

# Immunoprotection Of Crucian Carp With Recombinant Grass Carp (*Ctenopharyngodon Idella*) Interferon Against Poly I:C Infection

Yichuan Mi, Chengyu Hu §

Department of Bioscience, College of Life Science, Nanchang University, Nanchang 330031,  
China

## ABSTRACT

The immunostimulatory effect and antiviral activity of grass carp (*Ctenopharyngodon idella*) recombinant interferon (rCiIFN) were proved in our previous study. Type I IFN of crucian carp (*Carassius auratus*) shares high homology with that of grass carp. In this study, the rCiIFN protein ( $\approx 21$ kD) was expressed and purified from BL21 *Escherichia coli*. To evaluate in vivo protective efficacy of rCiIFN against poly I:C infection, we administered it by oral feeding in our experiments. Crucian carp were fed with pellets mixed with rCiIFN at 1  $\mu$ g/g fish body weight once daily for 1, 2 and 3 days before poly I:C infection. The results indicated that the relative percentage survival (RPS) from feeding for 3 consecutive days (54.29%) was higher than those from feeding for just 1 d or 2 consecutive days (38.81% and 47.83% respectively). By comparison with gene expression levels observed in PBS-injected controls, the expression of *IFN* and *PKR* were found to be significantly up-regulated in tested tissues of rCiIFN-injected fish, and most of *IFN* and *ISG* reached the highest level within 48 h post-treatment. These results demonstrated that rCiIFN played antiviral activity in crucian carp and oral administration of rCiIFN was effective in protecting crucian carp against poly I:C infection.

## KEYWORDS

recombinant interferon; relative percentage survival; poly I:C; oral administration; immunoprotection

§Corresponding author. Tel.: +86 79188317270; Fax: +86 79183969530.

E-mail address: [hucy2008@163.com](mailto:hucy2008@163.com)