

The Decrease in Human Endogenous Retrovirus-H Activity Runs in Parallel with Improvement in ADHD Symptoms in Patients Undergoing Methylphenidate Therapy

Chiara C, Bernanda PM, Claudia M, Elisa D, Tony MM, Valentina R, Sandro G, Paolo C, Paola SV, Augusto P, Emanuela B.

Int J Mol Sci. 2018 Oct 23;19(11). pii: E3286.
doi: 10.3390/ijms19113286.

Abstract

Increasing scientific evidence demonstrated the deregulation of human endogenous retroviruses (HERVs) expression in complex diseases, such as cancer, autoimmune, psychiatric, and neurological disorders. The dynamic regulation of HERV activity and their responsiveness to a variety of environmental stimuli designate HERVs as genetic elements that could be modulated by drugs. Methylphenidate (MPH) is widely used in the treatment of attention deficit hyperactivity disorder (ADHD). The aim of this study was to evaluate the time course of human endogenous retrovirus H (HERV-H) expression in peripheral blood mononuclear cells (PBMCs) with respect to clinical response in ADHD patients undergoing MPH therapy. A fast reduction in HERV-H activity in ADHD patients undergoing MPH therapy was observed in parallel with an improvement in clinical symptoms. Moreover, when PBMCs from drug-naïve patients were cultured *in vitro*, HERV-H expression increased, while no changes in the expression levels were found in ADHD patients undergoing therapy. This suggests that MPH could affect the HERV-H activity and supports the hypothesis that high expression levels of HERV-H could be considered a distinctive trait of ADHD patients.