PE-4

Effect of Starvation on the Growth and Hepatocyte Nuclear Size of Larval Haddock, *Melanogrammus aeglefinus*

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Introduction

Haddock, *Melanogrammus aeglefinus* (L.) has been identified as an one of the most attractive candidate species for commercial culture in Atlantic Canada (Litvak 1998). Particularly during the critical switch from endogenous feeding to exogenous feeding, and that maximize production of juveniles. The purpose of this paper is to describe the successful culture of haddock, and determine the earliest point at which the larvae can be successfully transit from endogenous to exogenous feeding.

Materials and Methods

Haddock larvae were hatched and reared at Aquaculture Research Station of the National Research Council, Sandy Cove, Nova Scotia, where the starvation trial was conducted. Larvae utilized their yolk-sac reserves and began exogenous feeding on 3 days post hatch (dph). The enriched rotifer treatments were fed to the larvae of fed group 3 times per day (9, 15, 20 h to maintain a concentration of 5 rotifers per ml) from the post hatch day 3 to 10.

Each day from the post hatch day 1 to 10 as the starved group till death, 50 larvae for fed group and starved group of the three experimental tanks were removed for growth measurements and histological analysis (Park et al., 1998). Differences between the mean nuclear areas of replicate sections from the same individual were analysed using Duncan's

Analysis of Variance. Percent survival of the larvae from fed group and starved group were determined at 10 dph, respectively. Statistical analysis was performed using SYSTAT 10 (ANOVA and Tukeys HSD).

Results and Conclusions

Starved haddock larval group experienced 100% mortality by the post hatch day 10 as the last experiment day. The growth in total length and body weight, the pattern of yolk-sac resorption and the karyometry revealed that larvae which successfully began exogenous feeding maintained the high growth rate, delayed yolk-sac resorption and the large nuclear sizes attained during the period of endogenous feeding. Nuclei of fasted larvae shrank gradually and lowest values were attained before starvation death. From our results, the initial haddock larval food should be supplied at least within the post hatch day 3. Also, it suggested that hepatocyte nuclear site in haddock could be used as an alternative indicator for the identification of starving condition and such karyometry might be criteria for evaluating the successful transition from endogenous to exogenous feeding regime.

References

Litvak M. 1998. The development of haddock culture in Atlantic Canada. Bull. Aqua. Asso. Can. 98: 30~33.

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