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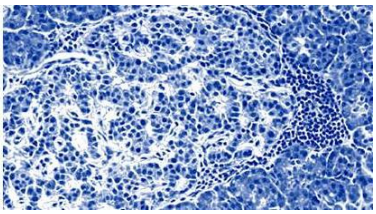

Coxsackievirus B4 induces the expression of Human Endogenous Retrovirus W (HERV-W) in primary cells

AUTHORS

A Bertin[1], A Dechaume[1], S. Levet[2], B. Charvet[2], V. Gmyr[3], J. Kerr-Conte[3], J. Pierquin[2], F. Pattou[3], H. Perron[2,4,5] and D. Hober[1]

[1] Univ Lille Faculté de Médecine, CHU Lille Laboratoire de Virologie EA3610 F-59000 Lille France
[2] Geneuro Innovation, 69008 Lyon, France
[3] Univ Lille CHU Lille Inserm U 1190, Recherche translationnelle sur le diabète
[4] Geneuro SA, Geneva, Switzerland
[5] Univ Lyon, France

PURPOSE

Human endogenous retrovirus type W (HERV-W) has been linked to multiple sclerosis (MS). In MS, the envelope protein of HERV-W has pathological features including the activation of auto-immunity by super-antigen properties, and induction of inflammation. Moreover, it has been shown that HERV-W Env expression could be transactivated by the infection with HHV-6, a virus linked to MS. T1D is a virus-associated auto-immune disease, and a recent study showed that HERV-W Env could be found in blood and pancreas of patients with T1D. T1D being closely associated to coxsackievirus B (CV-B) infections, we investigated the expression of HERV-W in human cells upon infection with CV-B4.

METHODS

Monocytes were selected by adherence from peripheral blood mononuclear cells obtained from the blood of 14 donors. Monocytes were treated with M-CSF for 7 days to obtain primary macrophages, that were infected with CV-B4. Primary human pancreatic ductal cells obtained from the pancreas of 5 brain-dead donors were infected with CV-B4. The levels of HERV-W Env m RNA and of HERV Env protein were evaluated by RT-qPCR and by immunoblot respectively..

SUMMARY OF RESULTS

In macrophage cultures of 6 donors, the level of HERV-W Env m RNA was upregulated when the cultures were inoculated with CV-B4 compared to controls. The levels of HERV-W Env mRNA, measured in pancreatic ductal cells harvested 16 and 48 hours after CV-B4 inoculation, were also upregulated upon CV-B4 infection in pancreatic cell cultures of 4 brain-dead donors. Moreover, in these cells, the level of HERV-W Env protein was high compared with controls.

CONCLUSIONS
These results indicate that the infection with CV-B4 can upregulate the expression of the envelope-encoding gene and/or transactivate certain copies of the HERV-W family in cultures of human macrophages and pancreatic cells.