# Chapter 3 Corticosteroid Receptor Balance Hypothesis

# Implications for Stress-Adaptation

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# Abstract

The corticosteroid receptor balance hypothesis refers to the central action of cortisol and corticosterone (CORT) on stress adaptation, which is mediated by mineralocorticoid receptors (MR) and glucocorticoid receptors (GR). Upon imbalance of MR:GR-regulated limbic-cortical signaling pathways, the initiation and/or management of the neuroendocrine stress response is compromised. At a certain threshold this may lead to a condition of hypothalamus-pituitary-adrenal axis dysregulation and impaired behavioral adaptation, which can enhance susceptibility to stress-related neurodegeneration and mental disorders. Here the progress is presented to test this hypothesis from the perspective of CORT coordinating three complementary phases of stressful information processing. First is the onset of the stress reaction when MR mediates CORT action on appraisal of novel information and emotional reactivity. Second is the termination characterized by CORT promoting behavioral adaptation and memory storage. Third is the basal phase when ultradian and circadian oscillations of CORT permit recovery and growth, while maintaining responsivity to stress.