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Homocysteine: Biochemistry, Molecular Biology, and Role in Disease

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Message from the Guest Editors

Dear Colleagues,

Homocysteine is a non-proteinogenic sulfhydryl-containing amino acid derived from methionine and is a homologue of cysteine. The concentration of homocysteine is regulated by two key pathways: remethylation back to methionine or transsulfuration to cysteine with simultaneous production of hydrogen sulfide (H2S). Homocysteine levels can be increased by different conditions, including genetic factors, diet, life style, several medications, etc. Elevated homocysteine, called hyperhomocysteinemia (hHcy), is associated with a higher risk of neurovascular diseases, dementia, migraines, developmental impairments or epilepsy. Mechanisms underlying neurotoxicity of homocysteine include oxidative stress, DNA damage, protein thiolation, and protein homocysteinylation, triggering apoptosis and excitotoxicity.

This Special Issue will focus on the role of homocysteine in the development of several pathological conditions and the mechanisms of H2S-mediated cell/neuroprotection.

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