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RESEARCH REPORTS

SUSTAINABLE AQUACULTURE FOR A SECURE FUTURE

Title: Ultrasound Enhanced Immersion Protocols for Masculinization of Nile Tilapia,
Oreochromis niloticus

Author(s): Amrit N. Bart and A.R.S.B. Athauda
Aquaculture and Aquatic Resources Management
Asian Institute of Technology
Klong Luang, Pathumthani 12120 Thailand

Martin S. Fitzpatrick and Wilfrido M. Contreras-Sánchez
Department of Fisheries and Wildlife
Oregon State University
Corvallis, Oregon 97331-1643 USA

Date: 21 October 2003

Publication Number: CRSP Research Report 03-195

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Androgen immersion protocols have been unsuccessful in consistently producing all-male tilapia at a high enough ratio for them to be commercially viable. This study explored the use of ultrasound to improve on the results of previous immersion studies. Variables tested include two hormones (trenbolone acetate-TBA and 17 α -methyl dihydrotestosterone-MDHT) at two concentrations (100 and 250 mg/L) and with or without ultrasound (cavitation level). All hormone treatments with ultrasound and non-ultrasound resulted in significantly higher masculinization than the appropriate controls ($P < 0.05$). Among pairs of treatments of the same hormone at the same dose, all ultra-sound treatments resulted in significantly higher number of males compared with non-ultrasound treatments with the exception of MDHT 250 mg/L ($P < 0.05$). Comparing across all ultrasound treatments, TBA 250 mg/L with ultrasound had higher masculinization than all the other ultrasound treatments ($P < 0.05$). Comparing across all non-ultrasound treatments, TBA 250 mg/L had higher ($P < 0.05$) masculinization than MDHT 100 mg/L and TBA 100 mg/L with non-ultrasound. Two of the three replicates of TBA 250 mg/L ultrasound treatment resulted in 100% males and the highest mean percentage (98%) of males. This study thus demonstrated the potential of a short-term immersion protocol using ultrasound to more predictably produce all-male, commercially viable tilapia seed.

This abstract is excerpted from the original paper, which was published in the *Journal of the World Aquaculture Society*, 34(2):210–216.

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Aquaculture Collaborative Research Support Program, Oregon State University, Snell Hall 418, Corvallis, Oregon 97331-1643 USA. The Aquaculture CRSP is supported by the U.S. Agency for International Development under CRSP Grant No.: LAG-G-00-96-90015-00.