PERFORMANCE OF NILE TILAPIA *Oreochromis niloticus* FED WITH DIETS CONTAINING ENZYME COMPLEX SSF (SOLID STATE FERMENTATION)

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The inclusion of enzymes in diets for fish may be an alternative to reduce antinutritional factors found in ingredients of plant origin and increase the availability of nutrients. The effect of Allzyme®SSF on growth performance in Nile Tilapia was evaluated.

The study included 360 fish with average weight ranging between 70g ± 4.43 in a completely randomized design with six dietary treatments (0, 50, 100, 150, 200 and 250g/tonne enzyme complex) arranged in six replicates and 10 fish per replicate. Except for SSF levels, the diets (Table 1) were the same in all treatments (CP, 32%; CE, 4500 Kcal/Kg; CF, 3.37%). Other fiberglass tank was installed at the laboratory under the same conditions in order to fish control growth. These fish were feeding with the rate feeding of 1.5% and the diet amount calculated was used to all treatments to target only the enzyme effect. The recirculating system contained biological and mechanical filters and automatic temperature control (around 28ºC). Dissolved oxygen, pH, ammonia and temperature were monitored weekly.

At day 60 of the experiment, there was a linear effect ($p<0,05$) according to treatment for final weight, weight gain and feed efficiency (Table 2). The authors concluded that to the feeding levels used in the experiment, the inclusion of the 150g Allzyme®SSF/tonne improve the performance of Nile tilapia.

Table 1. Composition of the experimental diet

Ingredient (%)	Treatments (g/Ton)					
	0	50	100	150	200	250
Soybean meal, 45%	45.80	45.80	45.80	45.80	45.80	45.80
Corn grain	35.09	35.09	35.09	35.09	35.09	35.09
SSF(1)	0	0.005	0.010	0.015	0.020	0.025
Inert (Caulin)	0.025	0.020	0.015	0.010	0.005	0
Others(2)	19.085	19.085	19.085	19.085	19.085	19.085

(1) Guarantee minimum levels of enzyme activity: α-amylase, 30 FAU/g; β-glucanase, 200 BGU/g; cellulose, 40 CMC/g; fungal protease, 700 HUT/g; pectinase, 4000 AJDU/g; phytase, 300 SPU/g; xylanase, 100 XU/g.
(2) Others: Gluten meal, 60%; Wheat meal; Commercial vitamin and mineral supplement for fish; Dicalcium phosphate; Calcitic lime; soybean oil; Vitamin C; Salt; BHT

Table 2- Performance of Nile tilapia fed diets containing enzyme complex SSF

Parameters	Inclusion levels of SSF (g/Tonne)						CV (%)
	0	50	100	150	200	250	
Feed intake (g)	83.76	83.76	83.76	83.76	83.76	83.76	-
Initial weight (g)	70.42	70.85	69.87	69.52	71.62	71.50	6.668
Final weight (g)[1]	138.72	139.75	140.08	145.81	144.70	147.15	4.790
Weight gain (g)[2]	68.30	68.90	70.21	76.30	73.06	75.65	10.066
Feed conversion rate (g/g)	1.23	1.22	1.20	1.11	1.16	1.14	10.053
Feed efficiency rate (g/g)(3)	0.82	0.82	0.84	0.91	0.87	0.90	10.060
Specific growth rate (%/day)	1.13	1.13	1.16	1.24	1.17	1.20	10.246
Survival (%)	98.3	100	100	96.7	96.7	100	4.342

[1]Linear effect ($p<0.05$): $Y= 136.43 + 1.79213X$; $R^2= 0.87$ / [2]Linear effect ($p<0.05$): $Y= 66.5409 + 1.58023X$; $R^2= 0.74$ / [3]Linear effect ($p<0.05$): $Y= 0.794168 + 0.0189879X$; $R^2= 0.73$