Heterogenous nuclear ribonucleoprotein Q increases protein expression from HIV-1 Rev-dependent transcripts.

Abstract:

Heterogenous nuclear ribonucleoproteins (hnRNPs) control many processes of the gene expression machinery including mRNA transcription, splicing, export, stability and translation. Recent data show interaction of the HIV-1 Rev regulatory protein with a subset of hnRNP proteins, that includes hnRNP Q, suggesting that hnRNPs can contribute to regulation of HIV-1 gene expression by Rev. In this work we address the effect of hnRNP Q on Rev-dependent gene expression. We show that hnRNP Q overexpression increased levels of proteins produced from a Rev-dependent reporter gene in the presence of Rev. Increased protein levels did not correlate with changes in either the levels or the nucleocytoplasmic distribution of Rev-dependent reporter mRNAs. Similar observations were made in persistently HIV-1 infected HeLa cells. In these cells, hnRNP Q overexpression increased levels of the HIV-1 Gag-p24 protein, while levels of viral Rev-dependent mRNAs were not affected. Our data indicate that hnRNP Q can stimulate the protein production of Rev-dependent mRNAs without changing mRNA levels and mRNA export, respectively. This suggests that hnRNP Q can boost HIV gene expression at the level of protein production.