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EVALUATION OF INTERFERON- α ANTI-VIRAL ACTIVITY
AGAINST AUJESZKEY'S DISEASE VIRUS,
AND THE MECHANISM(S) INVOLVED

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Interferon- α is a type I interferon, produced by neutrophils, macrophages, fibroblasts and so on. It is reported to inhibit Aujeszky's disease virus (ADV) replication in nervous tissue cells and porcine nasal mucosa *in vitro*. However the mechanism(s) by which interferon- α exerts its anti-viral activity against ADV is not known.

To evaluate the anti-viral activity of human natural interferon- α (IFN- α) against ADV, viral replication in IFN- α -treated Vero cells was examined by plaque assay. The replication of ADV was suppressed by treatment with IFN- α by 0.1~0.01 fold compared to that of the control until 24 hours post infection.

Effects of IFN- α on early steps of ADV infection, such as adhesion, penetration, uncoating, and transportation to the cell nucleus, were examined by dot blot analysis of the viral DNA in the IFN- α -treated cells. Equal amount of viral DNA was detected in IFN- α treated and control cell nuclei, indicating that the early steps of ADV infection were not impaired by IFN- α treatment.

Messenger RNA (mRNA) transcribed from the ADV IE gene was reduced in the IFN- α -treated cells when detected by Northern blot analysis, and transient expression assays showed that the transcription from the ADV IE promoter was selectively inhibited in IFN- α -treated Vero cells. Analysis of deletion mutants of the ADV IE promoter suggested that sequence between -90 and the transcription initiation site is needed for the inhibition.

These results indicate that IFN- α treatment inhibits ADV replication by altering the transcription of the IE gene, and suggest the involvement of ADV IE promoter in that event.