

DO FIRST FEEDING LARVAE OF *Solea senegalensis* PREFER COPEPODS TO ARTEMIA?

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INTRODUCTION

Diversification of finfish aquaculture implies production of larvae with different first feeding sizes, behavior and nutritional needs. This will require production of different types of live prey than are currently used. Copepods seems to be a good choice because not only do they constitute the natural prey in the wild but also they have good nutritious value and go through a series of different size class life stages that can be exploited to feed fish larvae with a variety of mouth gapes.

Acartia grani Sars is a marine coastal species that as been cultivated continuously in large volumes under controlled conditions and seems to be a good candidate for intensive rearing. Acceptability of the prey by fish larvae is an important trait to be evaluated. The objective of this study was to determine the acceptability by larvae of *Solea senegalensis* of *A. grani* nauplii and early copepodids (from $105 \mu\text{m} \pm 10$ to $430 \pm 30 \mu\text{m}$ in length) in comparison to *Artemia* ($450 \pm 20 \mu\text{m}$ in length). In captivity, *Solea senegalensis* first feeding preys are usually rotifers ($150 \mu\text{m}$ in length) that are substituted in a latter phase by newly hatched *Artemia* nauplii.

MATERIAL AND METHODS

Three diets composed of: exclusively *Acartia grani* nauplii; newly hatched *Artemia*; and a 1:1 mixture of copepod nauplii and *Artemia* instar I were given to 8 day post-hatch larvae of *Solea senegalensis* that were fed previously on S-rotifers. A control trial comprising diets composed solely of S-rotifers; of *A. grani* nauplii; and of a 1:1 mixture of copepods and S-rotifers was also carried out. The trial involving *Artemia* was carried out in 2-L containers, the concentration of prey was 1 per mL of

sea water and there was 1 larva for every 14 prey. Control trials were carried out in 1-L containers containing 70 larvae where the concentration of prey was 5 per mL of sea water so there was 1 larva for every 71 prey. There were triple replicates of each diet (3X3) giving a total of 9 containers in each trial. Larvae were left to feed for 6 hours after which the unconsumed prey was collected and counted under a stereomicroscope. Mean values of *Acartia grani* nauplii, *Artemia* and S-rotifers consumed by the larvae were compared using one-way ANOVA.

RESULTS AND DISCUSSION

The consumption of *Artemia* (instar I) by *Solea senegalensis* 8 DAH larvae was always higher than the consumption of *Acartia grani* nauplii (Fig. 1) although the differences were not significant at $P < 0.05$ (Table I). This was due to the high variance of the mean of consumed copepods by the fish larvae. The larger coefficients of variation (C.V.) of the mean of ingested copepods might be connected to the swimming behavior (looping, spiraling and jumping) of *A. grani*. In comparison the cruising *Artemia* have a more predictable path which may explain the lower C.V. on their intake.

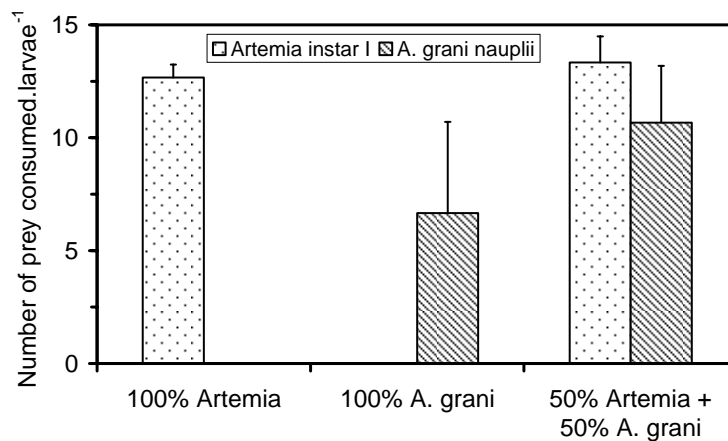


Fig. 1- Consumption of newly hatched *Artemia* in comparison to *Acartia grani* nauplii.

In the control trial (Fig. 2) where no choice between rotifers and nauplii was given to the larvae there was also no significant differences at $P < 0.05$. When fed equal parts of S-rotifers and *Acartia* nauplii the larvae ate significantly ($P < 0.005$) more rotifers than copepods (Table I). The

latter result was expected since larvae were fed previously on S-rotifers and recognized them as food.

Table I – Summary of the statistics and of the single factor ANOVA's

Groups	N	Mean	Stdev	C.V.	F	P-value
<i>Artemia</i> (100%)	3	12,7	0,58	0,05	6,480	0,064
<i>A. grani</i> (100%)	3	6,7	4,04	0,60		
<i>Artemia</i> (50%)	3	13,3	1,15	0,09	2,783	0,171
<i>A. grani</i> (50%)	3	10,7	2,52	0,24		
Rotifers (100%)	3	37,3	6,11	0,16	4,174	0,111
<i>A. grani</i> (100%)	3	25,0	5,00	0,20		
Rotifers (50%)	3	21,0	1,73	0,08	55,23	0,002
<i>A. grani</i> (50%)	3	5,3	3,21	0,61		

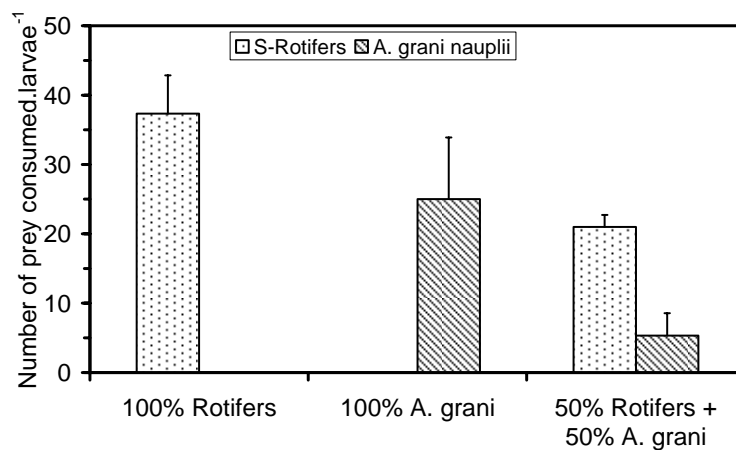


Fig. 2- Consumption of S-Rotifers in comparison to *Acartia grani* nauplii.

ACKNOWLEDGMENTS

This study was supported by the contracts: “Redaqua”- INTERREG III A and “Tecnologias de Produção Aquícola” - QCA III