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Decarboxylase enzymes: pyridoxine (B6)

Ex.: dopamine synthesis, GABA synthesis, histamine synthesis

B6 a cofactor for synthetase/synthase enzymes: ALA, Cystathionine

B6 a cofactor for glycogen phosphorylase

Transaminase enzymes (ALT/AST): B6

Carboxylase enzymes: biotin (B7)

Hydroxylase enzymes (collagen, norepinephrine synthesis): vit. C

Dehydrogenase enzymes: thiamine (B1)

Hydroxylase enzymes: tetrahydrobiopterin (BH4): synthesis of tyrosine, DOPA, and serotonin

Nutrient supplementation for disease

Cofactors

Thiamine for maple syrup urine disease (branched-chain  $\alpha$ -ketoacid dehydrogenase)

BH4 for PKU (phenylalanine hydroxylase)

B6, B12, or folate for homocystinuria (depending on the enzyme)

B12 (methyl malonyl CoA mutase) or biotin (propionyl CoA carboxylase) for organic acidemias

Biotin for acetyl CoA carboxylase deficiency (fatty acid synthesis)

B6 for sideroblastic anemia (ALA synthetase)

B6 is a cofactor for glycogen phosphorylase, so it could help McArdle [muscle] or Her's disease [liver]

5 cofactors for pyruvate dehydrogenase deficiency

Vitamin C and copper for collagen synthesis

Other supplementation

Tyrosine for PKU (tyrosine becomes an essential amino acid)

Cysteine for Homocystinuria (cystathionine synthase defic.; limit methionine in diet)

Methionine for Homocystinuria (methionine synthase defic.)

Thiamine for Wernicke encephalopathy, beriberi

Thiamine could improve 4 diseases

Maple syrup, pyruvate dehydrogenase deficiency; Wernicke; beriberi