



In-vitro inhibition of spring viremia of carp virus replication by RNA interference targeting the RNA-dependent RNA polymerase gene

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Abstract:

Spring viremia of carp, a fatal viral disease, is caused by the spring viremia of carp virus (SVCV) and can result in up to 70% mortalities in common carps and significant economic losses in several other cyprinid aquaculture. The present study aimed to investigate the possible control of SVCV replication in *Epithelioma papulosum cyprini* (EPC) cells using the RNA interference technology targeting the RNA-dependent RNA polymerase (L) gene of the SVCV that is essential for its replication. Three stealth small interfering RNA (siRNA) sequences were designed to target three different regions on the SVCV-L gene. The specific siRNAs designed were investigated individually or in combinations to inhibit the SVCV-L gene expression and the virus replication. Results showed that the most effective siRNA sequence was the siRNA-602 that specifically reduced the SVCV replication by two logs as indicated by the virus titration and quantitative real-time PCR. Results, also, showed that the minimum effective concentration of siRNA-602 was 20 nM when used to transfect the EPC cells before the virus inoculation. Results of this study clearly indicate that targeting the SVCV-L gene by RNAi can reduce the SVCV replication in vitro, that may lead to the control of SVCV in fish.

Keywords:

SVCV RNAi Transfection RNA-dependent-RNA polymerase gene EPC cell line

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