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GLUTAMATE AND DEPRESSION

F. Kapsali, C. Tsopelas, I. Kamilaris, M. Dimitraka, A. Sardis

Psychiatric Hospital of Attiki, Athens, Greece

Glutamate is the principal excitatory neurotransmitter in the cerebral cortex and it is implicated in the pathophysiology of depression and antidepressant activity.
Aim: Aim of this study is to review recent studies and examine the physiology of glutamate and its receptors, pathophysiology of NMDA, effects of stress on glial cells and glutamate neurotransmission and explore the antidepressant properties of NMDA antagonists.
Method: Review of recent pharmacological, imaging and genetic studies.

Results: Increasing evidence supports a tight relationship between stress, the glutamatergic system and depression. Extracellular glutamate concentrations are increased in several brain regions including prefrontal cortex and hippocampus after exposure to stress. Interactions between glutamate and other neurotransmitters are discussed, as are possible mechanisms by which such altered receptor activity might result in the clinical expression of depression.
A variety of NMDA antagonists , group I metabotropic glutamate receptor antagonists, as well as positive modulators of AMPA receptors ,demonstrate efficacy in various preclinical models

Conclusions: It seems that a breakthrough in the therapy of depression will require going beyond monoamine-based theory of depression. Evidence indicates that the glutaminergic system might be a promising target fir novel antidepressant therapy.

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