

## **M.S.75. GOPAL, C.—Nutritional Studies on Juvenile *penaeus indicus*—1987—Dr. R. Paul Raj.**

The present study was carried out to determine the requirement of protein and water-soluble vitamins in the diet of juveniles of the Indian white prawn *B. indicus*, using purified diets, and to evaluate the nutritive value of a few plant and animal protein sources for the same species.

Data on survival, growth, specific food consumption, food conversion ratio, protein efficiency ratio and biochemical composition of the prawns were collected from these experiments. Observations were also made on molting, food intake, response to photo-stimulus and changes in external morphology of the prawns. In few experiments, ammonia excretion by prawns was also recorded to elucidate the effects of experimental diets on excretion rates. Observations were also made on the histology of selected tissues of prawns from the experiments on ascorbic acid and choline requirements. Besides these, specific and non-specific symptoms observed in prawns, associated with deficiency or excess of the selected water soluble vitamins, were recorded.

Deficiency of sub-optimal levels of protein in the diet significantly affected the growth, survival, ingestion and utilisation of food and protein and general maintenance of body functions in prawns. Prolonged period of protein deficiency induced cannibalistic tendencies in prawns and resulted in near complete wiping of prawn population.

The optimal protein requirements of these juvenile prawns was found to be within the range of 35-40%.

Supra-optimal levels of protein (beyond 40% protein) in the diet had deleterious effect on growth, survival, body composition and utilization of food and protein.

Excess of proteins in diets resulted in enhanced rate of protein catabolism resulting in increased ammonia excretion rates.

A mixture of animal protein sources proved to be a superior protein source when compared to only plant or mixture of plant-animal protein sources.

Amongst plant protein sources, soybean meal and ground nut oil-cake were found to be as good as many of the animal protein source in promoting survival, growth and feed efficiency.

The protein sources of crustacean origin, namely the prawn meal and crab meal were found to show better food conversion ratio and protein efficiency ratio amongst all animal protein sources tested.

The purified diet was used as reference diet and it produced better survival and growth.

The deficiency of ascorbic acid, thiamine, niacin, pantothenic acid, inositol, riboflavin and choline in the diets severely affected the survival and growth of prawns. All these water-soluble vitamins were found to be indispensable for these prawns.

The findings clearly suggest the essentiality and optimal requirements for protein as well as water-soluble vitamins in the diet of juvenile *B. indicus*.