

Special Issue on **Oxidative Stress and Cognitive Function: Focus on the Interplay between Immune and Nervous System in Neurodegenerative Diseases**

CALL FOR PAPERS

The number of clinical cases of neurodegenerative diseases (NDs) has increased substantially in recent years, and that growth is projected to accelerate in the coming decades. Since aging is also considered a significant risk factor for dementia-related diseases, new therapeutic approaches that improve the quality of life and prevent the onset of aging-related diseases are required.

Alterations of the immune system activity can negatively affect the functionality of the central nervous system in different brain pathologies. Its dysregulation has been linked to multiple psychiatric pathologies ranging from depression and anxiety disorders to schizophrenia as well as NDs. Recent data indicate that the proinflammatory status of microglia, the resident immune system of the brain, contributes to the neuronal damage occurring in Alzheimer's and other NDs. At the same time, under acute and chronic oxidative stress (OS) conditions, cells of the peripheral immune system infiltrating the brain have been shown to play an important role in disrupting neurotransmission, synaptic plasticity, and cognitive functions such as memory and learning.

The immune system plays a major role in the OS of the brain by releasing reactive oxygen species (ROS) and proinflammatory cytokines. This event may contribute to neuronal loss and cognitive deficits and result in accelerated neurodegeneration. In addition, the role of oxidized amino acids and lipids (i.e., oxysterols) in relation to NDs may be part of a scenario in which the clinical symptoms are exacerbated, and it deserves more research. Although there have been great efforts to understand the exact mechanisms underlying these pathologies, their etiology still remains elusive and more research in this field is needed. In addition, bioactive antioxidant dietary components may contribute to developing novel therapies aiming to prevent OS or serve as adjuvant treatments to the conventional drugs for the treatment of progressive cognitive and motor dysfunctions that characterize most of NDs. Also, the incipient role of microbiota modulation in the gut-brain axis merits further investigation.

Contributions are invited from investigators worldwide in the form of reviews or original research articles in the relationship between neurological disorders, OS, inflammation, and potential neuroprotection of specific dietary antioxidants (not crude extracts) and drug treatments in models of NDs.

Potential topics include but are not limited to the following:

- ▶ Role of the immune system-mediated OS in regulating the cognitive functions in neurodegenerative diseases
- ▶ Role of the molecular mechanisms underlying the generation of ROS or oxidative damage in neurodegenerative diseases
- ▶ Role of the combination of physical activity and antioxidant food intake in preventing or improving cognitive functions
- ▶ Role of the inflammation in cognitive dysfunctions and effect of bioactive antioxidant dietary components in preventing brain dysfunctions
- ▶ Role of chronic oxidative stress exposure and aging on the microbiota-gut-brain axis

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/omcl/oscff/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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