ORAL COMMUNICATIONS

Addition of spermine in marine fish larvae diet: effect on growth, survival and digestive enzymes. A Peres, C Cahu, JL Zambonino-Infante *(Ifremer, DRV RA, BP 70, 29280 Plouzané, France).*

Live prey are still required for successful early larval rearing of some marine species. Microparticulated diets are well ingested by larvae from first feeding, but they induce a poor growth, a high mortality and a delay in the maturation of the digestive system (Cahu and Zambonino Infante, 1995). It has been observed in mammals that polyamines are involved in enterocyte maturation (Buts et al, 1993).

On day 20, after mouth opening, two groups of sea bass (*Dicentrarchus labrax*) larvae (five tanks per group) were fed compound diets with the polyamine spermine (0.33%), FP33 group or without spermine, FP0 group. A control group was fed life prey, LP. The experiment lasted for 20 days. Growth, survival and specific enzymatic activities in intestine (brush border membrane and cytosol) were studied. Results were subjected to Anova.

Survival rate (66%) and growth (23 mg) observed for LP group were significantly higher than for the two other groups. FP33 larvae group had a significantly higher survival rate (28%) than FP0 group (21%) but no difference was observed for growth (12.1 and 11.9 mg, respectively). The emergence of brush border enzymes activities (alkaline phosphatase and leucine amino peptidase) and the decrease in a cytosolic enzyme activity (leucine alanine peptidase) took place in FP33 group like in LP group. This increase in the brush border enzyme activities concurrently to a decrease in cytosolic enzyme activity was delayed for FP0 group. Specific activities obtained for trypsin and amylase were significantly higher in FP33 group than in FP0 group.

Adding spermine in formulated diet led to an easier and quicker acquisition of an adult mode of digestion for larvae, which resulted in a significant survival gain.

Buts JP, De Keyser N, Kolanowski J, Sokal E, Van Hoof F (1993). Maturation of villus and crypt cell functions in rat small intestine. Role of dietary polyamines. *Dig Dis Sci* 38, 1091-1098

Cahu CL, Zambonino Infante JL (1995). Maturation of the pancreatic and intestinal digestive function in sea bass (*Dicentrarchus labrax*): effect of weaning with different protein sources. *Fish Physiol Biochem* 14, 431-437

				LP	*FP0*	*FP33*
	Weight (mg)		day 20		3 ± 0.6	
			day 40	22 ± 6.0 a	12 ± 3.0 b	12 ± 4.4 a
	Survival (%)		day 20	66 ± 9.0 a	21 ± 4.1 b	28 ± 3.9 b
Specific	Brush	Phosphatase	day 31	723 ± 122.2 a	404 ± 66.0 b	680 ± 174.4 a
enzymatic	border	alcaline	day 40	968 ± 96.0 a	409 ± 46.0 b	825 ± 30.0 a
activities	membrane	Leucine	day 31	137 ± 31.0 b	81 ± 38.3 c	200 ± 47.4 a
in intestine		Aminopeptidase	day 40	140 ± 27.0 a	78 ± 18.0 b	164 ± 40.0 a
(mU/mg	Cytosol	Leu Ala	day 31	137 ± 11.7 b	249 ± 58.0 a	147 ± 32.5 b
protein)		Peptidase	day 40	85 ± 21.4 b	145 ± 18.2 a	118 ± 20.4 b