Results showed no significant main effect of drug condition on empathic responses. However, a significant interaction effect between drug condition and primary psychopathy was found for personal distress and a marginally significant interaction effect was found for empathic concern. Simple effects analyses showed significant negative correlations between primary psychopathy and personal distress as well as empathic concern in the placebo group, but not in the vasopressin group. In addition, among participants with higher levels of primary psychopathy (i.e., +1 SD above the mean) vasopressin increased personal distress and empathic concern compared to placebo.

Results suggest that vasopressin increases emotional arousal and empathic responding in individuals with higher levels of primary psychopathy. This calls for further research on the biological substrates of empathy with focus on vasopressin.

PT711

Molecular analysis of neural action mediated by the antipsychotic agent olanzapine in high glucose exposure

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Abstract

Objectives: Antipsychotic agent, olanzapine was used widely in the treatments for schizophrenia, bipolar disorder, and so on. It was found that neurons, especially its mitochondria exposed to olanzapine were damaged by oxidative stress resulting in induced autophagy, a controlled cellular self-digestion process in human SH-SY5Y neuronal cell line.

Olanzapine was prohibited to patients with diabetes. However, the molecular mechanisms of how olanzapine effects on neurons in high glucose situations remain unknown. The aim of this study is to verify the molecular influence of olanzapine on neurons in high glucose circumstances.

Methods: Human SH-SY5Y neuronal cell line was used in this study, and was grown in the same manner as previously described (Ljubica Vucicevic, et al. Autophagy. 2014). Cells were rested for 24 hours in normal (5 μM) and high glucose (50 μM) medium, and then treated in the same medium with olanzapine (100 μM) for another 24 hours. We performed a comparative analysis of the gene expression profiles using microarrays. We subsequently categorized genes using a web-based bioinformatics analysis tools: network explorer of Ingenuity Pathway Analysis. We then confirmed significant group-differences in mRNA and protein expression levels using qRT-PCR and western blotting.

Results: According to the microarray analysis, several genes which were expressed differentially were picked up focusing on molecules related to cell death and cell protection such as autophagy. Significant differences of these genes were shown by qRT-PCR and western blotting.

Conclusions: These findings supported that olanzapine might mediate the cellular damage and autophagy protects neurons from mitochondrial death by molecular mechanism. Further examination focusing on neural vitality and other function is warranted.

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Functional expression of choline transporter like-protein 1 (CTL1) and CTL2 in human brain microvascular endothelial cells

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Abstract

Objective: The brain is protected from the rest of body by the blood-brain barrier (BBB) including microvascular endothelial cells. The BBB at the level of the brain microvessel endothelium is the major site of the selective permeability. The central nervous system requires choline to synthesize the neurotransmitter acetylcholine and the membrane phospholipids phosphatidylcholine and sphingomyelin. Therefore, the transport of choline from the blood to the brain through the BBB is a physiologically important process. In this study, we examined the functional characterization of choline transporter in human brain microvascular endothelial cells (hBMECs).

Methods: We examined the [^{3}H]choline uptake into hBMECs. The expression of mRNA and protein of choline transporters was investigated by real-time PCR and Western blotting. The immunohistochemical and immunocytochemical detection was performed to determine the localization of choline transporter in human brain cortex and hBMECs, respectively.

Result: hBMECs was a saturable process that was mediated by a Na^+-independent, membrane potential and pH-dependent transport system. Choline uptake was inhibited by various organic cations also interacted with the choline transport system. The cells have two different [^{3}H]choline transport systems. Choline transporter-like protein 1 (CTL1) and CTL2 mRNA were expressed in hBMECs. CTL1 and CTL2 proteins were localized to microvascular endothelial cells in human brain cortical sections. Both CTL1 and CTL2 proteins were expressed on the plasma membrane. CTL2 proteins are mainly expressed in mitochondria.

Conclusion: We conclude that choline is mainly transported via intermediate choline transport system, CTL1 and CTL2 in hBMECs. These transporters are responsible for the uptake of extracellular choline and organic cations. CTL2 participate in choline transport mainly in mitochondria. Choline oxidation occurs in the mitochondria. The function of CTL2 may be associated with the control of choline oxidation.

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Oedipus Complex with Brain Injury

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Abstract

Objectives: Oedipus complex explains the emotions and ideas that concentrates upon a child's desire to have sexual relations with the parent of the opposite sex. Oedipus complex keeps in the unconscious via dynamic repression, and is usually revealed through psychoanalysis. I report a case who develops Oedipus complexafter a severe traumatic brain injury.