

MAIN THEME:  
ADVANCES IN RESTORATIVE NEUROLOGY  
**MONOMODAL VERSUS MULTIMODAL DRUGS IN BRAIN  
PROTECTION AND RECOVERY**

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Neurotrophicity, neuroprotection, neuroplasticity and neurogenesis are basic biological processes of paramount importance, overlapping and acting under genetic control to generate the endogenous defense activity (EDA) which continually counteracts pathophysiological processes.

Pathological cascades contain a limited number of pathophysiological processes. Stroke is characterized mainly by excitotoxicity, oxidative stress, inflammation and apoptotic-like processes.

Pathophysiological processes share some common mechanisms with endogenous basic biological processes (e.g. excitotoxicity and neurotrophicity together with neuroplasticity have, as a common important driver, the NMDAR activity; inflammation has an important contribution for neuroregeneration, stimulating neuroplasticity, via trophic factors). Every lesion in the nervous system triggers in the first minute an endogenous neuroprotective reaction. An endogenous repair process, combining neuroplasticity and

neurogenesis follow this as a second answer. All these processes are initiated and regulated by neurotrophic factors. Neurotrophic factors are produced by different players in the brain tissue and are acting in a pleotropic way against pathological cascades.

The same molecules, due to a complex genetically regulated process, are able to induce, immediately after achieving the endogenous neuroprotective effect, neuroplasticity and neurogenesis as well. Therefore, they have also not only pleotropic activity but also multimodal way.

Neuroprotection, neuroplasticity and neurogenesis, processes that are apparently independent, with different control, represent in fact sequences of the same process (EDA), regulated by neurotrophic factors.

Considering this, neurotrophic factors are important therapeutic agents in most important neurological disorders, including stroke and there are many positive clinical data proving this.