

Invasive Asian Carp Fish Species: A Natural and Sustainable Source of Methionine for Organic Poultry Production

Authors : Komala Arsi, Ann M. Donoghue, Dan J. Donoghue

Abstract : Methionine is an essential dietary amino acid necessary to promote growth and health of poultry. Synthetic methionine is commonly used as a supplement in conventional poultry diets and is temporarily allowed in organic poultry feed for lack of natural and organically approved sources of methionine. It has been a challenge to find a natural, sustainable and cost-effective source for methionine which reiterates the pressing need to explore potential alternatives of methionine for organic poultry production. Fish have high concentrations of methionine, but wild-caught fish are expensive and adversely impact wild fish populations. Asian carp (AC) is an invasive species and its utilization has the potential to be used as a natural methionine source. However, to our best knowledge, there is no proven technology to utilize this fish as a methionine source. In this study, we co-extruded Asian carp and soybean meal to form a dry-extruded, methionine-rich AC meal. In order to formulate rations with the novel extruded carp meal, the product was tested on cecectomized roosters for its amino acid digestibility and total metabolizable energy (TME_n). Excreta was collected and the gross energy, protein content of the feces was determined to calculate Total Metabolizable Energy (TME). The methionine content, digestibility and TME values were greater for the extruded AC meal than control diets. Carp meal was subsequently tested as a methionine source in feeds formulated for broilers, and production performance (body weight gain and feed conversion ratio) was assessed in comparison with broilers fed standard commercial diets supplemented with synthetic methionine. In this study, broiler chickens were fed either a control diet with synthetic methionine or a treatment diet with extruded AC meal (8 replicates/treatment; n=30 birds/replicate) from day 1 to 42 days of age. At the end of the trial, data for body weights, feed intake and feed conversion ratio (FCR) was analyzed using one-way ANOVA with Fisher LSD test for multiple comparisons. Results revealed that birds on AC diet had body weight gains and feed intake comparable to diets containing synthetic methionine (P > 0.05). Results from the study suggest that invasive AC-derived fish meal could potentially be an effective and inexpensive source of sustainable natural methionine for organic poultry farmers.

Keywords : Asian carp, methionine, organic, poultry

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