HIV-1 virion accumulation and ATP-induced release in human primary monocyte-derived macrophages

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HIV-1 is the causative agent of AIDS and an essential tool for the study of several biochemical and molecular mechanisms. In particular, ATP can trigger the release of virions, whose content is crucial for understanding the mechanisms of HIV-1 infection and transmission. However, the role of ATP in the regulation of HIV-1 virion release is still not fully understood.

Materials and Methods

Chromically HIV infected U1 cell line. The susceptible U1 cell line was obtained from ATCC (ATCC CRL-2415) and grown in RPMI 1640 supplemented with 10% FBS, 100 U/ml penicillin, 100 mg/ml streptomycin, and 2 mM L-glutamine. A total of 100,000 cells were plated per well in a 24-well plate and infected with 0.1 MOI of HIV-1 BaL strain for 2 h. After infection, the medium was replaced with fresh RPMI 1640 supplemented with 10% FBS. The cells were then incubated for 3 days at 37°C in a humidified atmosphere of 5% CO2.

Results

1) Extracellular release of HIV-1 (RT activity and IL-1)

ATP induces HIV-1 release from U1 cells infected with HIV-1 virus

2) Cell-associated HIV-1 (e.g., p24) and fluorescence (Microscopy-GFP)

ATP reduced the intracellular amount of HIV-1 p24

Conclusions

In conclusion, our study demonstrates that ATP can trigger HIV-1 virion release from U1 cells, suggesting a potential role for ATP in the regulation of HIV-1 infection and transmission. Further studies are needed to better understand the mechanisms underlying this process.