

## Abstract

---

This thesis examines the influence of stress on the activity of hippocampal CA1 area. The main task was to determine whether the stress load affects the changes of the local metabolism of glucocorticoids, and whether the levels of corticosteroid receptors in the CA1 hippocampus are modulated in response to stress. In order to answer these questions, the experiments were carried out using three different rat strains - Fisher, Lewis and Wistar which differ in their activities of hypothalamic-pituitary-adrenal axis. Our results demonstrate that stress has no effect on expression of MR mRNA. Conversely, stress reduces the levels of GR mRNA in CA1 area of the dorsal hippocampus. Moreover, we confirmed that the Lewis and Wistar rats didn't change metabolism of glucocorticoids after stress response. By the Fisher rats increased levels of  $11\beta$ -HSD1 mRNA expression and therefore increased the metabolism of corticosterone.