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PII: S1050-4648(16)30628-3

DOI: [10.1016/j.fsi.2016.09.061](https://doi.org/10.1016/j.fsi.2016.09.061)

Reference: YFSIM 4224

To appear in: *Fish and Shellfish Immunology*

Received Date: 23 June 2016

Revised Date: 26 September 2016

Accepted Date: 30 September 2016

Please cite this article as: Aiya Subramani P, Narasimha RV, Balasubramanian R, Narala VR, Ganesh MR, Michael RD, Cytotoxic effects of *Aeromonas hydrophila* culture supernatant on peripheral blood leukocytes of Nile tilapia (*Oreochromis niloticus*): Possible presence of a secreted cytotoxic lectin, *Fish and Shellfish Immunology* (2016), doi: 10.1016/j.fsi.2016.09.061.

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**Cytotoxic Effects of *Aeromonas hydrophila* Culture Supernatant on Peripheral Blood Leukocytes of Nile Tilapia (*Oreochromis niloticus*): Possible Presence of a Secreted Cytotoxic Lectin**

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**Abstract**

Number of exotoxins like haemolysin, leukocidin, aerolysin etc. were reported from *Aeromonas hydrophila*. In this study, we report the haemolytic and cytotoxic effect of *A. hydrophila* culture supernatant (CS) that is specifically inhibited by lactose and also by serum and mucus of Nile tilapia (*Oreochromis niloticus*). Hence, we assume the presence of a secreted lectin in the CS. CS is toxic to peripheral blood leukocytes (PBL) of *O. niloticus* as revealed by MTT assay and by flow cytometry. DNA laddering assay indicates that CS causes necrosis to PBL. As a result of necrosis, CS treated PBL showed increased production of reactive oxygen species as indicated by nitroblue tetrazolium and 2',7' –dichlorofluorescein diacetate assays. CS treated PBL showed reduced mRNA expression of TNF- $\alpha$  and IFN- $\gamma$  genes. When CS was subjected to polyacrylamide gel electrophoresis, it showed a single band corresponding to the molecular weight of 45 kDa. However, upon concentrating the CS by ultrafiltration, many bands were visualized. Further studies at molecular level are required to unravel this macromolecular-leukocyte interaction which would ultimately benefit the aquaculture industry.

**Keywords:** Aquaculture; Exotoxins; Haemolysis; Lectin; Necrosis; ROS production

**Introduction**

Secreted exotoxins are one of the highly studied bacterial virulence factors (Alouf 2006). The virulence factors including exotoxins secreted by *Aeromonas hydrophila* were

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