

Dyslexia and Nutrition

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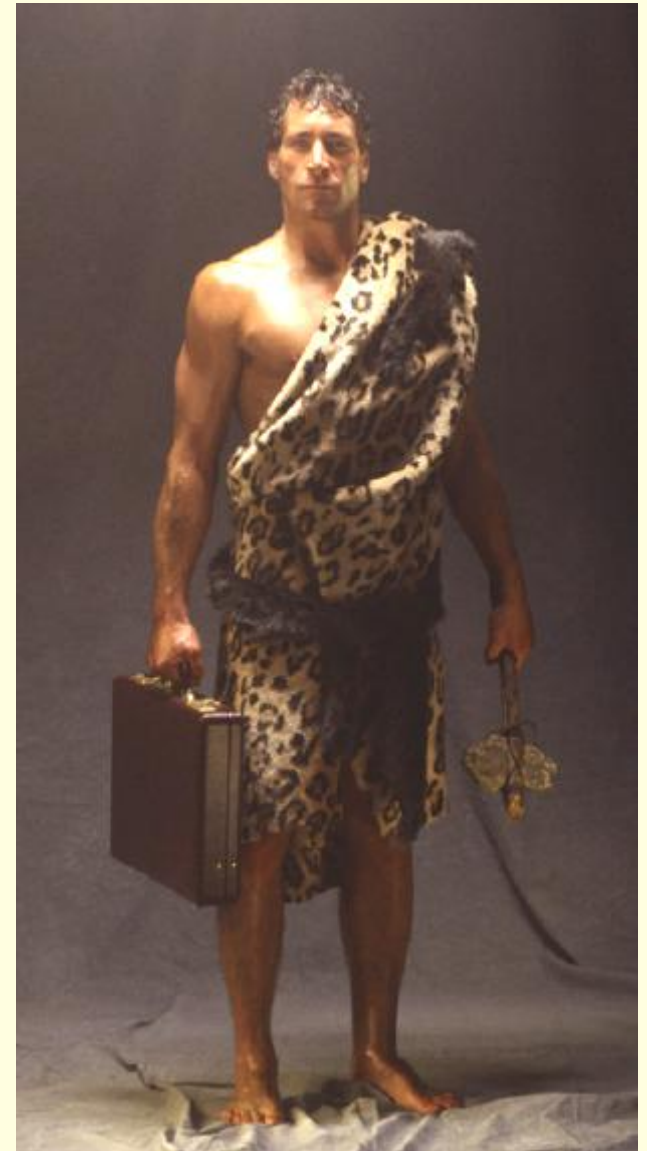
Overview

- Ancient diet
- Modern diet
- What our bodies need to work efficiently
- The effects of a poor diet
- Learning and a poor diet



History

- Prehistoric man's diet
- 4,000- 4,500 calories daily
- No heart disease or obesity
- Modern humans 50,000 years old
- 10,000 years ago - grains and livestock



Modern Diet

- Shelf-life of food
- Food to feed the masses
 - fertilizers
- Quality of feed for animals
- Convenience foods
- Additives (MSG), food colourings and preservatives (sodium benzoate)
- High carbohydrate
- High Omega 6, low Omega 3



