

immunostimulants examined did not have a significant effect on the ESR in both healthy and *Aeromonas* infected fish, as compared to the control group. The present results align with the findings of Harkal et al. (2011) who observed a rise in ESR from 7.25 mm/h to 8.10 mm/hr over a period of 24 to 96 hours respectively, in presence of a 15-ppm concentration of aqueous garlic extract. Similarly, they noted an increase in ESR from 7.80 mm/h to 9.11 mm/h over the same time frame.

Moreover, it has been indicated that an elevation in ESR might be attributed to an augmentation in the level of fibrinogen, resulting in fibrinogenemia, which can be caused by exposure to garlic or by chemical compounds such as sulphur. Similarly, Wu et al. (2013) found that the erythrocyte sedimentation rate reduced in the groups receiving dosages of 0.5 and 1.0 g/kg. In the groups receiving dosages of 2.0 and 4.0 g/kg, the ESR reduced from days 0 to 14, but rise from days 28 to 56. Malla et al. (2009) and Kumar & Benerjee (1990) have documented an elevation in ESR in *Channa punctatus* and *Clarias batrachus* following a seven-day exposure to chlorpyrifos.

5 Conclusion

It is concluded that the infected fish fed with all the five selected immunostimulant mixed feed exhibited lower lengths than the normal fish fed with immunostimulant diets. Among all the tested feeds, *Aeromonas*- infected fish fed with vitamin C mixed feed exhibited greater body length gain. The tested immunostimulants significantly enhance the Hemoglobin percentage, as well as RBC, WBC, neutrophils, lymphocytes, and monocyte count; decrease the eosinophil count and not shown a significant impact on the basophils count and ESR in both healthy and *Aeromonas* infected fish when compared to the control feed administered group. Thus, among the above selected immunostimulants, Vitamin C and Vitamin E have shown better impact on the morphometry and haematology of *Cata catla* fish under *Aeromonas hydrophila* infected conditions and restored all the above parameters as in healthy fish.

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Conflict of Interest Disclosure

The authors declare that this research was conducted without any commercial or financial relationships that could be construed as a potential conflict of interest.

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