

ORAL PRESENTATION

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O20 - Human rhinovirus replication-dependent induction of micro-RNAs in human bronchial epithelial cells

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Background

Micro-RNAs (miRNAs) are a class of small non-coding RNA molecules that function though post transcriptional regulation of gene expression by a process termed RNA interference (RNAi). RNAi-mediated targeting of viral RNAs is recognized as an antiviral defense mechanism. The epigenetic effect of miRNAs can either be direct, by interfering with virus genome, or indirect, through down-regulation of type I IFN genes. The aim of this study is to identify HRV-A1B specific miRNAs in human broncheal cell line.

Method

In silico prediction of potential HRV-A1B specific human mature miRNAs was performed using two different prediction tools, miRBase and RNAhybrid. Human bronchial epithelial cells (BEAS-2B) were infected with HRV-A1B (1 MOI) along with UV inactivated HRV1B (1 MOI), zymosan (TLR4 stimulator) and Poly I:C (TLR3 stimulator). RNA was isolated at different time points and the kinetics of 8 miRNAs were evaluated. The expression of miRNAs was measured by miRNA specific RT-QPCR. The results were calculated according to the 2^{\wedge} - $\Delta\Delta$ CT method (FI). Statistical analysis was performed using Student's t test.

Results

Sixty two miRNAs were predicted to bind to the HRV-A1B positive strand. Eight miRNAs were selected according to their binding properties. We found replication dependent

HRV-A1B specific induction in hs-miR-a (50 FI) and miR-b (24 FI) at 7 hours after HRV1B infection.

Conclusion

To our knowledge, this is the first study to demostrate replication dependent induction of HRV-A1B specific human miRNAs in human broncheal epithelial cell line. The expression levels of hs-miR-a and hs-miR-b were HRV replication-dependent. Further experiments are needed in order to define the potential antiviral activity of the above miRNAs.

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