

Effectiveness of Electroanaesthesia in Indian Major Carp *Labeo rohita*

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ABSTRACT

We have investigated the threshold Current densities ($\mu\text{A}/\text{mm}^2$) and Voltage gradient (V/Cm) which induce anaesthesia in *Labeo rohita* under Direct current (DC) and three low frequency Pulsed Direct current (PDC) of 1Hz, 3Hz and 6 Hz. The induction and recovery time, opercular beats (per minute) before exposure and 10 minutes after recovery and blood glucose response at 1hr, 2 hr 4 hr, 6hr and 12 hrs after exposure were also investigated. All the current types in this study were effective in anaesthetizing *L. rohita* with fast induction and rapid recovery period in 100% fishes. The threshold values of Current densities ($\mu\text{A}/\text{mm}^2$) and Voltage gradient (V/Cm) for inducing anaesthesia was higher in DC than PDCs. For PDC the threshold values were observed to decrease with increasing pulse frequencies. We did not find any significant difference in induction period and recovery times between the DC and PDCs. Opercular movements (beats/minute) were significantly lower ($P < 0.05$) during anaesthesia, significantly higher ($P < 0.05$) 1 minute after recovery in all current types and reduced significantly ($P < 0.05$) in DC, PDC 1 Hz and PDC 3 Hz after 10 min of recovery from anaesthesia. The change of blood glucose level observed in this study was consistent with the generalized stress response. The results of this study indicate that electro anaesthesia can be used for collection of morphometric data and noninvasive procedures where immediate release of fish is required. Results demonstrated that electroanaesthesia proffers a cost effective, ecofriendly alternative of chemical anesthetics for aquaculture activities in *L. rohita*.

Keywords: Electroanaesthesia, induction, recovery, *Labeo rohita*

