

Human endogenous  
retrovirus  
glycoprotein-  
mediated induction of  
redox reactants



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In the article Human endogenous retrovirus glycoprotein-mediated induction of redox reactants causes oligodendrocyte death and demyelination by Antonio, et al, the problem regarding the human endogenous retroviruses or HERVs is being addressed. These HERVs have been implicated in both human health and disease, and further understanding it could lead to therapeutic intervention (Nelson et al. , 2003). In this research, it was found that syncytin, an HERV-W encoded glycoprotein is being upregulated in the glial cells found in the area of the acute demyelinating lesions of patients suffering from multiple sclerosis.

Because of the expression of syncytin in the astrocytes, redox reactants were released. These redox reactants were cytotoxic to oligodendrocytes. In a mouse model of multiple sclerosis, it was then found out that the antioxidant ferulic acid prevented the syncytin-mediated neuroinflammation and the death of oligodendrocytes which would have led to some neurobehavioral deficits. This research focused mainly on syncytin, an HERV-W envelope glycoprotein, as well as its pathogenic effects, in order to examine the effects of HERV expression on the functions of the neural cells and for survival.

The research investigated the expression of the HERV genes in diseases which are neuroinflammatory. This was done through examination of abundant variations of HERV env mRNAs in the brains of people who have multiple sclerosis or other neurological disease which is the control of this research (Tai et al. , 2008). It would have helped a lot if the research specifically determined a controlled group with a definite neurological diseases or diseases to compare to.

Having other neurological diseases as control for this research may be used for comparison, but it would have been better if they had specified. The HERV-W env mRNA was then selectively upregulated in brain tissue from the individuals suffering from multiple sclerosis, as opposed to the controls. Meanwhile, the other HERV env mRNAs were not upregulated. It was then found out through sequencing of the resulting PCR or polymerase chain reaction products that HERV-W env was indeed overexpressed in the brain samples as compared to other HERV-W env sequence.

Because of this, it is suited to focus on the brain samples for better results. However, it would have been better to have tested more than once, though it would cost extra for the researchers, as it is indeed a constraint of the research being conducted. With the use of western blotting, it was found out that syncytin was present in the brain tissues of those who were suffering from multiple sclerosis however; they were limitedly expressed in the controls.

The immunoreactivity of syncytin in the brain showed that those in the multiple sclerosis groups had a 3-folds increase as opposed to the controls. The research also focused on the astrocytes and microglia, which are important in the aspect of modulating neuroinflammation. Because of this, the researchers had to determine whether or not the syncytin expression selectively upregulated the abovementioned immunologically active cells.

This could have been done early on, in order to immediately determine that syncytin indeed doesn't selectively upregulate the cells, because if this would have been set aside, it would be troublesome for the researchers if it only target the upregulation of these immunologically active cells. They used <https://assignbuster.com/human-endogenous-retrovirus-glycoprotein-mediated-induction-of-redox-reactants/>

double-label immunohistochemical assessment of the astrocytes and microglia, and it was found that there is enhanced expression of syncytin for the brain sections of those individuals suffering from multiple sclerosis as compared to the other neural cells like myelin-forming oligodendrocytes and other neurons.

With this, the difference of those who have multiple sclerosis is clear. It was stated earlier that the discovery made in this research is essential for the development of new therapeutic interventions, as it was made clear that HERVs are clearly associated to human health and diseases. Similar researches could be done basing on this one, trying out other types of HERVs and maybe other parts of the body aside from the human brain. All in all, the research has added important information in the field of medicine and the human body.