DIFFERENCES IN THE VIRAL INDUCTION OF THE SENEGALESE SOLE Mx PROTEIN EXPRESSION IN RTG-2 AND CHSE-214 CELLS

Daniel Álvarez-Torres[1], Esther García-Rosado[1], Bertrand Collet[2], Julia Béjar[1] María del Carmen Alonso[*1]

[1]University of Málaga, Málaga, Spain
[2]Marine Scotland Science Marine Laboratory, Aberdeen, Scotland-UK

Interferons (IFNs) play an important role in the fish innate immune system against viral infections by stimulating the expression of genes encoding antiviral proteins, such as Mx. The aim of the current study is to characterize the induction of the Senegalese sole Mx (*Solea senegalensis*, SsMx) protein expression after infection with different fish viruses. In order to fulfill this objective, RTG-2 and CHSE-214 cells were transiently transfected with the luciferase reporter gene under the control of the SsMx promoter. Viruses considered in the present study have been: (i) Infectious Pancreatic Necrosis Virus (IPNV, A2 serotype), (ii) Viral Hemorrhagic Septicemia Virus (VHSV, Ip8 herring isolate, Baltic Sea) and (iii) Epizootic Hematopoitic Necrosis Virus (EHNV, *Perca fluviatilis* isolate). The luciferase activity was measured and normalized to the green fluorescent protein (GFP) expression.

Transfected RTG-2 cells infected with VHSV showed significant induction of the luciferase reporter gene, compared to the control non-infected cells, at 24, 48 and 72 h post infection (p.i.). The maximum expression was recorded at 72 h p.i. (2.25 folds compared to the control cells). In these cells, the infection with IPNV and EHNV did not result in the luciferase expression at any time tested. In transfected CHSE-214 cells, EHNV stimulated luciferase expression at 24 h p.i. (2.17 folds compared to the control cells), whereas cells infected with IPNV and VHSV did not show luciferase activity at any time. The lack of induction of the SsMx promoter after VHSV infection in CHSE-214 cells, as well as after EHNV infection in RTG-2 cells may be caused by viral IFN-suppression mechanisms, as has been demonstrated for IPNV in previous studies. Furthermore, the different induction of the SsMx expression observed in RTG-2 and CHSE-214 cells after infection with the same virus indicates that cellular specific factors are involved in the IFN-signaling response. Therefore, the use of two different cellular systems might be an interesting approach to identify such cellular factors.

Keywords: *Solea senegalensis*, Mx promoter, IFN, IPNV, VHSV, EHNV

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