

Glucocorticoids belong to a family of steroid hormones synthesized in the adrenal gland. They fulfill a variety of functions related to metabolism, immune response and ontogenesis. Glucocorticoids function as the end-effector of hypothalamic-pituitary-adrenal (HPA) axis and as such, their levels in blood are elevated after exposure to stressors. The basal levels of glucocorticoid also show a pronounced diurnal rhythm, suggesting involvement of the circadian clock in the regulation of HPA axis. Studies have shown that other regulatory mechanisms apart from the HPA axis are involved in regulation of diurnal glucocorticoid secretion. The disturbances of the regulatory mechanisms may lead to serious pathological conditions. This thesis describes the rhythmic nature of glucocorticoid release and mechanisms by which the circadian clock exerts its influence over the rhythm. Thereafter, the feedback of glucocorticoids onto the clock system is briefly explained. Finally, some examples of a role of abnormal glucocorticoid secretion in selected pathologies are provided.