Control of light conditions affects feeding regime and enables successful eye migration in halibut

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Larvi 2009
Larval feeding in nature

Larval feeding under intensive rearing conditions
Dusk and dawn feeding

Harboe & Huse 1992
Improved rearing conditions

Improved prey capturing

Changes in gut transit time (retention time of food particles)
Method development

T. van der Meeren
Rearing conditions

Continuous illumination
Turbidity

Photo: IMR
Algae paste
Clay
Turbulence

Harboe et al., 1998.
Rheotactic behaviour
Transit time
Transit time
Atlantic halibut, success factors

Survival, pigmentation and eye migration
Eye migration
How to control feeding in larval tanks fed live prey

- Tank dynamics – larval density and flowrate.

- Removal of prey by filtration.

- Use of light and darkness.
Growth
Eye migration

![Bar chart showing eye migration in experimental and control groups.](image-url)
ORD activity

Days post first feeding

- Control
- Experimental

0 dpff 25 dpff 49 dpff

fmol\textsuperscript{-1} min\textsuperscript{-1} \mu g\textsuperscript{-1} (dry wt)
Deiodinase expression

Days post first feeding

Days post first feeding

mean normalized gene expression level

mean normalized gene expression level

DI

DI exp

DII

DII exp

DIII

DIII exp

0

6

49
Future work:

Tank dynamics

Model based on retention time of the prey in the tank

• Retention time:
  1 Water flow
  2 Feeding intake of the larvae and
  3 ”Natural” death rate of the prey

• Gut filling and evacuation time

• Effect of light / darkness
Survival:

Feeding regimes

Harboe et al., in prep.