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## RESEARCH REPORTS

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**Title:** Effect of Oxygen Saturation in Water on Reproductive Performances of Pacu *Piaractus brachypomus*

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**Abstract:** Broodstock pacu *Piaractus brachypomus* as well as their eggs during their embryonic development were exposed to either normoxia (5.5–7.5 mg O<sub>2</sub>/L) or hypoxia (2.0–4.5 mg O<sub>2</sub>/L) conditions. The plasma concentrations of 11-ketotestosterone in males and estradiol-17β in females, as well as that of their precursor testosterone (T) were significantly ( $P < 0.01$ ) higher in fish maintained under normoxic conditions than in fish exposed to hypoxia. After ovulation and spermiation induced by hormonal treatments, the plasma concentrations of T and 17,20β-dihydroxy-4-

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pregnen-3-one (17,20 $\beta$ P) significantly ( $P < 0.05$ ) increased in both sexes under both normoxic and hypoxic conditions. The plasma levels of T and 17,20 $\beta$ P achieved under normoxic conditions were higher than the ones recorded under hypoxia, except for those of 17,20 $\beta$ P in males. Males responded positively to the hormonal treatments, and the concentration of spermatozoa was  $10.5 \pm 0.8 \times 10^9$  /mL under both oxygen conditions. Hypoxia resulted in significantly lower survival of embryos ( $17.3 \pm 28\%$ ) in comparison to normoxic conditions ( $68.5 \pm 25\%$ ). Moreover, larval deformities were found when exposed to hypoxia ( $91.6 \pm 6\%$ ). During embryonic development of this species 4 mg/L of oxygen is tolerated at 26–27 C without negative impact. We conclude that despite the highly adaptable nature of adult pacu to environmental hypoxia, oxygen concentrations below 4 mg/L severely impacted survival of embryos.

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