

# BIOCHEMICAL COMPOSITION OF BLACKSPOT SEABREAM LARVAE, *PAGELLUS BOGARAVEO*, FED WITH ROTIFER ENRICHED WITH THREE DIFFERENT MICROALGAE

F. Linares<sup>1</sup>, M. Olmedo<sup>2</sup> and J.B. Peleteiro<sup>2</sup>

<sup>1</sup>Centro de Investigaciones Mariñas s/n, E-36620. Vilanova de Arousa (Pontevedra), Spain, E-mail: flinares@cimacoron.org

<sup>2</sup>Instituto Español de Oceanografía, Cabo Estay-Canido, Apartado 1552, 36280 Vigo (Pontevedra), Spain

## Introduction

Blackspot seabream, *Pagellus bogaraveo*, is one of the farmable species at commercial level. The success of larvar rearing is greatly influenced by first feeding regimes and the nutritional quality of starter diets (Izquierdo *et al.*, 2000). Obtaining larvae with a suitable biochemical composition is the result of good food and is essential to obtain good quality young individuals. This work studies the biochemical composition of blackspot seabream larvae at the feeding stage, fed with rotifer enriched with three different microalgae, *Isochrysis galbana*, *Tetraselmis suecica* and *Nannochloropsis sp2*.

## Materials and Methods

The experiment was conducted with blackspot seabream larvae from spawns obtained during the year 2000 from the broodstock belonging to the I.E.O. in Vigo and CIMA (Local Government of Galicia). Three samples of larvae were taken at the start (day 0) and at the end of the experience (day 15 of life). Analyses were performed on proteins (Bradford, 1976), total lipid by extraction with chloroform: methanol (2:1) (Blight & Dyer, 1959 modified by Fernández Reiriz *et al.* 1989) and gravimetric determination. Fatty acids prior to transesterification and metilation (Lepage & Roy, 1986) were analyzed by Gas Chromatography.

## Results and Discussion

Table I shows the protein, lipid and fatty acid composition in blackspot seabream larvae. Protein values ranged from 47% in recently hatched larvae, to 49, 48 and 53% in larvae fed with rotifer enriched with *Isochrysis*, *Tetraselmis* and *Nannochloropsis* respectively. Considerable lipid consumption was noted in the initial 15 days of larvae life, falling from the 26% achieved in recently hatched larvae to values close to 15%. The constant values in proteins and the decrease in total lipids throughout larval development in blackspot seabream was noted down previously (Linares *et al.*, 2000). No significant differences were noted in the composition of lipids and proteins in larvae fed with rotifer enriched with the three three mentioned microalgae. The PUFA percentage in terms of the total amount of fatty acids varied from 39% in recently hatched larvae to 37,34 and

38% in 15 day old larvae enriched with Isochrysis, Tetraselmis and Nannochloropsis respectively.

Table I. Proteins, lipids (% of dry weight) and fatty acids (% of total) in larvae of blackspot seabream newly hatched and fed with rotifer enriched with microalgae.

	Larvae newly hatched	15d. larvae fed with R+Iso	15 days larvae fed with R+Tetra	15 days larvae fed with R+Nanno
Proteins	47.29	48.86	48.07	53.19
Lipids	25.8	15.2	14.53	15.29
PUFA	38.92	36.63	33.57	37.73
Saturates	28.03	33.97	34.97	35.98
Monoinsaturates	26.74	20.30	21.16	18.29
Sum. (n-3)	32.74	22.05	25.81	27.29
Sum. (n-6)	5.57	13.11	6.52	8.42
20:5(n-3).EPA	6.86	2.34	9.84	11.71
22:6(n-3) DHA	22.55	15.79	6.86	6.21

Significant differences were noted between the docosahexaenoic fatty acid content, 22:6(n-3), among larvae fed with rotifer enriched with Isochrysis, which accounted for 16% of the total of fatty acids, in contrast with the 6.8 and 6.2% obtained in larvae fed with rotifer enriched with Tetraselmis and Nannochloropsis respectively. This may be relevant in view of the considerable importance of this fatty acid in marine fish.

## References

- Blight, E.G. & Dyer, W.J. 1959. A rapid method of total lipid extraction and purification. *Can.J. Biochem. Physiol.*, 37:911-917.
- Bradford, M.M. 1976. A rapid sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding. *Analytical biochemistry* 72, 248-254.
- Fernández-Reiriz, M.J., Perez-Camacho, A., Ferreiro, M.J., Blanco, J., Planas, M. Campos, M.J. & Labarta, U. 1989. Biomass production and variation in the biochemical profile (total protein, carbohydrates, RNA, lipids and fatty acids) of seven species of marine microalgae. *Aquaculture*, 83:17-37.
- Izquierdo, M.S., J. Socorro, L. Arantzamendi & C.M. Hernández Cruz. 2000. Recent advances in lipid nutrition in fishes. *Fish Physiology and biochemistry* 22:97-107.
- Linares, F., Olmedo, M., Peleteiro, J.B. & Gianzo, C. 2000. Biochemical composition of blackspot seabream larvae, *Pagellus bogaraveo*, throughout larval development. Initial results. *European aquaculture Society. Special publication n° 28:400*.