

The molecular mechanism of vitamin D action in attention-deficit/hyperactivity disorder: a review of current evidences.

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Abstract

Attention-deficit/hyperactivity disorder (ADHD) is a heterogeneous disorder characterized by hyperactivity, impulsivity and inattention. Children with ADHD have challenges with learning, behavior and psychosocial adjustments retaining into adulthood. The exact etiology of ADHD is unknown and the pathophysiology of this disease is complex. Multifactorial hypotheses such as catecholaminergic and serotonergic systems disorders, neurotropic factors, some biological impairment with inflammatory and oxidative stress pathways are considered for ADHD. Some studies have shown that vitamin D level in children with ADHD is lower than healthy children; therefore, it may be involved in the pathogenesis of ADHD. Moreover, vitamin D has important effect on the inflammation, oxidative stress and some of neurotrophic factors and neurotransmitters; therefore, vitamin D supplementation may be effective in these children by facilitating dopaminergic and serotonergic function and some neurotrophic factors, as well as decreasing inflammation and oxidative stress.