

Effect of anesthesia with propofol on blood parameters, pH, blood gases and ECG of grass carp, *Ctenopharyngodon idella*

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Abstract

Propofol, is well known in human and veterinary medicine as an anesthetic drug, but there is no report about using this drug in anesthesia of fish. In the present study, 40 Grass carp with average weight of 1 kg were chosen. Fishes were divided randomly into 4 groups of each with 10 fishes. One group was considered as control group and 3 other groups were anesthetized by bath method with 3 concentrations (2, 6 and 10 mg/l). At the time of anesthesia and recovery, the electrocardiogram of fishes was recorded and the arterial blood samples were taken from dorsal aorta of fish and the venous blood from the caudal vein. After transport of blood in ice bag, blood gases and pH of all fishes were measured. The mean and standard deviation of the all parameters were measured and the data were analyzed by one way analysis of variance. Results indicated that the average induction time of the fish was 127.4 ± 10 sec and recovery time was 12.49 ± 1.7 min. According to the results, the mean of O₂ concentration in arterial blood of experimental groups (2, 6 and 10 mg/l) were 1 ± 3.7 , 1 ± 1.1 and 2.4 ± 1.5 mmHg respectively and were significantly lower than the control group (5.5 ± 2.9 mmHg). Average pH of arterial blood in control group was 7.6 ± 0.21 and in experimental groups were 7.49 ± 0.3 , 7.5 ± 0.12 and 7.5 ± 0.09 and no significant difference was observed between the groups ($p > 0.05$). CO₂ concentration in blood of control group was 5.5 ± 2.9 mmHg and it was significantly lower than the experimental groups (12 ± 1.9 , 10.7 ± 1.6 and 12 ± 2.1 mmHg respectively). Heart rate in all experimental groups was significantly higher than the control and the r-r distance was lower than the control. No difference in the qrs distance was observed in all groups. Sinus arrhythmia was observed in all fishes. According to the results propofol can be considered as a comparatively safe anesthetic drug with little side effects on blood parameter and heart, and we recommend it for use in aquaculture.

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