Invitation to contribute to the Special Issue

Energy metabolism in the physiology and pathology of the central nervous system

Guest Editors

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Energy metabolism in the brain contributes to all functions of the central nervous system (CNS). Despite its undeniable role, this dependency is often omitted in scientific interpretations. Pharmacological Reports plans to launch a special issue devoted to the bidirectional interactions between energy metabolism and CNS functioning.

The brain has special energy requirements shaping its metabolism differently than other organs. Moreover, every cell type in the brain has different energy needs and even small changes in their state affect CNS functions. For example, neuro-glial interaction in the CNS energy management and brain function regulation is currently a subject of great interest. Furthermore, several psychiatric disorders such as depression, anxiety, and neurodegenerative diseases are related to chronic metabolic abnormalities not only within the CNS but in the whole body (i.e insulin resistance, diabetes mellitus, and dyslipidemia). Among the known contributing factors are genetics, diet, obesity, lack of exercise, dysregulation of the insulin-related mechanisms. Current research shows also that energy deficits contribute to the neurological dysfunctions within the CNS. Energy metabolism dysregulations are present already at the presymptomatic stages of multiple diseases, such as Alzheimer's and Parkinson's disease, and could be the targets for earlier therapies or diagnostic markers.

This Special Issue aims to gather new perspectives, which would lead to broadening the knowledge about energy metabolism in the CNS. It will present reports on significant new findings and point it out as a new possible venue to search for pathomechanisms, diagnostic markers, and therapeutic approaches for multiple brain disorders as well as to improve CNS functioning during normal healthy aging.

Manuscripts with original experimental results will be welcome, addressing hypotheses tested on molecular, cellular, and systems levels. Interdisciplinary and translational as well as basic science studies are welcome.

Review papers will be accepted after initial subject acceptance with Editors.

Candidate papers will be submitted to a peer-review process to guarantee the excellence of scientific results for research and educational purposes.