Special Issue

Functional Mechanism of B-Vitamins and Their Metabolites

Message from the Guest Editors

The B vitamins include a group of eight water-soluble vitamins crucial for a wide range of several metabolic processes in the body. Most B vitamins are excreted quickly from the body with the only exceptions of vitamin B-12 and folate, which are stored in the liver, but folate deficiency is a highly-prevalent vitamin deficiency throughout the world. The activity of these two vitamins is particularly crucial for cardiovascular, nervous and brain system function. With ageing the prevalence of age-related diseases and disabilities increases.

A B-vitamin metabolite, homocysteine (tHcy) plays a key role in two metabolic pathways: remethylation and transsulforation. In the remethylation pathway homocysteine is remethylated to methionine, a reaction catalysed by methionine synthase, which uses vitamin B12 as co-factor and 5-methyltetrahydrofolate (5-MTHF) as a methyl donor. This remethylation takes place in most tissues including liver and kidneys. In the transsulfuration pathway, limited to liver and kidneys, homocysteine is irreversibly converted to cystathionine by cystathionine □-synthase, which requires vitamin B6 as a co-factor.

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