Accepted Manuscript

Identification and characterization of a B-type mannose-binding lectin from Nile tilapia (*Oreochromis niloticus*) in response to bacterial infection

Xiaoxue Yin, Liangliang Mu, Yuan Li, Liting Wu, Yanjian Yang, Xia Bian, Bingxi Li, Shaoan Liao, Yutao Miao, Jianmin Ye

PII: S1050-4648(18)30616-8

DOI: 10.1016/j.fsi.2018.09.072

Reference: YFSIM 5593

To appear in: *Fish and Shellfish Immunology*

Received Date: 14 March 2018

Revised Date: 31 August 2018

Accepted Date: 25 September 2018

Please cite this article as: Yin X, Mu L, Li Y, Wu L, Yang Y, Bian X, Li B, Liao S, Miao Y, Ye J, Identification and characterization of a B-type mannose-binding lectin from Nile tilapia (*Oreochromis niloticus*) in response to bacterial infection, *Fish and Shellfish Immunology* (2018), doi: https://doi.org/10.1016/j.fsi.2018.09.072.

Identification and characterization of a B-type mannose-binding lectin from Nile Tilapia (*Oreochromis niloticus*) in response to bacterial infection

ABSTRACT

Lectins are a group of carbohydrate-binding proteins, which play an important role in innate immune system against pathogen infection. In this study, a B-type mannose-binding lectin (OnBML) was identified from Nile tilapia (*Oreochromis niloticus*), and characterized at expression patterns against bacterial infection and capability to promote phagocytosis by macrophages. The open reading frame of *OnBML* is 354 bp of nucleotide sequence encoding polypeptides of 117 amino acids. The deduced protein is highly homologous to other teleost BMLs, containing two repeats of the conserved mannose-binding motif QXDXNXVXY. Expression of *OnBML* was widely exhibited in all examined tissues, with the most abundance in spleen and following gill, peripheral blood, and head kidney. The *OnBML* expressions were significantly up-regulated following two major bacterial infections including a Gram-positive bacterium (*Streptococcus agalactiae*) and a Gram-negative bacterium (*Aeromonas hydrophila*) *in vivo* and *in vitro*. Recombinant OnBML protein possessed capacities of mannose-binding and calcium-dependent agglutination to *S. agalactiae* and *A. hydrophila*, and promoted the phagocytosis by macrophages. Taken together, the present study indicated that OnBML is likely to get involved in host defense against bacterial infection in Nile tilapia.