

Dry-Extrusion of Asian Carp, a Sustainable Source of Natural Methionine for Organic Poultry Production

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Abstract : Methionine, a sulfur containing amino acid, is essential for healthy poultry production. Synthetic methionine is commonly used as a supplement in conventional poultry. However, for organic poultry, a natural, cost effective source of methionine that can replace synthetic methionine is unavailable. Invasive Asian carp (AC) are a potential natural methionine source; however, there is no proven technology to utilize this fish methionine. Commercially available rendering is environmentally challenging due to the offensive smell produced during production. We explored extrusion technology as a potential cost effective alternative to fish rendering. We also determined the amino acid composition, digestible amino acids and total metabolizable energy (TMEn) for the extruded AC fish meal. Dry extrusion of AC was carried out by mixing the fish with soybean meal (SBM) in a 1:1 proportion to reduce high moisture in the fishmeal using an Insta Pro Jr. dry extruder followed by drying and grinding of the product. To determine the digestible amino acids and TMEn of the extruded product, a colony of cecectomized Bovans White Roosters was used. Adult roosters (48 weeks of age) were fasted for 30 h and tube fed 35 grams of 3 treatments: (1) extruded AC fish meal, (2) SBM and (3) corn. Excreta from each individual bird was collected for the next 48 h. An additional 10 unfed roosters served as endogenous controls. The gross energy and protein content of the feces from the treatments were determined to calculate the TMEn. Fecal samples and treatment feeds were analyzed for amino acid content and percent digestible amino acid. Results from the analysis suggested that addition of Asian carp increased the methionine content of SBM from 0.63 to 0.83%. Also, the digestibility of amino acid and the TMEn values were greater for the AC meal with SBM than SBM alone. The dry extruded AC meal analysis is indicative that the product can replace SBM alone and enhance natural methionine in a standard poultry ration. The results from feed formulation using different concentrations of the AC fish meal depict a potential diet which can supplement the required methionine content in organic poultry production.

Keywords : Asian carp, extrusion, natural methionine, organic poultry

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