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# ABSTRACT BOOK

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## Cell-mediated cytotoxicity of European sea bass leucocytes is impaired by nodavirus. A RNA-seq study

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Cell-mediated cytotoxicity (CMC) is amongst the major immune responses fighting viral infections but slightly characterized in fish. Nodavirus (NNV; family *Nodaviridae*, genus *Betanodavirus*), is one of the most threatening virus for teleost fish, being the European sea bass (*Dicentrarchus labrax*) one of the most susceptible species, and causes the viral encephalopathy and retinopathy (VER) disease that alters brain and retina structure and function. The innate CMC activity is increased in sea bass specimens as well as the innate and specific CMC activity was increased in groupers upon NNV infection. However, preliminary data in our lab demonstrated that sea bass leucocytes were unable to kill NNV-infected cells *in vitro* and showed impaired CMC-related immunity. In an effort to throw some light into this host-pathogen interaction we aimed with this study to perform a RNA-seq analysis of the CMC activity. Thus, sea bass head-kidney leucocytes (HKLs) were incubated with DLB-1 cells (a cell line derived from the European sea bass and susceptible to NNV) as target cells: alone (CMC\_DL1) or infected with NNV (CMC\_DL1-NNV). After CMC assays, RNA-seq (Illumina) 2x100bp was performed and incorporated in an in-house pipeline to improve the current annotation of the sea bass reference genome. Differential expression and GO enrichment analysis were performed on the annotated genes. Our results show that sea bass HKLs incubated with DLB-1 cells alone (CMC\_DL1) showed 2,544 and 1,747 transcripts differentially expressed up- and down-regulated, respectively. On the other hand, we detected in HKLs incubated with DLB-1 cells infected with NNV (CMC\_DL1-NNV) 2,878 up-regulated and 2,255 down-regulated genes. Interestingly, little differences were observed in the HKLs from both CMC. In conclusion, our data demonstrated for the first time the transcripts important in the fish CMC activity. In addition, there were no differences in such transcripts when the target cells were infected with NNV confirming the CMC activity data. These data demonstrate that the innate CMC activity is not primed against NNV-infected cells *in vitro* and could explain why sea bass are not able to overcome the infection and die. (Support: Grants AGL2013-43588-P and AGL2016-74866-C3-1-R (MINECO and FEDER), PTA2014-09515 (MINECO), PT13/0001/002 (Instituto de Salud Carlos III) and 19883/GERM/15 (Fundación Séneca de la Región de Murcia, Spain) are gratefully acknowledged).

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