Physical Signs of Fatty Acid Deficiency

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- Omega-3 and omega-6 fatty acids are absolutely essential for human life and health, but they must be provided by our diet. They play particularly key roles in brain development and function.

- Various physical signs are associated with deficiencies in these essential fatty acids. These include excessive thirst, frequent urination, rough, dry or scaly skin, dry, dull or 'lifeless' hair, dandruff, and soft or brittle nails. Raised bumps on the skin are particularly characteristic. (This is called 'follicular keratosis' as it results from a build-up of hard, dry skin around the hair follicles).

- Research has shown that these fatty acid deficiency signs are unusually common in people with ADHD, dyslexia and autistic spectrum disorders.[1-7] They have also been linked with behaviour, learning and health problems in boys with and without an ADHD diagnosis,[4] with the severity of reading, spelling and related difficulties in dyslexic children[5] and with visual, auditory and other features of dyslexia in adults.[6] This and other evidence has led to treatment trials to find out if supplementing the diet with fatty acids may help in these conditions.

- A simple checklist rating scale used in many of these studies to assess fatty acid deficiency signs is available as a separate document.[8] This can easily be used as an informal measure by parents, teachers, health professionals or researchers who may be interested. Across groups, scores have been shown to correlate with blood levels of fatty acids. However, results from this scale should never be interpreted in isolation, and any reliable diagnosis of fatty acid deficiency would require other information and professional advice. (Blood fatty acid analyses or other measures may be useful if available and properly conducted, but the response to dietary supplementation with fatty acids – if appropriate – would usually be a fairly definitive indicator).

- Many other features or clinical signs can sometimes reflect deficiencies or imbalances of omega-3 or omega-6 fatty acids. These include:
  - **Allergic or 'atopic' 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)
- IMPORTANT: Any of these signs can have other causes, so it should never be assumed that fatty acid deficiencies are responsible. Always seek medical attention for any such symptoms, and before taking food supplements or making any other major dietary changes.

Further information

This is one of a range of factsheets and handouts produced by Food And Behaviour Research. For further information on this and related topics, please visit **www.fabresearch.org** where summaries of the following research studies can also be found.

1. Colquhoun, I. and Bunday, S. A lack of essential fatty acids as a possible cause of hyperactivity in children. Medical Hypotheses, 1981; 7: 673-9.
2. Baker SM. A biochemical approach to the problem of dyslexia. Journal of Learning Disabilities 1985; 18(10): 581-584.
3. Stevens LJ, Zentall SS. Deck JL, Abate ML, Watkins BA, Lipp SR, Burgess JR. Essential fatty acid metabolism in boys with attention-deficit hyperactivity disorder. American Journal of Clinical Nutrition 1995; 62: 761-8.
4. Stevens LJ, Zentall SS. Abate ML, Kuczek T, Burgess JR. Omega-3 fatty acids in boys with behaviour, learning, and health problems. Physiol. Behav. 1996; 59(4/5): 915-920.
5. Richardson AJ, Calvin CM, Clisby C, Schoenheimer DR, Montgomery P, Hall JA, Hebb G, Westwood E, Talcott JB, Stein JF. Fatty acid deficiency signs predict the severity of reading and related difficulties in dyslexic children. Prostaglandins Leukotr Essent Fatty Acids, 2000; 63:69-74.
6. Taylor KET, Higgins CJ, Calvin CM, Hall JA, Easton T, McDaid AM, Richardson AJ. Dyslexia in adults is associated with clinical signs of fatty acid deficiency. Prostaglandins Leukotr Essent Fatty Acids, 2000; 63:75-78.
7. Bell JG, Dick JR, MacKinlay EE, Glen ACA, MacDonald DJ, Ross MA, Riordan V, Sargent JR. Apparent fatty acid deficiency in autistic spectrum disorders. Prostaglandins Leukotrienes and Essential Fatty Acids (In Press).
8. FAB Research. Factsheet 003/PFADS-CRS: Physical Fatty Acid Deficiency Signs – Clinical Rating Scale. Food and Behaviour Research, November 2003.