Abstract

Obsessive-compulsive disorder is a chronic psychiatric disease. It seriously limits the quality of life of patients. Treatment of OCD is not yet fully successful and still many patients are left with debilitating symptoms without functioning medication. Animal models of genetic, behavioral, pharmacological, and optogenetic origins are beneficial in the achievement of new understandings of the disease.

Chronic sensitization of serotonin 1A and 7-receptors with an agonist 8-OH-DPAT ((8-hydroxy-2-(di-propylamino)-tetralin hydrobromide) induces perseverative and compulsive behaviors, which is considered to constitute an animal model of OCD. In this thesis, the 8-OH-DPAT model has been tested in the active place avoidance task on Carousel maze to provide information about the model on learning. Second, this model is used to determine, whether co-administration of memantine or riluzole alleviates the cognitive and learning deficits of this model.

To uncover these effects, an active place avoidance task on a Carousel maze was used. Measured criteria were total distance, entrances to the shock sector, total number of shocks, and median speed after the shock. During habituation, the animals were sensitized to 8-OH-DPAT (with a control group that did not receive 8-OH-DPAT but only saline). In an acquisition, two injections were administered to the animals, one with memantine or riluzole or saline and the other with 8-OH-DPAT or saline. In the habituation, we evaluated the effect of 8-OH-DPAT sensitization. In the acquisition, six groups were evaluated: saline control group (Sensitized/Undrugged/Untreated and Unsensitized/Undrugged/Untreated), 8-OH-DPAT control group (Sensitized/Drugged/Untreated), group that received memantine and then 8-OH-DPAT, group that received riluzole and then 8-OH-DPAT (Sensitized/Drugged/Mem/Ril-Treated), memantine and then saline and group that received riluzole and saline (Sensitized/Undrugged/Mem/Ril-Treated). Both memantine – 8-OH-DPAT and riluzole – 8-OH-DPAT groups (Sensitized/Drugged/Mem/Ril-Treated) showed increased hyperlocomotion and errors than all the other groups. These results indicate that memantine nor riluzole is effective in improving OCD symptoms in the 8-OH-DPAT animal model, it rather makes them more intense.

Keywords: obsessive-compulsive disorder (OCD); behavior, brain, animal models, 8-OH-DPAT, riluzole, memantine, learning, learning deficit, memory