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# ANTIVIRAL EFFECT OF ANTISENSE RNA AND SENSE RNA COMPLEMENTARY TO MOUSE HEPATITIS VIRUS mRNA7 WHICH ENCODED N PROTEIN

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Mouse hepatitis virus (MHV), a member of the coronaviridae, is associated with encephalomyelitis, hepatitis and gastroentiritis of laboratory mice. MHV is an enveloped virus containing a helical nucleocapsid structure composed of a plus-sensed, single-stranded RNA and nucleocapsid (N) protein which is encoded by mRNA7. The virion RNA is initially transcribed into a genome-length negative-stranded RNA. In turn, the negative-stranded RNA is transcribed into a genomic RNA and six species of subgenomic mRNAs (mRNA 2～7).

Although the molecular mechanisms underlying the phenomenon are still unclear, antisense RNA has been used as one of the tools for inhibiting viral multiplication *in vivo* and *in vitro*. To provide insight into the mechanisms inhibiting viral multiplication, the effect of antisense and sense RNA on MHV multiplication was investigated, since both positive- and negative-stranded viral specific RNA are synthesized in MHV-infected cells.

The vector (pZip-neo) which expressed antisense or sense mRNA7 was transfected into DBT cells. Several transfected cell lines which expressed antisense or sense RNA constitutively were established (A1 and A2 or S1 and S2, respectively). In MHV-infected A1 and S1 cells, MHV multiplication was inhibited by more than 95% at 12 h. p. i. and the synthesis of viral specfic RNA was reduced compared to that of untransfected MHV-infected cells at 3.5 h. p. i. Such inhibitory effects were not observed in infected A2 and S2 cells. The translocation of antisense or sense RNA from nucleus to cytoplasm was delayed in A2 and S2 cells and cytoplasmic antisense RNA in A2 cells was more unstable than that in other transfected cells.

These results indicate that MHV multiplication is inhibited by both antisense and sense RNA complementary to MHV-mRNA7. Thus, these RNAs might be useful as antiviral agents against MHV.