

Fatty Acids in Dyslexia, Dyspraxia, ADHD, and the Autistic Spectrum

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- Scientific evidence suggests that imbalances or deficiencies of certain highly unsaturated fatty acids (HUFA) may contribute to a range of behavioural and learning difficulties including ADHD, dyslexia, dyspraxia, and autistic spectrum disorders. This could help to explain the strong familial associations between these conditions and their common overlap within the same individuals.
- These omega-3 and omega-6 fatty acids are found in fish and seafood, some nuts and seeds and green leafy vegetables. They are absolutely essential for normal brain development and function, but are often lacking from modern diets. Everyone needs adequate dietary supplies of these HUFA for mental and physical health, but research shows that some people may need higher levels in their diet than others. Constitutional individual differences in metabolism that would increase dietary requirements include:
 1. difficulties in the conversion of simple essential fatty acids (EFA) into the more complex HUFA that the brain needs, i.e. DGLA and AA (omega-6), and EPA and DHA (omega-3)
 2. unusually rapid breakdown and loss of these HUFA
 3. difficulties in recycling, transporting or incorporating HUFA into cell membranes.There is some evidence for each of these factors in ADHD, dyslexia, dyspraxia, and autism.
- Food supplements of HUFA may therefore help in the management of these conditions. Controlled trials have provided preliminary evidence for this in ADHD and dyslexia, but further treatment trials are still needed, especially with respect to dyspraxia (now underway) and autism.
- Research indicates that omega-3 fatty acids are more likely to help than omega-6 (although both are important for optimal brain function). Of the omega-3 fatty acids, the latest evidence indicates that it is EPA - not DHA – that is likely to be most beneficial for these purposes.
- It is essential to recognise that ADHD, dyslexia, dyspraxia, or autistic spectrum disorders are simply descriptive labels for particular patterns of behavioural and learning difficulties. In practice, the individual differences between people with any of these labels are substantial, and most show features of more than one of these conditions. Furthermore, fatty acid deficiency is clearly only one possible contributory factor. There are many potential causes of behavioural and learning difficulties; and for any individual, all such avenues should be investigated. For these reasons, fatty acid supplements cannot be expected to help in every case, but potential indicators of a good response to this approach include:
 - **Physical signs of fatty acid deficiency** (excessive thirst, frequent urination, rough or dry 'bumpy' skin, dry, dull or 'lifeless' hair, dandruff, and soft or brittle nails)
 - **Allergic tendencies** (such as eczema, asthma, hayfever etc.)
 - **Visual symptoms** (such as poor night vision, sensitivity to bright light, or visual disturbances when reading - e.g. letters and words may appear to move, swim or blur on the page)
 - **Attentional problems** (distractibility, poor concentration and difficulties in working memory)
 - **Emotional sensitivity** (such as depression, excessive mood swings or undue anxiety)
 - **Sleep problems** (especially difficulties in settling at night *and* waking in the morning)

Ongoing research will help to clarify the importance of these features as indicators of relative HUFA deficiency. Although common in dyslexia, dyspraxia, ADHD and autistic spectrum disorders, they are certainly not confined to individuals with these conditions.

Further information

These are only summary notes from a full article by Dr Alex Richardson, available as a free handout from the website of Food and Behaviour Research at www.fabresearch.org

Other information freely available there includes a range of factsheets and handouts on fatty acids and other aspects of nutrition, references to scientific studies in this area, books and other information on these conditions.

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