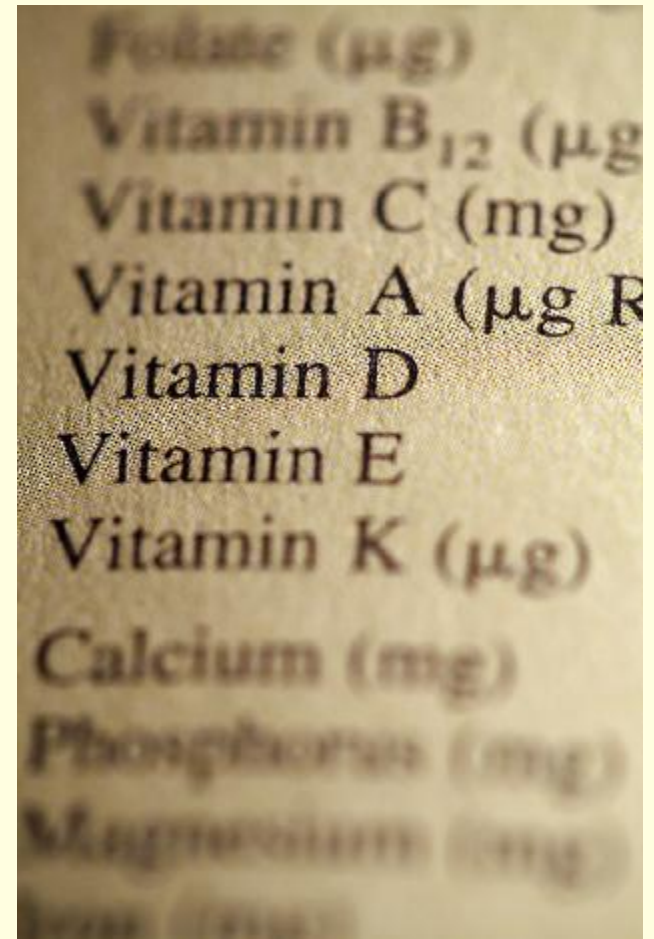
Obtained from our diet

- 39 different essential nutrients
- Vitamins
- Minerals
- Essential amino acids
- Essential Fatty Acids



Vitamins

- Vitamin C - scurvy, antioxidant, Fe uptake
- Vitamin A - vision, immune system, brain & nervous system, reproduction & growth.
- Vitamin D - rickets, osteoporosis
- Vitamin E - protects fats
- Vitamin B complex— energy production, immune function, hormone production
- Bernard Gesch



Minerals

- Iron - anaemia, 'restless leg syndrome'
- Calcium - muscle contraction, hormone production, regulates blood flow
- Zinc - 200 different biochemical reactions
- poor sense of smell & taste
- Magnesium - protein synthesis, anxiety & panic disorders, ADHD
- Copper - red blood cell production

Iron
26
Fe
55.85
1.8

Iron
26
Fe
55.85
1.8

Zinc
30
Zn
65.39
1.6

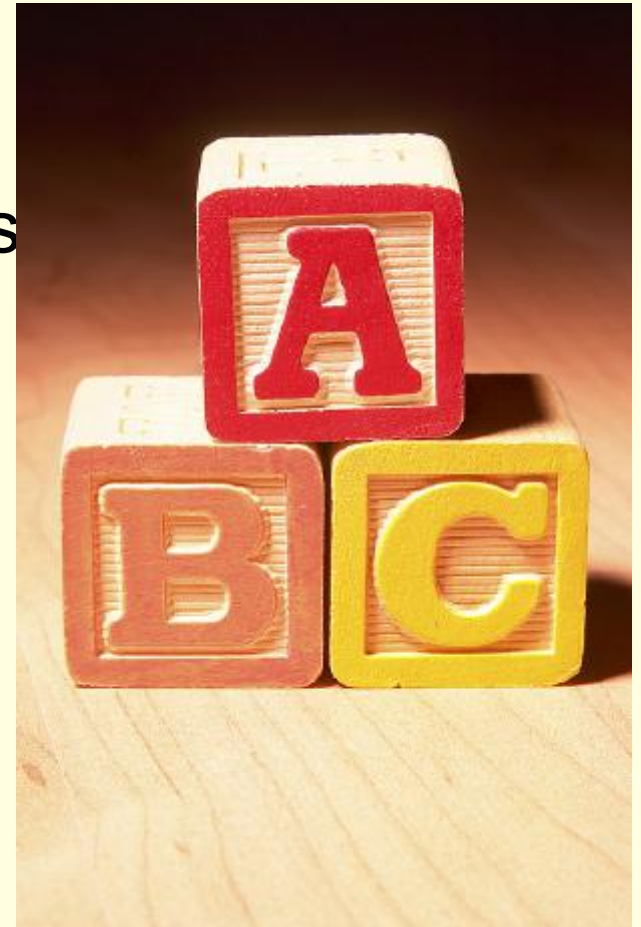
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Copper
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Essential Amino Acids

- Building blocks of protein
- 21 different amino acids, 9 of which are essential amino acids
- Key building blocks of tissue; DNA
- Muscle
- Hormones
- Enzymes
- Neurotransmitters



Carbohydrates

- Energy- glucose
- Goods carbs – vegetables, fruit, beans, pulses and whole grains
- Bad carbs – refined sugars, white flour, sugars found in sweets, snacks, fizzy drinks. Modified starches found in breakfast cereals, cakes, pastries etc



Symptoms of too much sugar consumption

- Tiredness
- ‘Foggy brain’
- Inability to concentrate
- Irritability
- Nervousness
- Depression
- Allergies & intolerances
- Blood-pressure changes
- More marked in adolescents- behaviour & inability to handle alcohol



