

Effect of EUS on Some haematological Paramaters of channa Straitus

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ABSTRACT

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Epizootic ulcerative syndrome (EUS) is such type of epidemic disease from which a number of fishes have been found to suffer since a long period. A great loss in fish farming is seen also. The paper deals about effect of such EUS disease on some haematological parameters of selected fish C. Straitus.

Keywords : EUS, C. Straitus, Haematological parameters

I. INTRODUCTION

Seasonal epizootic condition of freshwater and estuarine warm water fish of complex infection aetiology characterized by the presence of invasive *Aphanomyces* infection and necrotizing ulcerative lesion typically leading to a granulomatous response. EUS is endemic in many countries and is still extending its geographical range even into subtropical subtemperate and temperature climate.

The emergence of EUS disease in India during December, 1998 emphasized due to entering of diseased fishes along with flood waters of Bangladesh where the severe outbreak started in November – December 1998. The transmission of severe disease through contaminated water area and fish of exotic varieties is significantly important. So far as available literature is concerned, histologically and haematologically, it is well established that the

invading fungus causes significant necrotic changes in the skin and muscle tissue of granulomas and ultimately results in the formation of dermal ulcers (Parithabhanu and Subramanian, 2006; Kumar et. Al. 2009; Nirmal and Shashi, 2014 and Shashi and Yadav, 2014)

The present paper deals with the effect of EUS on some haematological parameters and size of blood cells in fish Channa Straitus.

II. METHODS AND MATERIAL

In the present study, fish Channa Straitus common name 'Saura' was selected which is commonly found in ditches, paddy fields, waterlogged areas and swamps. For the experiment, both healthy and infected species were collected with the help of fishermen and were kept in separate aquarium containing pond water . The EUS affected fishes were

kept in laboratory for 26 hours to acclimatize at laboratory conditions. Then these fishes were used for experiments. Care was taken to bring such fishes under investigation before dieting because the EUS affected fishes found could not survive even for 96 hours. Estimated haemoglobin content and total count of different leucocytes were chosen as haematological parameters. For all these experiments blood was collected with the help of plastic syringe from the corda dorsalis of the healthy and ulcerative fishes. Ethylene dichlorotichloroacetate was used as anticoagulant. The parameters selected for investigations of control and infected fishes were total weight, haemoglobin percentage, PCV, neutrophils, leucocytes, monocytes, eosinophils and basophils (all in %) and their sizes (in μ) were applied as prescribed standard methods of Darmody and Dvenpart, 1954 and Akela et al., 1988.

III. RESULTS AND DISCUSSION

The analysis of variance showed in Table 1 was due to highly significant variability in the level of selected parameters due to EUS. The level of haemoglobin content in weight in percentage investigated due to EUS. The maximum percentage fall recorded in channa Straitus was 36.02%. EUS caused a significant decrease in number of erythrocyte ($2.691 \pm 0.047 \times 106/\text{mm}^3$), leucocytes (8.3 ± 0.089), PCV (47.13 ± 0.793), neutrophils ($34.0 - 0.663$), lymphocytes (53.1 ± 1.291), monocytes (8.3 ± 0.894), eosinophils (3.0 ± 0.4), and basophils (1.6 ± 0.209) respectively. Likewise the average size of different blood cells of Channa Straitus e.g. erythrocytes, neutrophils, lymphocytes, monocytes, eosinophils and basophils blood cells diameter also showed variations due to EUS, which may be seen in Table 2. In both the tables, the mean value and standard errors (SE) of selected parameters for investigation of EUS in Channa Straitus were taken.

Table 1. Showing the effect of EUS of certain Haematological Parameters of C. Straitus

Parameters	Control Fish	Infected Fish
Weight (in grams)	46.43 ± 0.962	44.76 ± 1.186
Haemoglobin (in gram %)	14.86 ± 0.342	9.48 ± 0.283
Erythrocytes (in $106/\text{mm}^3$)	2.691 ± 0.045	1.068 ± 0.055
Leucocytes (in $106/\text{mm}^3$)	3.458 ± 0.089	3.708 ± 0.104
PCV (in %)	47.13 ± 0.794	31.21 ± 0.724
Neutrophils (in %)	34.0 ± 0.663	24.9 ± 0.932
Lymphocytes (in %)	53.1 ± 1.292	59.0 ± 0.425
Monocytes (in %)	8.3 ± 0.892	10.0 ± 0.485
Eosinophils (in %)	3.0 ± 0.3	5.5 ± 0.664
Basophils (in %)	1.6 ± 0.209	0.6 ± 0.209

Table 2. Showing the effect of EUS on the average size (diameters) of blood cells of Channa Straitus

Parameters	Control Fish	Infected Fish
Weight (in grams)	46.43 ± 0.962	44.76 ± 1.186
Erythrocytes (in μ)	6.17 ± 0.023	6.6 ± 0.025
Neutrophils (in μ)	11.49 ± 0.026	11.88 ± 0.042
Lymphocytes (in μ)	8.15 ± 0.002	7.45 ± 0.016
Monocytes (in μ)	10.59 ± 0.022	10.28 ± 0.030
Eosinophils (in μ)	9.71 ± 0.022	10.47 ± 0.028
Basophils (in μ)	8.68 ± 0.052	8.75 ± 0.033

Ulcer might have affected the nervous system of fish, that the neutral elements associated with blood vessels and stroma which effect haemopoiesis, causing decrease in the rate of haemopoiesis (Kumar et. al. 2009; Verma and Shashi 2004; Shashi and Yadav, 2014; Parithabance and Subramanian, 2006 and Nirmal and Shashi, 2014).

IV.CONCLUSION

In the present study a drastic fall in the haemoglobin content might be because of anaemia which in turn is due to bacterial ulcer where as a significant decrease in total erythrocytes and some other studied parameters in both sexes of *Channa Straitus* of all experiments fishes might be due to bleeding from ulcer or due to disturbance in the metabolic activities of haemopoietic organs. The highest number of leucocyte was found because of more amount of blood and blood cells in this fish. So, on the whole, it was seen that EUS causes so many ulcerations in different ways in *Channa Straitus*.

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