Piquer¹, Dhekra Belloumi¹, Carmen Cano¹, Mar Martínez¹, César Fernández² and Santos Rojo³

¹IVIA, CITA, Pol. Ind. La Esperanza, 100, 12400 Segorbe, Castellón, Spain, ²Bioflytech, S.L., Ctra. Cementerio, km2,2, 30320 Fuente Álamo, Murcia, Spain, ³UA, Dep. C. Ambientales y R. Naturales, Ap. 99, 03080, Alicante, Spain; dhekrabelloumi@gmail.com

A trial was conducted to evaluate the protein (CP) and amino acids (AA) digestibility of two types dehydrated Black Soldier fly (i.e. *Hermetia illucens*) larvae meal: a defatted meal (DF) and a full fat meal (FF) in broilers. These insects were all fed with agri-food by-products. A total of 140 male broilers of 21 days of age were used. Five experimental feeds were formulated to calculate standardized ileal digestibility (SID) of CP and AA using the regression method. After 7 days of receiving the experimental diets, animals were slaughtered and the terminal ileum content was collected to determine CP and the individual AA digestibility. The FF meal showed a higher amount of crude fat, gross energy and calcium and a lower amount of CP (52.8 vs. 43.2% in dry matter basis) compared with DF insect meal. The AA profile was similar between the two insect meals, and the most abundant essential AA were valine, isoleucine, and lysine in both ingredients. The digestibility of CP and essential AA was high (>70%) in both ingredients. The SID of CP was similar in DF and FF (76.6 vs. 73.0%, respectively). In general, AA digestibility was lower in FF compared with DF, but the differences were not significant. Among the essential AA, those with a higher SID were methionine, phenylalanine and arginine in both insect meals (95.5 vs. 91.8, 88.7 vs. 80.5 and 88.9 vs. 79.4 in DF and FF, respectively). Regarding the non-essential AA, glutamic acid and tyrosine were the most digestible in both ingredients. In conclusion, in terms of CP and AA, both DF and FF Black Soldier fly larvae meals can be suitable protein and AA sources for broiler chickens' diets, especially methionine. Thus, insects fed agricultural by-products represent a novel and promising feed ingredient for poultry diets and could potentially be used as substitution ingredients of soybean in broiler diets, especially DF sources. This work was supported by the project Wayst'up, funded by the European union's horizon 2020 research and innovation programme under grant agreement no. 818308.