Fats

- **Saturated Fats** e.g. Animal fats (solid at room temperature)
- **Trans Fats** e.g. Fats found in processed foods, cakes, biscuits
- **Unsaturated Fats**
 - Mono unsaturated fats e.g. Olive Oil
 - Poly unsaturated fats e.g. Omega 3 & Omega 6



Pathways for synthesis

Omega-3 Fatty Acids

Alpha-linolenic (ALA)



Octadecatetraenoic



Eicosatetraenoic



Eicosapentaenoic (EPA)



Docosapentaenoic (DPA)



Docosahexaenoic (DHA)

Green leafy vegetables, seaweed
and some nuts/seeds (flax, walnut)

Fish and seafood

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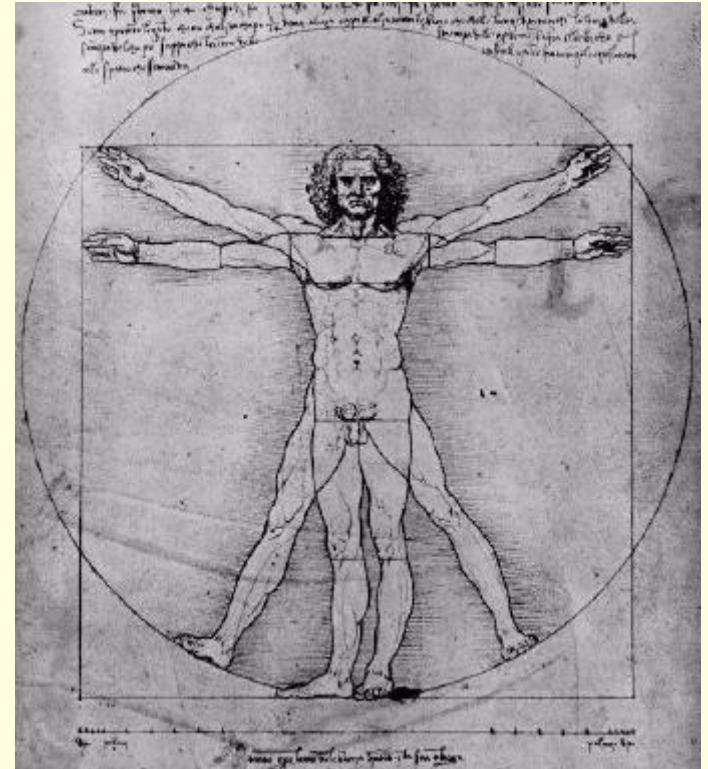
Factors effecting the manufacture of complex Fatty Acids

- Slow and inefficient in humans
- Zinc and vitamin deficiencies (B3, B6 and C)
- Stress
- Smoking, alcohol and caffeine consumption
- Diet (Saturated fats and cholesterol)
- Genetic predisposition, gender
- Viral infections
- Dyslexia, schizophrenia



Fatty Acids in the body

- AA and DHA are key components of nerve membranes, making up 15-20% of the brain's dry mass.
- 30-50 % of the retina is DHA
- AA is crucial for brain growth
- DHA is particularly concentrated in synapses and photoreceptors
- DHA is essential for normal visual and cognitive development
- EPA- regulation of processes relevant to brain function. Endocrine, cardiovascular and immune systems.



Signs of Fatty acid Deficiency

Physical signs

- Dry skin
- Dry hair
- Excessive thirst
- Frequent urination
- Soft or brittle nails
- Dandruff
- Rough skin (upper arms and legs)
- Allergies especially eczema



Signs of Fatty acid Deficiency (cont)

Mood Signs (EPA deficiency)

- Mood often changes quickly and drastically
- Easily frustrated
- Emotionally sensitive
- Tendency to ‘overdo and over-react’, and then become over tired
- Prone to a negative outlook on life
- Undue anxiety/ tension



Signs of Fatty acid Deficiency (cont)

Attentional Signs

- Difficulty sustaining attention
- Easily distracted
- Does not seem to listen
- Forgetful in daily activities-working memory problems
- Brain fog
- Prone to make ‘careless’ mistakes
- Difficulty seeing tasks through to completion
- Sleep problems (difficulty falling asleep at night and waking up)



Signs of Fatty acid Deficiency (cont)

