The Second International Anxiety Congress
Shefa Neuroscience Research Center, Tehran, Iran, 1-3 October, 2014
The Neuroscience Journal of Shefaye Khatam
Volume 2, No.3, Suppl 1

Poster Presentation Review

Gamma Aminobutyric Acid (GABA) and its Alterations in Stress

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Published: *1 Oct 2014*

Abstract

Gamma aminobutyrate (GABA) is a non-protein amino acid that is thought to play an important role in the modulation of the central response to stress. Mechanisms by which GABA may facilitate these responses to stress are metabolic and/or mechanical disruptions. Environmental stresses increase GABA accumulation through cytosolic acidification, induce an acidic pH-dependent activation of glutamate decarboxylase. Also stresses, such as cold, heat, salt, and transient environmental factors, increase cellular levels of Ca^{2+}. Increased Ca^{2+} stimulates glutamate activity and GABA synthesis. In addition, GABA plays an important role in integration of hypothalamo-pituitary-adrenocortical (HPA) stress responses. The HPA axis activation by corticotrophin releasing factor (CRF)-releasing neurons of the hypothalamic paraventricular nucleus (PVN) is hormone response to stress. The activity of the PVN is dependent on the regulation by GABA. In this review we will specifically evaluate and focus on the potential relevance of stress responses and regulation of GABA synthesis.

Keywords: Stress, GABA, Paraventricular Nucleus, Hypothalamus.

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