

Screening for protective antigens of Cyprinid herpesvirus 2 and construction of DNA vaccines



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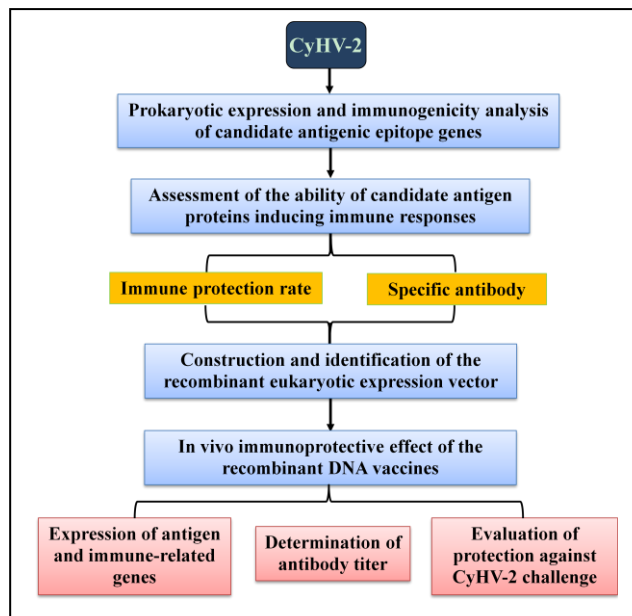
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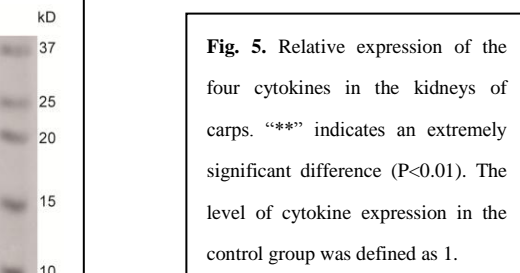
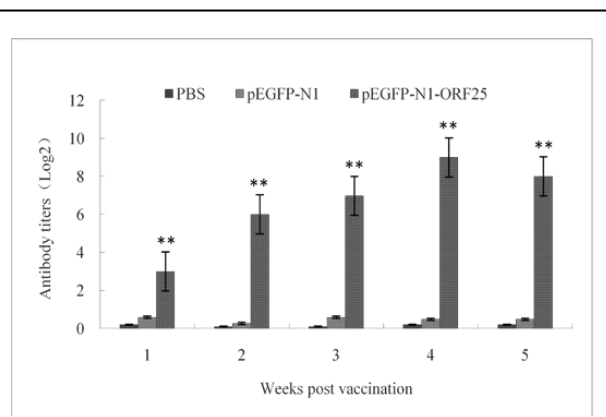
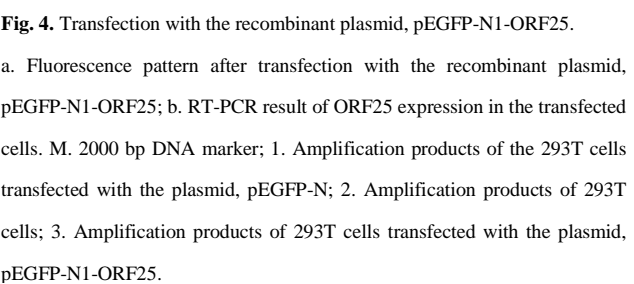
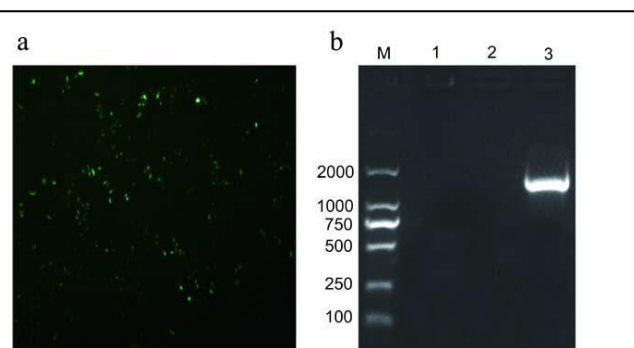
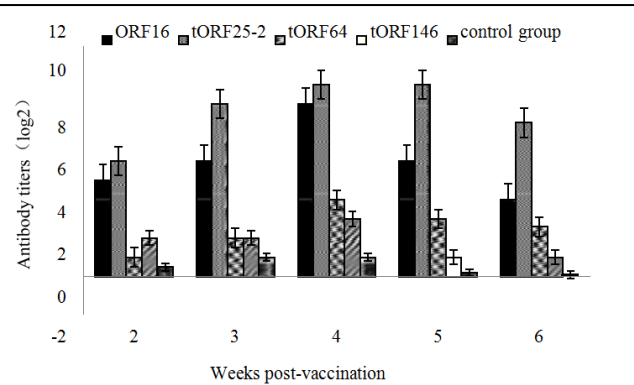
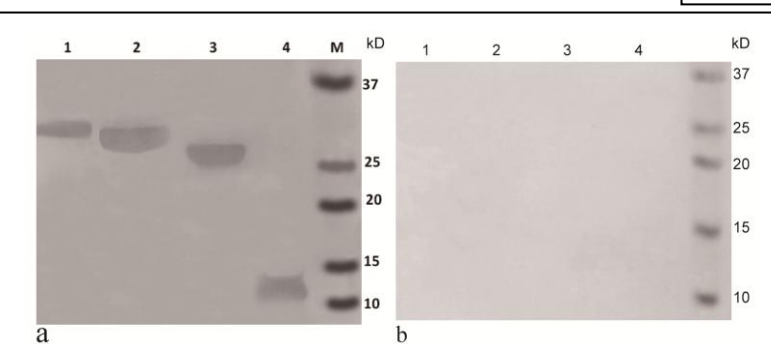
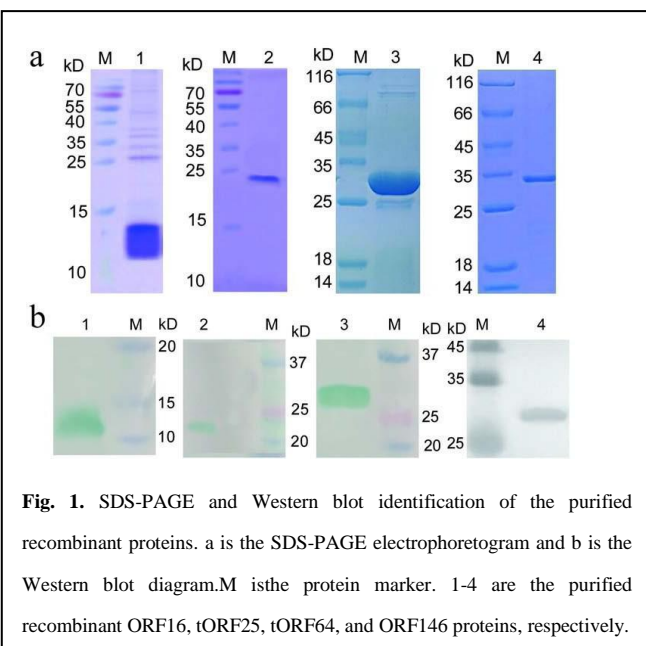
Abstract

