The steroid hormone secretion and coloration in tilapia (Oreochromis mossambicus) were affected by visual and body contact.

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ABSTRACT

Multiple biological processes can generate sexual selection on male visual signals such as color. In breeding season, male tilapia develop distinct nuptial coloration trying to attract female for breeding. It has been known that pigment migration within fish pigment cells (chromatophores) is under the control of nervous and endocrine systems. Steroid hormones are crucial regulators in mediating the reproductive functions, including gametogenesis, sex characteristics presentation, gender switch and nuptial coloration. However, most nuptial coloration studies focus on the environment and feeding conditions, those on sexual hormone levels and visual and body contact are still scant. Thus, in this study, relationship among tilapia sex steroids, body coloration, and visual and body contact was investigated. Blood concentrations of steroids (progesterone, estrogen, testosterone and 11-keto testosterone) and coloration of fins during breeding season from sexual mature male or female tilapia cultured together or separately for two weeks were analyzed every three days by enzyme immunoassay and ImageJ program, respectively. Results showed that in male the concentration of testosterone 272.4 pg/mL of those cultured together for 6 days was higher than those cultured for 15 days 162.2 pg/mL, the same result of those bred separately was observed (159.6 pg/mL for 6 days vs 129.6 pg/mL for 15 days), and similar result in 11-keto testosterone 180.7 pg/mL of those cultured together for 6 days was higher than those cultured for 15 days 159.3 pg/mL, and the same result of those bred separately was observed (179.4 pg/mL vs 148.5 pg/mL). In female, progesterone 59.7 pg/mL of those cultured together for 6 days was higher than 15 days 54.3 pg/mL as well as the same result of those bred separately was observed (67.6 pg/mL vs 57.1 pg/mL), however, contract result existed in estradiol 249.6 pg/mL cultured together for 6 days less than those of 15 days 571.1 pg/mL, and the same re...

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