Starches as Carbohydrate Sources and Their Optimum Level in Feed on Growth of Black Tiger Shrimp (Penaeus monodon Fabricius, 1798)

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Abstract

Effect of various types of starches as dietary carbohydrate sources on growth of black tiger shrimp (Penaeus monodon Fabricius, 1798) with initial weight of 1.94 grams, was experimented in cages hanging in earthen pond for 10 weeks. Experiment was planned as completely randomized design, composed of 9 formulated diets according to dietary carbohydrate sources, and each with 3 replications (27 cages). Diet 1-9, each of experimental diet contain 15% one of starch as major carbohydrate source, namely wheat flour, tapioca flour:dry milling, tapioca flour:wet milling, tapioca:dried tuber meal, black glutinous rice flour:dry milling, glutinous rice flour:wet milling, rice flour:wet milling, potato starch and rice flour:dry milling. Nutritional value of experimental diets (% dry weight) were as followed; protein 42-44%, lipid 8-9%, carbohydrate 25-30%, fiber 5-6%, ash 16% and gross energy 455-463 Kcal/100 grams.

Results showed that there was not significance effect of starches on average mean body weight, weight gain, survival rate and food conversion rate (FCR) of shrimps (p>0.05). At the end of experiment, average mean body weight of shrimps were 12.3-13.4 grams, weight gain were 536.5-592.9%, survival rate were 44.4-54.0% and food conversion rate were 2.4-3.5. Shrimps fed with diet 6 (glutinous rice flour:wet milling) had better mean body weight (13.4 grams), weight gain (592.9%) and FCR (2.4) than others, but not significance difference (p>0.05). Proximate composition of shrimps at the end of experiment were not significance difference in statistics among treatments (p>0.05). Protein were varied in the range of 70-73%, lipid 6-7%, carbohydrate 2-4%, fiber 6-7%, ash 12-14% and gross energy 466-483 Kcal/100 grams. Above results revealed that P. monodon is able to use all types of starches without any difference on growth and biochemical composition.

Key words : carbohydrate, starch, Penaeus monodon

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