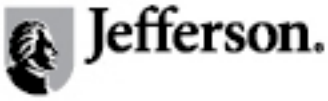

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Up-regulation of interferon-a/APOBEC3G signal pathway potently inactivates HIV-1 infectivity in resting CD4-T cells

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Poster presentation

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Background

Interferon (IFN) system, including various IFNs and IFN-inducible gene products, is well known for its potent innate immunity against wide-range viruses. Recently, a family of cytidine deaminases, functioning as another innate immunity against retroviral infection, has been identified. However, its regulation remains largely unknown.

Methods

IFN-a was added to the culture of resting CD4 T-cells. The expression of APOBEC3G was detected with real time RT-PCR and Western blotting. The promoter of APOBEC3G was analyzed by luciferase expression. The effect of IFN-a/APOBEC3G upon HIV-1 was examined by treating the cells with APOBEC3G-specific siRNA.

Results

We have demonstrated that, through a regular IFN-a signal transduction pathway, IFN-a can significantly enhance the expression of APOBEC3G in human primary resting but not activated CD4 T-cells, and the amounts of APOBEC3G associated with a low molecular mass (LMM). Interestingly, short-time treatments of newly-infected resting CD4 T-cells with IFN-a will significantly inactivate human immunodeficiency virus type 1 (HIV-1) at its early stage. This inhibition can be counteracted by APOBEC3G-specific short interfering RNA (siRNA), indicating that IFN-a-induced APOBEC3G plays a key role to mediate this anti-HIV-1 process.

Conclusion

Our data suggest that APOBEC3G is also a member of IFN system, at least in the resting CD4 T-cells. Given that IFN-a/APOBEC3G pathway has potent anti-HIV-1 capability in resting CD4 T-cells, augmentation of this innate immunity barrier could prevent residual HIV-1 replication in its native reservoir in the post-highly active antiretroviral therapy (HAART) era.