

Omega-3 Fatty Acids, and in Particular DHA, Are Associated with Increased Attention Scores in Adolescents

The study, conducted with a healthy adolescent population in Barcelona, also analysed for the first time levels of alpha-linoleic acid, a plant-derived unsaturated fat

Barcelona, September 29, 2022- Docosahexaenoic acid (DHA) is associated with a greater capacity for selective and sustained attention in adolescents, while alpha-linolenic acid (ALA) is associated with lower impulsivity, according to a study co-led by ISGlobal, a center supported by the "la Caixa" Foundation and the Pere Virgili Institute for Health Research (ISPV). The results confirm the importance of having a **diet that provides sufficient amounts of these polyunsaturated fatty acids** for a healthy brain development.

During adolescence, important structural and functional changes occur in the brain, especially in the **prefrontal area, which plays a major role in controlling attention**. On the other hand, omega-3 unsaturated fatty acids are known to be critical for proper brain development and function. The most abundant fatty acid in the brain, particularly in the prefrontal area, is **DHA**, which is mostly supplied by **eating fatty fish**.

"Despite the established importance of DHA in brain development, few studies have evaluated whether it plays a role in the attention performance of healthy adolescents," says **Jordi Júlvez**, IISPV researcher, ISGlobal research associate and coordinator of the study. "In addition, the possible role of alpha-linoleic acid (**ALA**), another **omega-3 but of plant origin**, has not been as extensively studied," he adds. This is relevant, given the **low fish consumption** in Western societies.

The purpose of this study was to determine whether a higher intake of DHA and ALA was associated with an increased attention performance in a group of **332 adolescents from different schools in Barcelona**. The participants underwent **computerized tests** that measure reaction times in order to determine selective and sustained attention capacity, inhibition capacity in the face of distracting stimuli, and impulsivity. The adolescents also answered a series of questions on **dietary habits** and gave blood samples to measure **red blood cell levels of DHA and ALA** - an objective and valid indication of long-term dietary intake of these fats.

The results show that **higher levels of DHA are associated with greater selective and sustained attention and inhibitory attention**. In contrast, **ALA** was not associated with attention performance, but was associated with **lower impulsivity**. "The role of ALA in attention control is still unclear, but this finding may be clinically relevant, as impulsivity is a feature of several psychiatric conditions, such as ADHD," explains **Ariadna Pinar-Martí**, first author of the study.

"Our study indicates that dietary DHA most likely plays a role in attention-requiring tasks, but further studies are needed to confirm a cause-effect, as well as to understand the role of ALA," concludes Júlvez. In any case, the findings add to the already existing evidence on the **benefit of consuming fatty fish** (the main source of DHA) at a time when the brain is developing in its highest sophistication before reaching adulthood.

Reference:

Pinar-Martí A, Fernández-Barrés S, Gignac F et al. Red blood cell omega-3 fatty acids and attention scores in healthy adolescents. Eur Child Adolesc Psychiatry. 2022 Aug 12. doi: 10.1007/s00787-022-02064-w.

About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between the "la Caixa" Foundation and academic and government institutions to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. Its working model is based on the generation of scientific knowledge through Research Programmes and Groups, and its translation through the areas of Training and Analysis and Global Development. ISGlobal has been named a Severo Ochoa Centre of Excellence and is a member of the CERCA system of the Generalitat de Catalunya.

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