

Partial or total replacement of soybean meal with Iranian cottonseed meal in diets for rainbow trout (*Oncorhynchus mykiss*.)

ABSTRACT

Apparent digestibility coefficients (ADC) were calculated in experiment 1 by using chromic oxide in the diet as an indigestible marker to evaluate the Iranian Cottonseed meal (CSMP). Experiment 2 was carried out to investigate the nutritional value of cottonseed meal (CSM) as soybean meal (SBM) substitute in quality low cost rainbow trout (*Oncorhynchus mykiss*) ration. In this study, six formulated feeds consisting different levels of CSMP (0, 20, 40, 60, 80, 100%) substitution of SBM were fed to a total of 540 rainbow trout with initial mean body weight of 50 ± 5 g. Fish were randomly stocked into eighteen 100 L. fiberglass tanks with 30 fish per tank and 3 tanks per diet and fed to apparent satiation 3 times a day and 7 days per week for 60 days. The ADC of CSMP and SBM were measured as of dry matter, 62.7 and 69.2%; crude protein, 82.4 and 87.3%; fat, 66.6 and 78.5%, respectively. After an 8 week feeding trial, the average weight gain of fish fed with diets 1 to 6 was: 100.6, 102, 102.9, 103.3, 103.9, and 103.4 g, respectively. Average feed conversion ratio (FCR) of fish fed diets 1 to 6 was measured as of 1.280, 1.317, 1.310, 1.273, 1.290, and 1.253, respectively. For all six treatments, the survival percentage was more than 99%. ADC value for most nutrients of CSMP was different from those of SBM. Weight gain and survival rate were not significantly different ($P > 0.05$) for fish fed with CSMP diets compared to the control diet but the differences of FCR, specific growth ratio (SGR), and daily weight gain (DWG) were significant among different diets ($P < 0.05$). In the feasibility study, complete replacement of SBM by CSMP revealed to be economic and based on the gossypol analysis, total gossypol levels was not observed for toxicity on liver of fish fed by CSMP, indicating the possibility of total replacement of SBM by CSMP in rainbow trout fed formulations.

Keyword: Rainbow trout; Cottonseed meal; Soybean meal.