Visual Signs

- Poor vision at night or in dark conditions
- Headaches or eye strain
- Loses place on page when reading
- Letters or words move around when reading
- Words blur
- Sensitivity to bright light



Points of Interest

- Males are more prone to fatty acid deficiency
- Irritable bowel syndrome
- Post-natal depression
- Premature babies
- Pregnant mothers taking fatty acids
- Depression low in fish eating countries



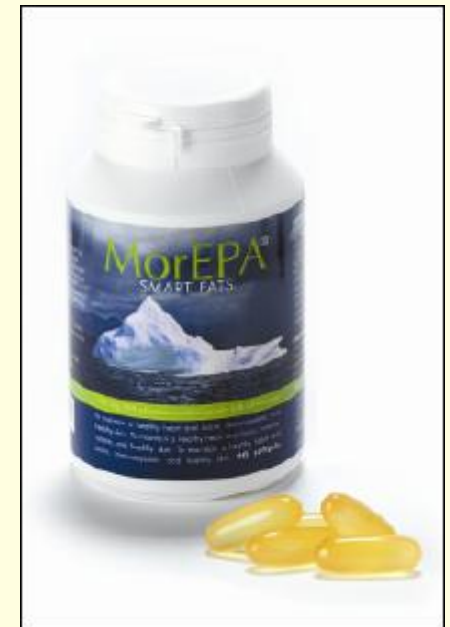
Conclusions

The optimum diet for learning:

- Exercise
- Protein- fish, lean meats, tofu
- Good carbohydrates- fruit, vegetable, nuts, seeds, whole grain
- Water
- Omega 3 – fish, green leafy vegetable, nuts
- Direct supplementation with an omega-3 (EPA) fatty acid may be of benefit
- Potential indicators of a good response to supplementation are:
 - Dry skin, allergies, visual symptoms, attention problems, emotional sensitivity and sleep problems.

Optimal Doses

- Dietary requirements will differ between individuals and in the same individual over time
- For Dyslexia and Dyspraxia: a high-EPA fish oil supplying 500mg EPA daily
- For behavioural problems and/ or severe mood swings 1g/day of EPA
- 2-4g pure EPA have been used in schizophrenia and depression
- Evening Primrose Oil: a dose supplying 50-100mg of GLA daily (more may be helpful for people with allergies)
- Reduce the initial dosage to half or one third after three months
- Vitamin E to help prevent oxidation
- Zinc

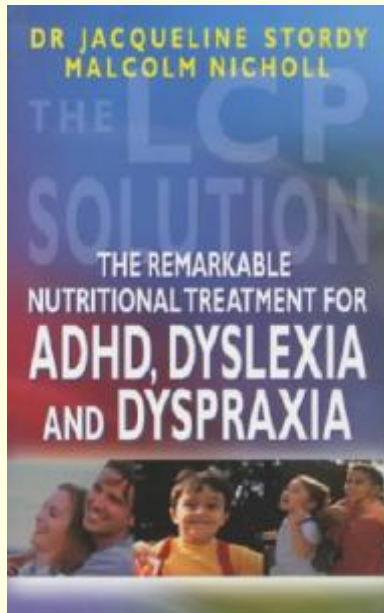


Useful web-sites

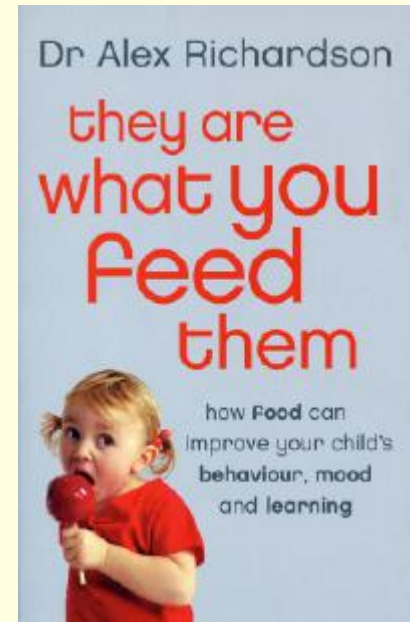
- www.fabresearch.org
- www.dyslexic.org.uk
- www.equazen.com
- www.childrensfood.org
- www.nu-intelligence.com
- www.thedyslexiashop.co.uk



Further Reading



‘The LCP Solution- the remarkable nutritional treatment for ADHD, Dyslexia and Dyspraxia’
Stordy & Nicholl



- ‘They are what you feed them’
- Dr Alex Richardson

Questions?

