Cationic Peptides--Pardaxin: A Compound that Stimulates Phospholipase A2 Infused with Silver Nano-Particles Displays an Antiviral Activity on HIV-1 Replication and DNA Mutation

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HIV-1 affects the immune system by destroying CD4 cells and thus weakening the immune system. Our main aim was to prepare to prepare pardaxin and it assess its effect on HIV virus? an antimicrobial peptide that stimulates phospholipase A2. Pardaxin was infused with silver nanoparticles to increase the specificity of the drug for HIV infected cells. This peptide does not affect normal body cells. In this report, the effects of well-characterized antimicrobial amphipathic peptides (pardaxin) on human immunodeficiency virus 1 (HIV-1) replication, and DNA mutation in acutely infected cells are assessed at sub-toxic concentrations. Production of infectious cell-free virus was inhibited in a dose-dependent manner, with ID50 values in the range 0.9-1.5 μM for pardaxin. Silver nanoparticles (0.4μm) were infused with pardaxin which was used in a higher amount than the silver nanoparticles. Accumulation of silver nanoparticles and pardaxin results was due to noncovalent bonding by electromagnetic forces. Pardaxin nanoparticles then were tested with HIV-1 infected T Lymphoma and fibroblastoid cells for an antiviral activity. Analysis of the effect of pardaxin on cell-associated virus production revealed decreased levels of the Gag antigen and HIV-1 mRNAs. Transient transfection assays with HIV long terminal repeat (Long Terminal Repeat)-driven reporter gene plasmids indicated that pardaxin has a direct suppressive effect on the activity of HIV LTR. HIV Long Terminal Report activity was also reduced in human cells stably transfected with retroviral expression of plasmids for the pardaxin gene. Our results indicate that there is an 80% reduction i