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Growth , immunity and ammonia excretion of albino and normal Apostichopus japonicus (Selenka) feeding with various experimental diets (Article)

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Abstract

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An experiment was conducted to evaluate the effects of six experimental diets on growth performance, ammonia excretion and immunity of albino and normal Apostichopus japonicus. A factorial design was used, the factors being type of diets (six levels) and colour of A. japonicus (two levels). A total of 30 randomly selected albino A. japonicus were housed in each (60 × 50 × 30 cm^3) of 18 blue plastic aquaria to form six groups in triplicate, and the same set-up was used for the normal A. japonicus. Each group of animals was fed with one of the six experimental diets. Apparent dry matter digestibility (ADMD) and apparent crude protein digestibility (ACPD) were analysed using acid-insoluble ash (AIA) content method. At the end of the experiment, all A. japonicus were harvested and weighed to calculate growth parameters. After weighing, six individuals from each aquarium were randomly sampled for immune indices. Results indicated that all growth parameters of A. japonicus increased with decreasing nutrient content in their diets ($p < .01$), whereas an opposite result was observed in case of the ammonia-nitrogen production by A. japonicus. Normal A. japonicus grew better ($p < .01$) and produced lower ($p < .01$) quantity of ammonia nitrogen compared to the albino A. japonicus. Immunity particularly superoxide dismutase and lysozyme activities was higher ($p < .05$) in normal compared to albino A. japonicus. Considering all measured variables, D1 (diet containing crude protein, crude lipid, carbohydrate and crude ash 51.8, 8.7, 231.3, 708.2 g/kg, respectively) was the best diet among all experimental diets. More research is still needed to optimize nutrients in the diet of A. japonicus, as this study does not provide information about critical threshold level of nutrients in diets. Until then, diet D1 can be recommended for A. japonicus aquaculture. © 2017 John Wiley & Sons Ltd

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