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Effect of epigenetic modulations on excessive ethanol intake and relapse in rats

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Abstract

Recent studies highlighted the existence of epigenetic changes in addiction. Some of these changes are possibly implicated in long-lasting neurobiological events that are responsible for the transition toward addiction, i.e. the transition from occasional substance of abuse intake into loss of control of consumption and dependence. We aim at studying epigenetic modulations in alcohol dependence using the HDAC inhibitor (HDACi) sodium butyrate (NaB).

Our behavioral studies demonstrated that NaB was able to decrease EtOH self-administration in rats turned in a dependant state by previous inhalation of ethanol vapor. NaB also decreased excessive EtOH consumption in rats following an intermittent-access to 20% ethanol in a 2-bottle-choice drinking paradigm. Moreover, NaB effect on relapse was observed as it blocked the increase of EtOH consumption induced by alcohol deprivation. Our immunohistological studies of histone H3 acetylation demonstrated a region-specific pattern effect of NaB treatment in the brain reward system, pointing out the special reactivity of prefrontal cortex and amygdala to NaB.

Our conclusion is that HDAC inhibitors could represent interesting pharmacotherapy in alcohol-addiction.

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Biography

Catherine Vilpoux has completed her Ph.D from Rouen University (France) and postdoctoral studies from Sanofis-Synthelabo (Bagneux, France). She is a lecturer at the University of Picardie Jules Verne (France, Amiens) and a member of the INSERM laboratory “Group Of Research to Alcohol and Pharmacodependence) “(GRAP).