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Cellular and transcriptomic response to treatment with the probiotic candidate *Vibrio lentus* in gnotobiotic sea bass (*Dicentrarchus labrax*) larvae

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2 gnotobiotic sea bass (*Dicentrarchus labrax*) larvae

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21 ABSTRACT

22 The present study aimed at evaluating the cellular and transcriptomic responses induced by the
23 probiotic candidate *Vibrio lentus* with gnotobiotic European sea bass (*Dicentrarchus labrax*, Linnaeus
24 1785) larvae. For this, a histomorphological analysis was performed using the terminal
25 deoxynucleotidyltransferase-mediated dUTP nick end labeling (TUNEL) and the anti-proliferating cell
26 nuclear antigen (PCNA) assay. In addition, a global transcriptomic approach was adopted to study the
27 whole body mRNA changes upon administration of *V. lentus* by microarrays with the custom Agilent
28 sea bass oligonucleotide-microarray v2.0 (4 x 44K). Following *V. lentus* administration, the apoptotic
29 and cell proliferative indexes did not show significant differences between treatments for hindgut
30 nor for midgut. However, *V. lentus* treatment did significantly modify the gene expression related not
31 only to cell proliferation and cell death, but also to cell adhesion, reactive oxygen species
32 metabolism, iron transport, and immune response.

33 Our data represent the first global analysis of the effects of the probiotic candidate *V. lentus* on the
34 gene expression profile in gnotobiotic European sea bass, and as such, provides a first delineation of
35 the mechanisms by which this agent interacts with its host and exerts its beneficial effects.

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