

Accepted Manuscript

Immune priming and portal of entry effectors improve response to vibrio infection in a resistant population of the European abalone

Bruno Dubief, Flavia L.D. Nunes, Olivier Basuyaux, Christine Paillard



PII: S1050-4648(16)30712-4

DOI: [10.1016/j.fsi.2016.11.017](https://doi.org/10.1016/j.fsi.2016.11.017)

Reference: YFSIM 4298

To appear in: *Fish and Shellfish Immunology*

Received Date: 23 August 2016

Revised Date: 20 October 2016

Accepted Date: 6 November 2016

Please cite this article as: Dubief B, Nunes FLD, Basuyaux O, Paillard C, Immune priming and portal of entry effectors improve response to vibrio infection in a resistant population of the European abalone, *Fish and Shellfish Immunology* (2016), doi: 10.1016/j.fsi.2016.11.017.

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 **Immune priming and portal of entry effectors improve response to vibrio infection in a resistant population**
2 **of the European abalone**

3

4 **Bruno Dubief¹, Flavia LD Nunes^{1,2}, Olivier Basuyaux³, Christine Paillard¹**

5 ¹ Laboratoire des Sciences de l'Environnement Marin (LEMAR), UMR6539 CNRS/UBO/IRD/Ifremer, Institut
6 Universitaire Européen de la Mer, University of Brest (UBO), Université Européenne de Bretagne (UEB), Place
7 Nicolas Copernic, 29280, Plouzané, France

8 ² Ifremer Centre de Bretagne, DYNECO, Laboratoire d'Ecologie Benthique Côtière (LEBCO), 29280, Plouzané

9 ³ Synergie Mer et Littoral, Centre expérimental ZAC de Blainville, 50560 Blainville-sur-mer, France

10

11 **Abstract**

12 Since 1997, populations of the European abalone *Haliotis tuberculata* suffer mass mortalities attributed to the
13 bacterium *Vibrio harveyi*. These mortalities occur at the spawning season, when the abalone immune system is
14 depressed, and when temperatures exceed 17°C, leading to favorable conditions for *V. harveyi* proliferation. In
15 order to identify mechanisms of disease resistance, experimental successive infections were carried out on two
16 geographically distinct populations: one that has suffered recurrent mortalities (Saint-Malo) and one that has
17 not been impacted by the disease (Molène). Furthermore, abalone surviving these two successive bacterial
18 challenges and uninfected abalone were used for several post-infection analyses. The Saint-Malo population
19 was found to be resistant to *V. harveyi* infection, with a survival rate of 95% compared to 51% for Molène.

20 While *in vitro* quantification of phagocytosis by flow cytometry showed strong inhibition following the first
21 infection, no inhibition of phagocytosis was observed following the second infection for Saint-Malo, suggesting
22 an immune priming effect. Moreover, assays of phagocytosis of GFP-labelled *V. harveyi* performed two months
23 post-infection show an inhibition of phagocytosis by extracellular products of *V. harveyi* for uninfected abalone,
24 while no effect was observed for previously infected abalone from Saint-Malo, suggesting that the effects of
25 immune priming may last upwards of two months. Detection of *V. harveyi* by qPCR showed that a significantly
26 greater number of abalone from the susceptible population were positive for *V. harveyi* in the gills, indicating
27 that portal of entry effectors may play a role in resistance to the disease. Collectively, these results suggest a
28 potential synergistic effect of gills and haemolymph in the resistance of *H. tuberculata* against *V. harveyi* with
29 an important involvement of the gills, the portal of entry of the bacteria.

Download English Version:

<https://daneshyari.com/en/article/5540982>

Download Persian Version:

<https://daneshyari.com/article/5540982>

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