EFFECT OF REPRODUCTIVE EXHAUSTION IN RED PORGY *PAGRUS PAGRUS* ON EGG AND LARVAL LIPID CLASSES COMPOSITION

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Introduction

Fish egg lipid classes composition has been found to change in certain species along the reproductive season (Almansa *et al.*, 1999), whereas spawn quality is being reduced from early to late spawns. Hence, not only fatty acid contents but also lipid classes composition could be correlated with egg quality.

Materials and methods

Pagrus pagrus eggs and larvae lipid class composition was studied along the embryo and early larval development. Spawns were sampled every six hours during embryo development and every 12 hours until 60 hours after spawn and every 24 hours from 60 to 192 hours after spawn. The spawning season last from February to May, and in this study, early (February) and late (April) spawns are compared in terms of triacylglycerol (TG), phosfatidylcholine (PC), phosphatidyletanolamine (PE), diglycerids (DG), monoglycerids (MG) and free fatty acids (FFA).

Results and discusslon

PC was less abundant during most of development for late spawns (LS), especially after hatch and starvation (Table I, II and III). PE showed more variation for LS, but was more abundant at early embryo until 18 hours, after that both treatments had a similar increase until 120 hr (3 days after hatch) for early spawns (ES) and 144 hr (4 days larvae) for LS. The PE was better retained for early spawns while in LS ones was abruptly consumes in the last 24 hours. TG was more abundant at the beginning for LS (18 hours) and showed less movement during embryo, but in both cases the depletion began after hatch. For LS the TG is only residual at 108 hr and less quantity than that at 144 hr for ES (Table III).

Table I. Lipid classes content on eggs from ES and LS spawns (10^{-8} g).

		0 HR	12 HR	24 HR	42 HR
PC	ES	393.1 ± 10,84 a	419.4 ± 1,54 a	382.7 ± 6,85 a	362.1 ± 6,19 a
	LS	399.7 ± 8,09 a	398.9 ± 7,01 b	372.4 ± 2,07 b	353.4 ± 0,72 a
PE	ES	36.2 ± 10,56 a	57.4 ± 3,60 a	18.5 ± 2,59 a	24.2 ± 1,47 a
	LS	37.1 ± 3,41 a	38.1 ± 4,14 b	28.2 ± 0,77 b	20.2 ± 0,08 b
TG	ES	298.6 ± 9,89 a	282.5 ± 8,80 a	370.6 ± 10,50 a	307.1 ± 16,07 a
	LS	308.0 ± 3,90 a	318.9 ± 7,78 b	317.1 ± 4,37 b	290.5 ± 2,56 a

Table II. Lipid classes content on yolk sac larvae form ES and LS spawns (10^{-8}g).

		48 HR	72 HR	96 HR	120 HR
PC	ES	390.4 ± 3,84 a	275.5 ± 4,94 a	262.2 ± 6,81 a	275.5 ± 10,18 a
	LS	366.2 ± 1,67 b	242.6 ± 6,35 b	264.8 ± 1,05 a	212.5 ± 0,24 b
PE	ES	25.6 ± 2,10 a	23.7 ± 3.08 a	52.9 ± 7,94 a	81.8 ± 3,61 a
	LS	25.4 ± 0,52 a	39.7 ± 0,70 b	38.3 ± 3,42 a	72.2 ± 5,30 a
TG	ES	312.6 ± 21,53 a	174.6 ± 18,13 a	168.2 ± 8,34 a	84.1 ± 4,10 a
	LS	329.7 ± 0,62 a	218.1 ± 5,86 b	134.1 ± 1,17 b	20.8 ± 1,25 b

Table III. Lipid classes content on starved larvae from ES and LS spawns (10^{-8}g).

		144 HR	168 HR	192 HR
PC	ES	250.2 ± 5,63 a	202.6 ± 4,59 a B	167.5 ± 4,16 a
	LS	199.3 ± 5,21 b	121.3 ± 0,71 b A	132.5 ± 2,47 b
PE	ES	72.6 ± 5,89 a	53.7 ± 2,26 a	67.5 ± 7,64 a
	LS	81.2 ± 0,15 a	67.3 ± 1,73 b	31.1 ± 0,35 b
TG	ES	35.4 ± 4,34 a	7.6 ± 0,02 a	3.3 ± 0,06 a
	LS	19.8 ± 1,57 b	5.4 ± 0,36 b	ND

PC.- Phosphatidylcholine; PE.- Phosphatidyletanolamine; TG.- Triacylglycerol; DG.- Diacylglycerol; MG.- Monoacylglycerol; FFA.- Free fatty acids and SPM.- Sphingomielin.

The lipid classes DG, MG and FFA appeared after depletion of TG and are in all cases more abundant for LS than ES specially from 72 to 120 hr because in this treatment these classes are consumed quickly in starvation, while ES appear like DG and MG are still increasing meaning TG catabolism is yet present.

In conclusion lower PC quantities and PE for the last 24 hours and higher utilization of TG until total exhaustion were found in LS progeny. Besides, the abundant presence of DG, MG and FFA in LS, suggest that starved symptoms become on LS at least 24 hours prior than larvae for ES.

References

Almansa E., Pérez M.J., Cejas J.R., Badía P., Villamandos J.E., Lorenzo A., 1999. Influence of Broodstock gilthead seabream (*Sparus aurata* L.) dietary fatty acids on egg quality and egg fatty acid composition throughout the spawning. Aquaculture 170: 323-336.

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