EXPRESSION OF DIGESTIVE ENZYME PRECURSORS UNDER DIFFERENT FEEDING CONDITIONS IN Sparus aurata LARVAE

Sánchez-Amaya, M.I., Yúfera, M. & Martínez-Rodriguez, G.
Instituto de Ciencias Marinas de Andalucía. CSIC, Campus Universitario Rio San Pedro, s/n 11510. Puerto Real, Cádiz (Spain)

INTRODUCTION

✓ Digestive enzymes expression – Useful tool for nutritional condition and adaptation of the organism to dietary change.
✓ Aim – To study the expression onset and ontogeny of α-amylase (Amy), bile activated lipase (BAL) and trysigen (Trp) in gilthead seabream Sparus aurata in order to better understand the sequence of events occurring during the alkaline digestion in larval development and to gain insights into the digestive physiology from hatching stage onwards.

RESULTS & DISCUSSION

Amy, BAL, and Trp transcripts were localized specifically by ISH in the exocrine pancreas and the signal started to detect with very low intensity from hatching, when it started to increase.

(a) Expression increased from 0 to 8 DAH, and decreased until 11 DAH, just before 100% mortality. This is in agreement with the irreversible starvation moment at 7-8 DAH (Yúfera et al., 1993).

(b) Expression of BAL and Trp increased till 15 DAH, and decreased afterwards. Expression for α-amylase increased till day 5 and was almost negligible at 34 DAH.

(c) Gene expression profiles at 12 DAH were very similar in all treatments and to 4 DAH, but not to 12 DAH larvae fed on rotifers (control +), which exhibited higher expression.

(d) Gene expression profiles and levels at 9 and 15 DAH were very similar in all treatments (inert diets or live prey) without significant differences between them.

CONCLUSIONS

BAL, α-amylase and trysigen, involved in the digestion of lipids, carbohydrates and proteins, were present in S. aurata larvae before the onset of exogenous feeding. Moreover, patterns of expression were different between fed and fasted larvae, as well as between both microdiets time-courses, indicating the importance of macronutrients composition and quality and set-point in the beginning of the digestive system development.

ACKNOWLEDGMENTS

Ministry of Science and Innovation, Spain (National Plan Projects AGL2006-06689-C02-01, AGL2007-64450-C02-01/ACU & Aquagenomics Consolidate 28502).
Mrs. Sánchez-Amaya was supported by a predocutor FPI fellowship (BES-2005-11031).
This study benefits from participation in LARVANET COST action FA0801.

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