

Assessing the efficacy of inert liquid feeds as alternatives to *Artemia* during the larviculture of *Amphiprion ocellaris*

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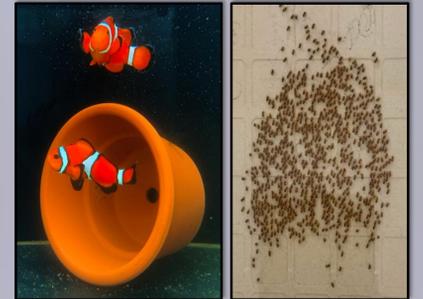


Introduction

- Clownfish are the most popular and recognizable marine ornamental fish and a key commodity for ornamental producers
- Production issues persist, including heavy reliance on live feeds, which are costly to produce and maintain
- Inert diet alternatives can be used to replace live feeds, such as *Artemia* nauplii
- **Objective: investigate the efficacy of inert liquid diets to replace *Artemia* during clownfish culture**

Methods

- Clownfish spawns were collected from paired broodstock after 6 days of incubation and hatched in 125L tanks at 28C
- Larvae were fed rotifers (*Brachionus plicatilis*) enriched with Algamac 3050 for the first 4 DPH, then weaned onto *Artemia* and/or Liquid *Artemia* diets
- Larvae were stocked into 15L tanks one day prior to the introduction of diet treatments



Brand Trial

- Objective: compare performance of two brands of LA diets
- Diet Treatments
 - Cargill's Livalife (LL)
 - Zeigler's EZ Artemia Ultra (EZ)
 - *Artemia* nauplii reference diet
- 25 larvae/15L tank; n=5
- Duration – 10 days



Inclusion Trial

- Objective: determine best inclusion amount of LL to replace *Artemia*
- Diet Treatments
 - 100% *Artemia* (positive control)
 - 75% *Artemia* : 25% LL
 - 50% *Artemia* : 50% LL
 - 25% *Artemia* : 75% LL
 - 100% LL (negative control)
- 25 larvae/15L tank; n=5
- Duration – 14 days

Weaning Trial

- Objective: determine best timepoint to wean larvae to 100% LL
- Diet Treatments
 - 100% *Artemia* nauplii
 - 25:50 LL:*Artemia* (negative control)
- Weaning at 11 DPH
- Weaning at 22 DPH
- Weaning at 26 DPH
- 25 larvae/15L tank; n=5
- Duration – 21 days

Results

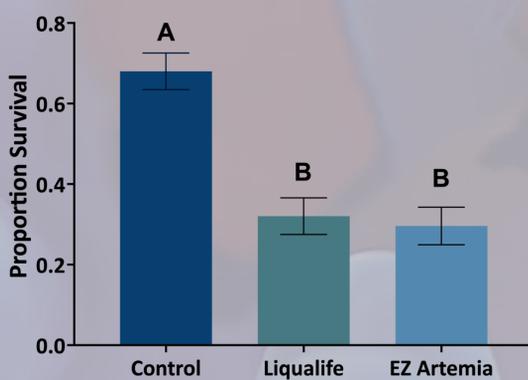


Figure 1. Proportion survival (± SEM) of clownfish larvae fed 100% *Artemia* nauplii (control), 100% Livalife, or 100% EZ Artemia for 10 days. Letters above bars indicate statistical significance (Generalized linear mixed model (GLMM) $p < 0.05$).

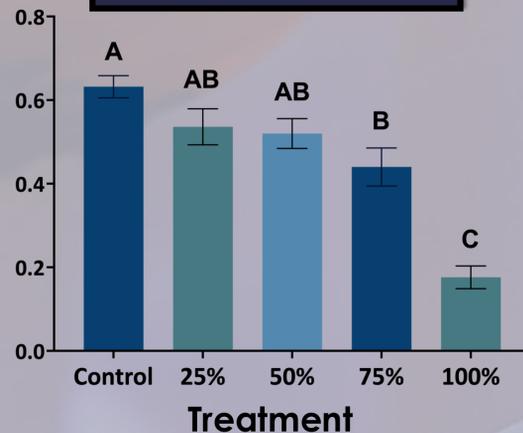


Figure 2. Proportion survival (± SEM) of clownfish larvae fed 100% *Artemia* nauplii (control), three different LL inclusion rates, or 100% Livalife for 14 days. Letters above bars indicate statistical significance (GLMM; $p < 0.05$).

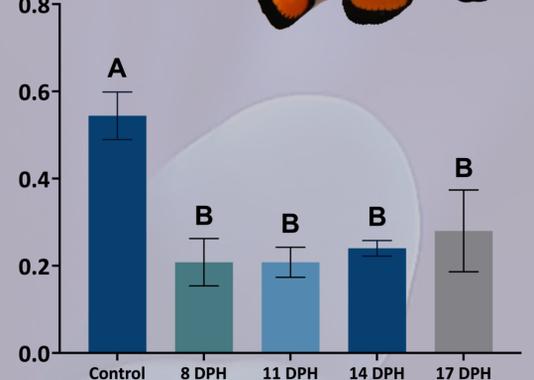


Figure 3. Proportion survival (± SEM) of clownfish larvae fed 100% *Artemia* nauplii (control), or weaned to Livalife at three different timepoints for 21 days. Letters above bars indicate statistical significance (GLMM; $p < 0.05$).

Discussion

- The addition of liquid inert diets into the feeding regime of *A. ocellaris* did not improve larval survival or growth (not pictured)
- The poor larval performance found with liquid diets may have been due to low palatability, digestibility, or a mismatch with nutritional requirements
- Additional research on reducing live feeds for clownfish should focus on inert diets that better match the nutritional needs of the species

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