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Sustainable Aquaculture for a Secure Future

Title: The Use of Ultrasound to Enhance-transport of Compounds into Fish and Fish Embryos: A Review

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Abstract: Fish culture is a rapidly growing industry. Even faster growth can be expected if we have better control over reproduction, seed storage, growth, and diseases. Despite an availability of a variety of substances with the potential to allow control over processes that facilitate sexual differentiation, preservation of embryos, reproduction, and disease prevention, there is no reliable and efficient method to deliver these substances. Novel techniques such as ultrasound have shown to enhance transport of substances through the skin of both, mammals and fish. This paper summarizes results of some of our original studies to deliver calcein into fish larvae for marking and quantification, to enhance delivery of androgen for sex reversal of tilapia and to enhance permeation of cryoprotectants into embryos for cryopreservation using cavitation level ultrasound.

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