

Pharmacological aspects of neuro-immune interactions

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The use of systematic approach for the analysis of mechanism of action of drugs at different levels of biological organization of organisms is an important task in experimental and clinical pharmacology for drug designing and increasing the efficacy and safety of drugs. The analysis of published data on pharmacological effects of psychotropic drugs possessing immunomodulatory and/or antiviral properties have shown a correlation between central effects of examined drugs associated with the impact on the processes of neurogenesis of adult brain and survival of neurons, and their ability to alter levels of key proinflammatory cytokines. The changes that occur as a result of the influence of pharmacological agents at one of the systems should inevitably lead to the functional reorganization at another. Integrative mechanisms underlying the neuro-immune interactions may explain the "pleiotropic" pharmacological effects of some antiviral and immunomodulatory drugs. Amantadine, which was originally considered as an antiviral agent, was approved as anti-parkinsonic drug after its wide medical use. The prolonged administration of interferon alpha caused depression in 30-45% of patients, thus limiting its clinical use. The antiviral drug ?Oseltamivir? may provoke the development of central side effects, including abnormal behavior, delirium, impaired perception and suicides. Anti-herpethetical drug ?Panavir? shows pronounced neuroprotective properties. The purpose of this review is to analyze the experimental and clinical data related to central effects of drugs with antiviral or/and immunotropic activity, and to discover the relationship of these effects with changes in reactivity of immune system and

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Amantadine

Amitriptyline

Interferon

Neuro-immune interaction

Neurogenesis

Oseltamivir

Panavir

Semax

alpha interferon

amantadine

amitriptyline

antivirus agent

cytokine

immunomodulating agent

oseltamivir

panavir

peptide derivative

psychotropic agent

semax

unclassified drug

oseltamivir

probucol

antiviral activity

behavior disorder

brain nerve cell

cell survival

clinical pharmacology

delirium

depression

drug activity

drug analysis

drug approval

drug design

drug efficacy

drug indication

drug mechanism

drug safety

human

immune system

immunomodulation

inflammation

nervous system development

neuroprotection

nonhuman

Parkinson disease

perception disorder

priority journal

Review

side effect

suicide

animal

drug effect

immunology

immunomodulation

nervous system

Animals

Antiviral Agents

Humans

Immune System

Immunomodulation

Nervous System

Oseltamivir

Probucol