Senegalese sole is able to adapt protein metabolism when co-fed with Artemia replacement

Objectives

The aims of this study were to evaluate the effects of Artemia replacement by an inert diet on Senegalese sole growth performance, and understand how protein digestibility and protein retention efficiency may explain these effects.

Experimental design

Results

Table 1 - Two-way analysis of variance (ANOVA) for protein metabolism of 16 days after hatching (DAH) sole larvae, fed one (1x, hot-chase) or two (2x, cold-chase) meals of a standard live feed feeding regime (ST) or live feed co-fed with inert diet from mouth opening (ARTL).

<table>
<thead>
<tr>
<th></th>
<th>Artemia EG</th>
<th>Artemia AF</th>
<th>Artemia EG</th>
<th>Artemia AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digestibility</td>
<td>50.31 ± 0.22</td>
<td>50.30 ± 0.09</td>
<td>50.31 ± 0.22</td>
<td>50.30 ± 0.09</td>
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<tr>
<td>Metabolism</td>
<td>11.53 ± 0.41</td>
<td>11.52 ± 0.21</td>
<td>11.53 ± 0.41</td>
<td>11.52 ± 0.21</td>
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<tr>
<td>Retention</td>
<td>9.56 ± 0.08</td>
<td>9.56 ± 0.08</td>
<td>9.56 ± 0.08</td>
<td>9.56 ± 0.08</td>
</tr>
</tbody>
</table>

Results are shown as means ± SD (ST, n=10; ARTL, n=20). Different superscript letters indicate significant differences between treatments (ST, ARTL) or feeding (x1, x2). Different superscript letters indicate significant differences between treatments (ST, ARTL) or feeding (x1, x2). Different superscript letters indicate significant differences between treatments (ST, ARTL) or feeding (x1, x2).

Conclusions

Protein digestibility is reduced during sole metamorphosis, especially if a feeding regime with a high proportion of complex proteins is used. Therefore, a high co-feeding strategy impairs sole larvae protein utilization and thereby leads to lower larval growth.

Nevertheless, a co-feeding strategy may enhance sole larvae growth, when the relative amounts of live feed and inert diet are optimised.