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## Abstract

The objective of this study was to determine the ameliorative potential of licorice (*Glycyrrhiza glabra*) root powder against an infection caused by *Aeromonas hydrophila* which is a commonly occurring infection in farmed fish throughout the world. For this purpose, the intestinal histology and gene expression analysis of the tight junction proteins i.e. claudin and occludin and pro-inflammatory genes i.e. TNF- $\alpha$  INF- $\gamma$  and IL-8 as well as TGF was done. A growth experiment was conducted for a period of 2 months prior to the challenge test. After that control and treatment groups were injected using PBS and *Aeromonas hydrophila* respectively and given control diet and LRP supplemented diet for a period of 14 days. The histology of the mid intestine showed normal histology in the negative control group and in the positive control group that was given infection and injected with PBS, the histology showed signs of infection. A repaired intestinal histology was observed in the fish fed 5% and 10% LRP. The gene expression analysis of the tight junction proteins showed that LRP significantly increased the expression of claudin in the 5% and 10% LRP fed group and the expression of occludin increased significantly at an inclusion level of 20%. The expression of the pro-inflammatory cytokines i.e. was found to be significantly similar to the negative control group in which no infection was given. Thus, licorice root powder has an ameliorative potential against *Aeromonas hydrophila* infection and can be used as a feed additive to solve the problem of antibiotic resistance in humans caused by the use of antibiotics in aquaculture.