

**ABSTRACT FORM**  
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**Abstract  
Title:**

**THE ROLE OF ADAR1, AN ADENOSINE DEAMINASE IN ANTI HIV-1 IMMUNITY**

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**Text:**

**Background:** The innate immune system is the first line of host defense against invading pathogens. Type 1 interferon plays an important role in innate immunity by promoting the expression of specific cellular proteins, some of which are involved in the inhibition of virus replication and particle formation. Among different interferon inducible genes, ADAR1 (adenosine deaminase acting on RNA 1) catalyzes hydrolytic deamination of adenosine to inosine in complete or partially double-stranded RNA, which are common intermediate products found during viral infections.

**Objective:** Results from a few published reports suggest that ADAR1 potentially regulates Hepatitis C virus (HCV) and Influenza A virus infections. However, the direct effect of ADAR1 on virus infection remains elusive. Here our objective is to determine the role of ADAR1 in anti HIV-1 immunity.

**Result and conclusion:** We have shown by p24 ELISA and TZM assay that ADAR1 inhibits the production of infectious HIV-1 in 293T cells. An 8-fold decreased in the viral particle formation was observed when the highest concentration of ADAR1 was used. The same phenomenon was observed in Hela cells and Jurkat T cells. By using different ADAR1 domain mutant it was also observed that catalytic domain of ADAR1 and the double-stranded RNA-binding domain appear to be critical in restricting the production of infectious HIV-1 particles. So, we concluded that ADAR1 restricts HIV replication and infectivity.

**Implication:** Evaluating the RNA editing effects of ADAR1 during HIV infection and understanding the mechanism(s) by which viral production is inhibited may provide further insight into the host cell-pathogen interaction and reveal an important mediator of anti-viral innate immunity.

**CATEGORY OF EMPHASIS**

(check all that apply)

Bioscience

Education/Prevention