

Accepted Manuscript

Dietary threonine deficiency depressed the disease resistance, immune and physical barriers in the gills of juvenile grass carp (*Ctenopharyngodon idella*) under infection of *Flavobacterium columnare*

Yu-Wen Dong, Lin Feng, Wei-Dan Jiang, Yang Liu, Pei Wu, Jun Jiang, Sheng-Yao Kuang, Ling Tang, Wu-Neng Tang, Yong-An Zhang, Xiao-Qiu Zhou

PII: S1050-4648(17)30655-1

DOI: [10.1016/j.fsi.2017.10.048](https://doi.org/10.1016/j.fsi.2017.10.048)

Reference: YFSIM 4919

To appear in: *Fish and Shellfish Immunology*

Received Date: 19 July 2017

Revised Date: 23 October 2017

Accepted Date: 26 October 2017

Please cite this article as: Dong Y-W, Feng L, Jiang W-D, Liu Y, Wu P, Jiang J, Kuang S-Y, Tang L, Tang W-N, Zhang Y-A, Zhou X-Q, Dietary threonine deficiency depressed the disease resistance, immune and physical barriers in the gills of juvenile grass carp (*Ctenopharyngodon idella*) under infection of *Flavobacterium columnare*, *Fish and Shellfish Immunology* (2017), doi: 10.1016/j.fsi.2017.10.048.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



1 **Dietary threonine deficiency depressed the disease resistance, immune and physical**
2 **barriers in the gills of juvenile grass carp (*Ctenopharyngodon idella*) under infection of**
3 ***Flavobacterium columnare***

4 Yu-Wen Dong ^{a,1}, Lin Feng ^{a, b, c,1}, Wei-Dan Jiang ^{a, b, c}, Yang Liu ^{a, b, c}, Pei Wu ^{a, b, c}, Jun Jiang ^{a, b, c},
5 Sheng-Yao Kuang ^d, Ling Tang ^d, Wu-Neng Tang ^d, Yong-An Zhang ^e, Xiao-Qiu Zhou ^{a, b, c,*}

6
7 ^a Animal Nutrition Institute, Sichuan Agricultural University, Chengdu 611130, China

8 ^b Fish Nutrition and safety Production University Key Laboratory of Sichuan Province, Sichuan Agricultural
9 University, Chengdu 611130, China

10 ^c Key Laboratory for Animal Disease-Resistance Nutrition of China Ministry of Education, Sichuan
11 Agricultural University, Chengdu 611130, China

12 ^d Animal Nutrition Institute, Sichuan Academy of Animal Science, Chengdu 610066, China

13 ^e Institute of Hydrobiology, Chinese Academy of Sciences, Wuhan 430072, China

14
15 **Corresponding authors. Animal Nutrition Institute, Sichuan Agricultural University, Chengdu 611130,*
16 *Sichuan, China. Tel.: +86 835 2885157; fax: + 86 8352 885968*

17 *E-mail addresses: xqzhouqq@tom.com, zhouxq@sicau.edu.cn (X.-Q. Zhou);*

18
19 ¹ These two authors contributed to this work equally

20

Download English Version:

<https://daneshyari.com/en/article/8498845>

Download Persian Version:

<https://daneshyari.com/article/8498845>

[Daneshyari.com](https://daneshyari.com)