ABSTRACT BOOK

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DIFFERENTIAL INDUCTION OF THE GILTHEAD SEABREAM *MX1*, *MX2* AND *MX3* PROMOTERS BY IPNV AND VHSV

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Type I interferon (IFN I) system triggers specific signalling pathways leading to the activation of the innate immune defence of vertebrates against viral infections. The complex expression regulation of Interferon Stimulated Genes (ISGs) is responsible for the control of the IFN I response. Hence, one of the key issues in understanding virus-host interactions relies on the knowledge of the regulatory mechanisms governing ISGs expression. Among ISGs, the Mx proteins play a main role due to their direct antiviral activity. The study of Mx genes in the farmed fish gilthead seabream is especially interesting, since this species displays an unusually high natural resistance to viral diseases, and behaves as an asymptomatic carrier and/or reservoir of several viruses, such as infectious pancreatic necrosis virus (IPNV) and viral haemorrhagic septicaemia virus (VHSV), pathogenic to other fish species. Three independent Mx genes (*Mx1*, *Mx2*, and *Mx3*) have been identified in this species, showing the three proteins a wide spectrum of antiviral activity. The structure of the three promoters (pMx1, pMx2 and pMx3) has been disclosed, and their response to poly I:C characterized in RTG-2 cells, where a clear induction of the three promoters, although with some differences in the kinetics and magnitude of the response, was observed. To further analyse these promoters, the response of pMx1, pMx2 and pMx3 to two viral infections has been evaluated in the present study. For that purpose, RTG-2 cells were transiently transfected with plasmids containing each promoter driving the luciferase gene, and subsequently inoculated with either IPNV or VHSV. Although the three promoters were induced by IPNV and VHSV, several differences were recorded. In general, the response was stronger in cells inoculated with VHSV compared to IPNV-inoculated cells, and the fold induction was higher for pMx2. These results highlight the specific regulation that controls the activity of each promoter, and support the idea that a complex interaction between host cells, specific *Mx* promoters, and viruses, is the responsible of the final outcome of a viral infection, in terms of Mx induction.

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