Induction of antiviral cytidine deaminases does not explain the inhibition of hepatitis B virus replication by interferons.

Abstract:

Interferons (IFNs) play a major role in the control of hepatitis B virus (HBV), whether as endogenous cytokines limiting the spread of the virus during the acute phase of the infection or as drugs for the treatment of its chronic phase. However, the mechanism by which IFNs inhibit HBV replication has so far remained elusive. Here, we show that type I and II IFN treatment of human hepatocytes induces the production of APOBEC3G (A3G) and, to a lesser extent, that of APOBEC3F (A3F) and APOBEC3B (A3B) but not that of two other cytidine deaminases also endowed with anti-HBV activity, activation-induced cytidine deaminase (AID), and APOBEC1. Most importantly, we reveal that blocking A3B, A3F, and A3G by combining RNA interference and the virion infectivity factor (Vif) protein of human immunodeficiency virus does not abrogate the inhibitory effect of IFNs on HBV. We conclude that these cytidine deaminases are not essential effectors of IFN in its action against this pathogen.