Impact of Human Immunodeficiency Virus Type 1 gp41 amino acid substitution on Fusion and Expression Relating to Viral Entry

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Abstract

The envelope glycoprotein(Env) of the HIV type 1(HIV-1) is crucial to viral infectivity for binding to the CD4 and chemokine receptors. The membrane fusion process mediated by the gp41 transmembrane Env of HIV-1 was addressed by fusion assay measuring luciferase activity in CEM cell in co-culturing with 293HEK cell transfected with *env* and *tat* expression vector(p이1443). Mutagenize residues at N:C contact points investigate effect on fusion and look for evidence of inter-trimer interactions. The single mutations in the N-terminal(Q577W, G572W, A558L, L556S) and C-terminal(W628Q, W631G, S649L, L645A) of gp41 resulted in inhibition of fusion. In contrast, one mutation(V570I or I635V, these are same N:C contact point) had limited effect on membrane fusion. These defects in cell-cell fusion did not correlate with apparent defects in the levels of gp160 process to gp120 and gp41 by Western blot analysis with anti-gp120, gp41 serum.

In conclusion, the mutation in the gp41 effected on the viral entry with the result of fusion assay whether that effected on the expression of gp41 or not. However, double mutation in the N:C contact point may be compensate the effects on the fusion.

References

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