Critical appraisal of omega-3 fatty acids in attention-deficit/hyperactivity disorder treatment.

Königs A, Kiliaan AJ.


Abstract

Attention-deficit/hyperactivity disorder (ADHD) is a common neurodevelopmental disorder. The classical treatment of ADHD where stimulant medication is used has revealed severe side effects and intolerance. Consequently, the demand to search for alternative treatment has increased rapidly. When comparing levels of omega-3 polyunsaturated fatty acids (ω-3 PUFAs) in ADHD patients with those in age-matching controls, lower levels are found in ADHD patients' blood. ω-3 PUFAs are essential nutrients and necessary for a proper brain function and development. Additionally, there are strong indications that ω-3 PUFA supplements could have beneficial effects on ADHD. However, the results of ω-3 PUFA supplementation studies show a high variability. Therefore, we reviewed recent studies published between 2000 and 2015 to identify effective treatment combinations, the quality of design, and safety and tolerability of ω-3-containing food supplements. We searched the databases MEDLINE, PubMed, and Web of Science with keywords such as "ADHD" and "ω-3/6 PUFA" and identified 25 studies that met the inclusion and exclusion criteria. The results of these ω-3 PUFA studies are contradictory but, overall, show evidence for a successful treatment of ADHD symptoms. Tolerability of the given supplements was high, and only mild side effects were reported. In conclusion, there is evidence that a ω-3 PUFA treatment has a positive effect on ADHD. It should be added that treatment could be more effective in patients with mild forms of ADHD. Moreover, the dosage of stimulant medication could be reduced when used in combination with ω-3 PUFA supplements. Further studies are necessary to investigate underlying mechanisms that can lead to a reduction of ADHD symptoms due to ω-3 PUFA treatments and also to determine the optimal concentrations of ω-3 PUFAs, whether used as single treatment or in combination with other medication.