

INCORPORATION OF FATTY ACIDS FROM DIFFERENT LIPID CLASSES IN LARVAL GILTHEAD SEABREAM (*Sparus aurata*) FED ON MICRODIETS

M. Salhi¹, S. Kolkovski², M. S. Izquierdo³ and A. Tandler²

¹ Instituto Canario de Ciencias Marinas, Gobierno de Canarias, PO Box 56, E-35200 Las Palmas, Spain.

² National Center for Mariculture, Israel Oceanographic and Limnological Research, PO Box 1212, Eilat 88112, Israel.

³ Dpto. Biología, Universidad de Las Palmas de Gran Canaria, PO Box 550, E-35017 Las Palmas, Spain.

Several studies suggest that besides the dietary essential fatty acid content, the molecular form in which they are present in the diet is also important for a good growth and survival of larval marine fish. Thus it has been suggested that the phosphatidylcholine containing n-3 HUFA may be necessary for the larval fish if the rate of biosynthesis does not satisfy metabolic demands, and pointed out the possibility of a more rapid digestion and a more effective incorporation to the tissues of the n-3 HUFA from phospholipids than those from triglycerides.

The present work was conducted to study the effect of the soybean lecithin and the polar lipid level in microdiets on the incorporation of the dietary fatty acids to the lipid of *Sparus aurata* larvae, and to check the possible differences in fatty acid incorporation to the larval lipids depending on the molecular form of dietary fatty acids: as polar lipids (phosphatidylcholine) or neutral lipids (triglycerides and free fatty acids). To achieve this goal, gilthead seabream larvae were fed radiolabelled fatty acids included in microdiets differing in their lipid composition was conducted. Radiolabelled palmitoil-phosphatidylcholine, glycerol trioleate and free oleic and eicosapentaenoic acids were included in 4 diets: in diets A and B the main sources of n-3 HUFA were neutral lipids, whereas polar lipids were major contributors source in diets C and D. Three lecithin levels were tested, being the highest in diet B and the lowest in diet C. The total n-3 HUFA level in diets A and B was enough to meet the essential fatty acid requirement of larval gilthead seabream obtained in a previous study with a triglyceride based diet, while diets C and D had a total n-3 HUFA level lower than the minimum determined. Twenty five day-old gilthead seabream larvae were fed the labelled microdiets to determine ingestion and assimilation rates.

An increased ingestion of the microdiet was observed as the polar lipid content of the diet was elevated. However, a high microdiet ingestion resulted in a reduced incorporation of fatty acids in form of triglyceride to the larval lipids. On the other hand, the phosphatidylcholine fatty acids were incorporated to the larval polar lipids in a greater extent than the neutral molecular forms tested. Besides, a higher incorporation of oleic acid as triglyceride than as free fatty acid to the larval lipids was observed. The free eicosapentaenoic acid incorporated to the larval polar lipids seemed to depend on the level of this fatty acid in the diet.