In recent years, crucian carp hematopoietic necrosis caused by *Cyprinid herpesvirus 2* (CyHV-2) infection has caused an enormous economic loss to the aquaculture industry. In this study antigenic epitope analysis was performed on the membrane proteins of CyHV-2, and 8 antigen-rich peptide fragments were selected for prokaryotic expression. Then, the immunogenicity of the recombinant proteins was analyzed. On this basis, DNA vaccines were constructed for immunization of hybridized Prussian carps. The protective effect of DNA vaccines against challenge in hybridized Prussian carps was evaluated.

Methods



Results



Conclusions

Our study showed that all 8 recombinant proteins were successfully expressed. Among the recombinant proteins, ORF16, tORF25, tORF64, and ORF146, gave a positive serum reaction with CyHV-2. Of the four proteins used for the immunization of silver crucian carps, the antibody titer induced by tORF25 was the highest. The DNA vaccine, pEGFP-N1-ORF25, was constructed based on ORF25 and able to induce production of specific antibodies in carps, while up-regulating the expression of MHC I, IL-1 β , C3, and TF-A in the kidneys of carps. Moreover, the immunoprotective rate was increased to 70% in hybridized Prussian carps. The results showed that the DNA vaccine constructed based on the ORF25 gene had a greater immune protective effect and can be used as a candidate vaccine for immunoprotection against CyHV-2.

Significance statement

Hematopoietic necrosis caused by CyHV-2 infection has always been a difficult problem. In this study, we constructed a novel DNA vaccine based on the ORF25 gene, which has a strong immune protection effect. This vaccine can be used as a candidate vaccine against CyHV-2 infection.