The effects of oral and bath treatment with metronidazole and levamisole on some of the serum enzymes and proteins in common carp (Cyprinus carpio)

Barakitabar, S.¹; Peyghan, R.² and Razi jalali, M.²

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Abstract
Metronidazole and levamisole have several clinical and biochemical side effects such as changes in the activity of serum enzymes and proteins and other profiles. There are some reports of metronidazole and levamisole effect on blood serum proteins in animals, but there is no report of these drugs on criteria in common carp. In this study, 150 common carp (75±15 gr) were divided randomly into five categories. One group served as the control (no drug) and four treatment groups: Metronidazole bath (5mg/l/24hr in 2 days interval), Oral metronidazole (5mg/kg/10 days), Levamisole bath (5mg/l/24hr in 2 days interval) and Oral levamisole (5mg/kg/10 days) were considered. After 10 days, on days 1, 7 and 14 after completion of treatment, blood samples were collected from fish and serum total protein in combination with electrophoresis and the activity of serum enzymes (AST, ALT and ALP) were performed. The results showed that there was no significant difference in plasma total protein in the studied groups compared to the control group. Serum enzymes activity in the control group was not significantly different between the two groups of levamisole bath and oral levamisole except for alkaline phosphatase. Aspartate aminotransferase enzyme activity in the oral metronidazole group was significantly higher than the control group. The mean values of albumin, alpha-1 globulin, alpha-2 globulins, beta-globulins and gamma globulins in the control group did not significantly differ with other groups. Based on the findings of this study, it can be concluded that levamisole and metronidazole drugs in the recommended doses in these treatments have altered some of the serum indices but did not significantly increase the number of studied factors. It does not have a significant effect on blood protein factors and it is advisable to recommend it as an antiparasitic treatment in common carp, although supplementary research seems necessary in this regard.

Key words: Common carp, Metronidazole, Levamisole, Enzyme, Electrophoresis

1- DVM Graduated from Faculty of Veterinary Medicine, Shahaid Chamran University of Ahvaz, Ahvaz, Iran
2- Professor, Department of Clinical Sciences, Faculty of Veterinary Medicine, Shahaid Chamran University of Ahvaz, Ahvaz, Iran
Corresponding Author: Peyghan, R., E-mail: peyghan2014@gmail.com
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