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The role of marine omega-3 in autism spectrum disorders and attention-deficit/hyperactivity disorder - a review focused on mothers' diet

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Autism Spectrum Disorders (ASD) and Attention-Deficit/Hyperactivity Disorder (ADHD) are two increasingly prevalent neurodevelopmental disorders. This rise appears to be associated with a higher dietary intake of n-6 Polyunsaturated fatty acids (PUFAs) and lower of n-3 PUFAs. Docosa Hexaenoic Acid (DHA), a key nutritional n-3 PUFA, is crucial for an optimal offspring's neurodevelopment through the last trimester of pregnancy. Recently, lower DHA levels have been reported in children with ASD and ADHD. The present review summarizes the main research achievements, concerning the effect of maternal DHA intake in children neurodevelopment in order to elicit its role in the prevention and mitigation of ASD and ADHD. Papers written in English and published from 2007 to 2017 were included in this review and articles were also chosen from the reference lists of the selected articles. As main finding, a low maternal marine DHA intake seems to negatively affect childhood neurodevelopment and increase the risk and the severity of ASD or ADHD. Higher DHA status at time of birth was associated with better childhood neurodevelopment, but controversial results found in prenatal supplementation raised the hypothesis that the benefits of DHA may be influenced by other factors as socio-economic background and life-style. In conclusion, an optimal maternal consumption of marine products and being breast feed may promote some neuronal protection in offspring, confirming the essential role of DHA as a modifiable risk factor for ASD and ADHD.

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