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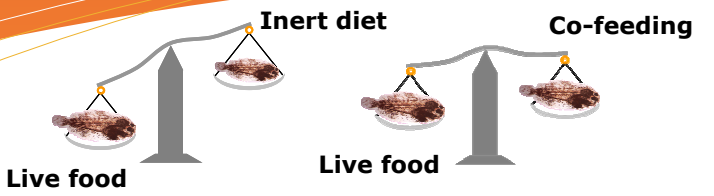
CO-FEEDING IN SENEGALESE SOLE AT MOUTH OPENING: CONSEQUENCES ON DIGESTIVE PHYSIOLOGY



AIM

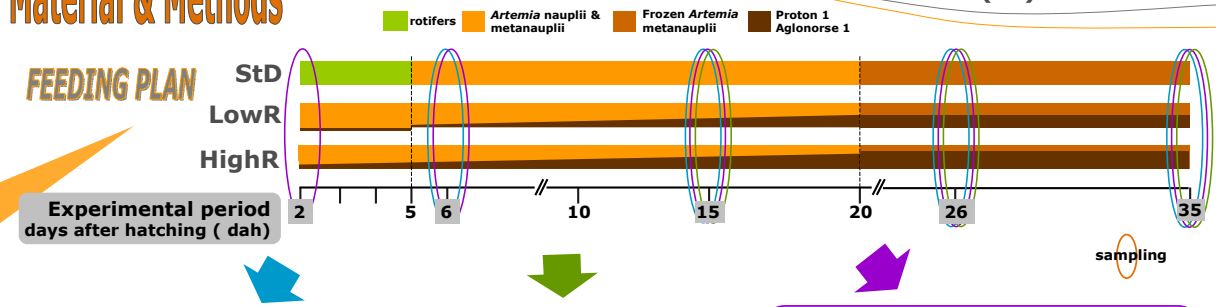
Analyze the influence of inert diet on *Solea senegalensis* digestive physiology, using different co-feeding regimes.

Live food possesses attributes that enhance digestive activity together with some stimulatory effect towards digestive hormone secretions (Kolkovski 2001)

through

- quantitative assessment of CCK-8
- ontogenetic development of CCK and VIP immunoreactive (IR) cells

Material & Methods



StD - Standard regime

LowR - Gradual & low level of Artemia replacement

HighR - gradual & high level of Artemia replacement

Growth

dry weight determined individually (pool of 15 larvae at 6 dah)

CCK quantification

(Rojas-Garcia et al., 2001)

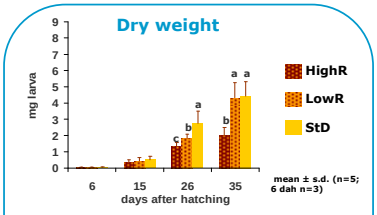
sampling, 30 minutes after feeding individual analysis; ethanol extraction; through radio-immunoassay - ^{125}I; EURIA-CCK kit

Immunohistochemical analysis

(Pinto et al., 2009)

sole digestive tract sections (5µm)
specific antisera dilutions
1:5000 - CCK (cholecystokinin)
1:2700 - VIP (vaso intestinal peptide)

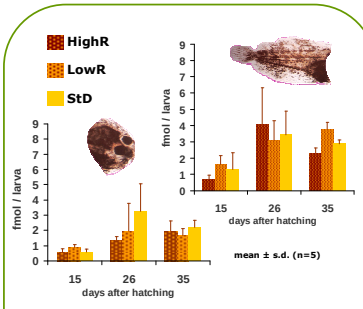
Results & Discussion



- Introduction of inert diet at mouth opening and live food replacement occurring just after 5 dah – LowR – allowed sole larvae to reach weight values identical to sole larvae submitted to StD regime

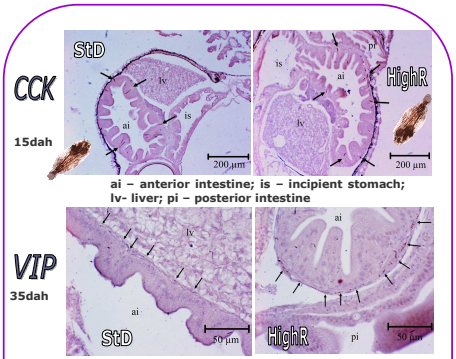
but

- When live food was replaced by inert diet at mouth opening – HighR – larval weight was affected, being 2 times lighter than sole larvae from LowR and StD feeding regimes



- A higher fraction of live food did not enhance CCK secretion
- CCK content increased with larval development, suggesting an increase of the endocrine regulatory capacity
- At 35 dah, CCK on gut compartment was comprised between 54% (HighR) to 70% (LowR) of whole body CCK

higher digestive efficiency of LowR fed sole larvae ?



- CCK and VIP - IR cells were observed at 2 and 6 dah, respectively, regardless feeding regime.
- CCK - IR cells were located mainly in anterior intestine
- VIP immuno reactions were observed in the submucosa and muscular layer of digestive tract, at the end of some nerve fibers, first on intestine but later also in stomach

Indicators of hormonal control of digestion occurs at early life stages

Scarcity of live food at early life stages of development had a negative impact on development.

Identical indicators of a neuro-endocrine regulation of digestion at the same stages of development, regardless feeding regime.

Acknowledgments:
To FCT (Portugal) for funding this study (DIGFISH project; POCI/CVT/58790/2004) and supporting L. Ribeiro grant (SFRH/BPD/7148/2001)

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