

hCG hormonal induction in wild queen drum (*Cynoscion albus*) in captivity

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The objective

Evaluate the reproductive response of *C. albus* to hCG hormonal induction in captivity to future restocking and mariculture program.

Introduction

The queen drum, *Cynoscion albus*, is one of the 34 species distributed along the Central América pacific coast, which is captured with a trammel in the Gulf of Nicoya. Because overfishing reports of sciaenid species in Costa Rica, the laboratory start a Sciaenid Reproduction Program to implement the reproduction in captivity. The first specie was weakfish *C. squamipinnis*, which spawning in captivity after 2.5 years of adaptation without hormonal induction. First generation also spawned applying the same protocols. However, wild queen drums captured and transported to the laboratory at the same conditions of weakfish, not respond to the captivity reproduction strategies applied to weakfish, although both species share the same habitats and reproduction behavior. The objective of this study was to evaluate the reproductive response of *C. albus* to hCG hormonal induction in captivity.

Methods

Wild fish (6 females and 6 males) were captured and transported by boat to the laboratory and were maintained in an 18 t external cylindrical fiberglass tank. The spawning conditions were Saran cover (80% shade), aeration (20 PSI), and daily water exchange (80%). Daily, fish were fed with fresh sardines at 2% body weight (BW), and maturity was observed every two months to reduce handling stress. Fish were anesthetized with eugenol (clove oil, 0.1 ml L⁻¹), and ovarian biopsies were taken by inserting a plastic cannula. After 2.5 years, females and males were totally ripens, but not spontaneously spawn occurred. Females ($n=3$) were injected with a 300 IU/Kg BW, and males ($n=2$) with a 50 IU/ Kg BW. Fish and tank conditions were observed during latency period, and presence of floating eggs was indication of spawning. Eggs were collected and concentrate in a 2 lts volume, samples were taken (1 mL, $n=3$) and eggs counted.

Results and Discussion

After 2.5 years in captivity, females were mature at 11.7 ± 1.0 kg BW, and males at 12.5 ± 1.0 kg BW. Males with a fluid sperm (1:30 minutes motility time), and female's ovary samples showed oocyte diameter of 500 ± 20 μ m, with gray-clear cytoplasm. Latency period after injection was 49 hours, when the eggs were detected in the collector. The first spawn was 522467 eggs, with a fertilization of 85%, and second was 116375 eggs with a fertilization of 80%.

Conclusion

C. albus respond to hormonal stimulation of hCG producing a good quality eggs and sperm. Although females reach the gonadal development in captivity, the final maturation and ovulation not occurred after adaptation period, like weakfish *C. squamipinnis*, which live in the same habitats. The results obtained confirm *C. albus* as strong candidate in possible restocking programs and mariculture.

