

## ABSTRACT

Studies were carried out on the fresh water cichlid Oreochromis niloticus(L.) to evaluate several nutritional parameters, such as the optimum dietary protein level, salinity level, ration size and feeding frequency. In the investigations seven isocaloric diets of protein content ranging from 10-48% by dry weight were utilized. Experiments were carried out in four salinities viz. 0‰, 5‰, 10‰ and 15‰.

Growth of young O.niloticus was consistently better on diets containing 28-30% protein. Fish grew best at 10‰ when maintained on diets upto 30% protein while for diets of higher protein content, fish grew best in fresh water. Lower food conversion ratio and highest protein efficiency ratio were shown in fry, fed with 28-30% crude protein diets at 10‰, than in other salinities.

The total digestibility estimates, made using faecal material accumulated through the night did not significantly differ ( $p > 0.05$ ) from those estimates based on faecal material collected during the day time (between 1000 and 1530 h.) between feedings. A significant decrease of dry matter digestibility and an increase of protein digestibility was noted when the dietary protein content varied from 22.0-30.4%. Salinity had no significant effect on the digestibility of any of the seven experimental diets. In O.niloticus the total and protein digestibility showed daily variations.

When fish were fed with 28-30.0% dietary protein level at a salinity level of 10‰, the body protein content (64.55%) the percentage protein retained (50.11%) and the energy content (30.11Kj/g) were at its maximum, where as the ash content (14.56%) and the moisture content (69.27%) were

minimum. Further the body lipid content was slightly higher under the above mentioned conditions. Thus it is clear that the protein deposition, energy, percentage protein retained, ash and moisture content directly depend on the dietary protein levels and salinity levels where as the percentage of body lipid is inversely related to the percentage of protein in fish carcass.

Optimum ration size and feeding frequency were determined for O.niloticus fry having a mean weight ranging from 20-30mg maintained on six rations (4%, 6%, 8%, 10%, 12% of body weight and ad libitum) and at five frequencies (five times a day, three times a day, twice a day, once a day, once in two days) using 28% protein diet, in fresh water. Highest growth ( $15.54\% \text{ day}^{-1}$ ), best food conversion (FCR 4.32) and protein efficiency (0.83) ratios indicated that a ration of 9% body weight  $\text{day}^{-1}$  and a frequency level of twice a day were more suitable for O.niloticus fry.