

EFFECTS OF IFN γ ADMINISTRATION ON ALLOGRAFT REJECTION IN GINBUNA CRUCIAN CARP

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ABSTRACT

The rejection of allografts is primarily accomplished by cell-mediated immunity including T cells and IFN γ in mammals. Recently, we identified four IFN γ isoforms with antiviral activities in gimbuna crucian carp. In fish, however, the roles of IFN γ isoforms in cell-mediated immunity remain unknown. Here we investigate the effects of administration of recombinant gimbuna IFN γ (rgIFN γ) isoforms in scale allograft rejection. IFN γ rel 1 showed significantly higher expression at 5 days after allografting, while significant changes were not observed in other isoforms. Administration of rgIFN γ rel 1 but not rgIFN γ rel 2 nor rgIFN γ 2 enhanced the allograft rejection. The number of CD4⁺ and CD8 α ⁺ cells in grafted scales and surrounding epidermis increased at an early stage of rejection, while that of sIgM⁺ cells increased at day 0 and day 5 in rgIFN γ rel 1 administrated group. Accumulation of CD8 α ⁺ T cells from distal to medial epidermis of grafted scales was accelerated in rgIFN γ rel 1 administrated group. Interestingly, mRNA expression of IFN γ 1 and IFN γ 2 was significantly up-regulated after rgIFN γ rel 1 administration, while that of IFN γ rel 1 and IFN γ rel 2 was not. Expression of granzyme was significantly higher at day 2 in rgIFN γ rel 1 administrated group, while that of Perforin 1 and 3 was not. These results suggest that the administration of rgIFN γ rel 1 induced the accumulation of T cell subsets at the allograft site and the secretion of effector molecules resulting in the promotion of allograft rejection. Present results also suggest the differential contribution of four IFN γ isoforms to allograft rejection.

KEYWORDS

IFN gamma; allograft rejection; CD4; CD8; teleost

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