

## Enhancement of Electrical Sex Reversal Combined with Immersion Technique

The present study proposes an alternative technique of sex reversal for Nile tilapia (*Oreochromis niloticus* L.) to enhance all-male yield using transient pulse-electric fields combined with immersion technique. Tilapia's eggs obtained from our parent breeding stocks were selected as the egg-stage development during segmentation-pharyngula (2-3dpf) (day post fertilization) for electrical inductions with the optimized electric field strengths of 87.50 kVm<sup>-1</sup> generated between narrow plate electrodes. Before induction, eggs were carefully washed and re-suspended in the special electroporation medium (EPM) (to be patent) prepared using HEPES buffer with various micro-concentrations of the androgen hormone of 17alpha-methyltestosterone (MT) of 500-1,000-1,500-10,000 µg.l<sup>-1</sup> MT. All experiments had been performed at room temperature. It was found that tilapia's eggs suspended in EPM with the ratio of 100 eggs/500 ml EPM had the critical tolerance limit at 10,000 µg.l<sup>-1</sup> MT for the maximum duration of 24 hrs with hatching rates of 91.00%±2.65%, 79.33%±6.11%, 90.33%±2.08% and 81.67%±12.42% (P>0.05), respectively. Increasing MT concentrations shifted survival rates of tilapia to the lower values as 83.33%±3.06%, 73.00%±7.00%, 79.33%±3.51% and 57.00%±1.41% (P<0.01), respectively. The optimized electrical parameters used for the present study were constrained at the induced voltage of 375 VDC, 5 square wave pulses, 50 µs pulse durations with 1:1 mark-space ratio. We achieved to enhance all-male sex reversal rates of tilapia eggs combined with the immersion technique at 89.23%±1.16%. By comparison to experiments of 1,500 µg.l<sup>-1</sup> MT without immersion, all-male sex reversal rate had a lower value as 81.25% with hatching of 87.70%±15.13% (mean ± SD) and survival rate of 73.04%±6.15% (mean ± SD).

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