

Article

Potential of Insect Meals as Protein Sources for Meat-Type Ducks Based on In Vitro Digestibility

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Simple Summary: There has been a dramatic increase in duck meat consumption. As a result, ducks are an interesting alternative type of livestock. Animal-based proteins such as fishmeal and animal by-products are valuable nutrients with high digestibility, but they are associated with cost fluctuations, pathogen contamination, and environmental impacts. Therefore, plant-based proteins are used, but they have the disadvantages of inappropriate amino acid profiles, anti-nutritional factors, and mycotoxin contamination. Insect meal contains favorable nutrients and low production costs and is environmentally friendly; however, there is a large number of insect species. Therefore, the purpose of this investigation is to screen insects for their potential use as a protein source in the duck diet. Insect meal with a high proportion of low-digestible components was shown to have low digestibility. In conclusion, yellow mealworm larvae, giant mealworm larvae, lesser wax moth larvae, house fly larvae, mulberry silkworm pupae, and American cockroach nymph have the potential to be alternative protein sources for ducks.

Abstract: There has been a dramatic increase in duck meat consumption. As a result, ducks are an interesting alternative type of livestock. Animal-based proteins such as fishmeal and animal by-products are valuable nutrients with high digestibility, but they are associated with cost fluctuations, pathogen contamination, and environmental impacts. Therefore, plant-based proteins are used, but they have the disadvantages of inappropriate amino acid profiles, anti-nutritional factors, and mycotoxin contamination. Insect meal contains favorable nutrients and low production costs and is environmentally friendly; however, there is a large number of insect species. Therefore, the purpose of this investigation is to screen insects for their potential use as a protein source in the duck diet. Insect meal with a high proportion of low-digestible components was shown to have low digestibility. Yellow mealworm larvae, giant mealworm larvae, lesser wax moth larvae, house fly larvae, mulberry silkworm pupae, and American cockroach nymph have the potential to be alternative protein sources for ducks. Insect meal has been widely studied and is used in animal nutrition to replace common protein sources that have several disadvantages and to promote sustainability in animal production. Two-step in vitro digestibility using crude enzyme extracts from digestive tracts of meat-type ducks (Cherry Valley) was performed on general protein sources and insect meals to compare the in vitro digestibility of organic matter (OMd) and crude protein (CPd). Variation in chemical components between different types of insect meal was found. A positive correlation was