Survival of Atlantic bluefin tuna (*Thunnus thynnus*) larvae hatched at different pH and salinity conditions

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**INTRODUCTION**

The world market for the appreciated Atlantic bluefin tuna (ABT, *Thunnus thynnus*) is limited by the capture of wild animals. Thus, aquaculture of this species is gaining momentum, though to date there are still some obstacles to overcome during the first stages of breeding (1). Egg and larval production efforts are carried out under environmental conditions similar to those of the natural environment (2, 3). In this sense, tuna species are sensitive to environmental fluctuations and mass mortalities occur (4). However, rearing teleost fish during their early life stages at optimal environmental conditions can increase survival and growth rates (5, 6). Water pH and salinity are key parameters in the energy management of fish, favoring growth if the osmoregulatory expenditure is minimized (7, 8). We hereby aim at evaluating ABT larval survival at different environmental conditions, and its relationship with osmoregulation.

**MATERIAL & METHODS**

Two experiments were conducted with fertilized eggs (5 h post fertilization) of ABT maintained in 1 l tanks until hatch was completed (44 h at 23°C).

1) In a first experiment, eggs were exposed to sea water salinity (38 ppt) and four pH treatments: 8.0 (control), 7.7 (near future), 7.3 (far future) and 7.0 (lower) in triplicate (50 eggs per tank).

2) In a second experiment, eggs were exposed to eleven salinities and constant pH 8.0 (control): 27, 30, 33, 36, 37, 38 (control), 39, 40, 43, 46 and 49 ppt in triplicate (50 eggs per tank).

Larval survival alongwith with Na⁺/K⁺-ATPase and v-type H⁺-ATPase activity (the most relevant osmoregulatory enzyme in tuna larvae) (9) were evaluated.

**CONCLUSIONS**

*Thunnus thynnus* total survival is not affected by changes in water pH in the range from 8.0 to 7.3, suggesting high resilience of this species to ocean acidification. Moreover, the best survival rates occur in the range from 33 to 40 ppt salinity, coinciding with a lower osmoregulatory effort. Future studies should delve into the effects of these variables on the growth of ABT larvae.

**REFERENCES**


