

Comparison of Zinc Amino Acid Complex and Zinc Sulfate in Diet for Asian Seabass (*Lates calcarifer*)

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Abstract : Asian seabass is one of the economically important fish of Thailand and other countries in the Southeast Asia. Zinc is an essential trace metal to fish and vital to various biological processes and function. It is required for normal growth and indispensable in the diet. Therefore, the artificial diets offered to intensively cultivated fish must possess the zinc content required by the animal metabolism for health maintenance and high weight gain rates. However, essential elements must also be in an available form to be utilized by the organism. Thus, this study was designed to evaluate the application of different zinc forms, including organic Zinc (zinc amino acid complex) and inorganic Zinc (zinc sulfate), as feed additives in diets for Asian seabass. Three groups with five replicates of fish (mean weight 22.54 ± 0.80 g) were given a basal diet either unsupplemented (control) or supplemented with 50 mg Zn kg⁻¹ sulfate (ZnSO₄) or Zinc Amino Acid Complex (ZnAA) respectively. Feeding regimen was initially set at 3% of body weight per day, and then the feed amount was adjusted weekly according to the actual feeding performance. The experiment was conducted for 10 weeks. Fish supplemented with ZnAA had the highest values in all studied growth indicators (weight gain, average daily growth and specific growth rate), followed by fish fed the diets with the ZnSO₄, and lowest in fish fed the diets with the control. Lysozyme and superoxide dismutase (SOD) activity of fish supplemented with ZnAA were significantly higher compared with all other groups ($P < 0.05$). Fish supplemented with ZnSO₄ exhibited significant increase in digestive enzyme activities (protease, pepsin and trypsin) compared with ZnAA and the control ($P < 0.05$). However, no significant differences were observed for RNA and protein in muscle ($P > 0.05$). The results of the present work suggest that ZnAA are a better source of trace elements for Asian seabass, based on growth performance and immunity indices examined in this study.

Keywords : Asian seabass, growth performance, zinc amino acid complex (ZnAA), zinc sulfate (ZnSO₄)

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