Outcome-based comparison of Ritalin versus food-supplement treated children with AD/HD.

Altern Med Rev. 2003 Aug;8(3):319-30.
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Twenty children with attention deficit/hyperactivity disorder (AD/HD) were treated with either Ritalin (10 children) or dietary supplements (10 children), and outcomes were compared using the Intermediate Visual and Auditory/Continuous Performance Test (IVA/CPT) and the WINKS two-way analysis of variance with repeated measures and with Tukey multiple comparisons.

Subjects in both groups showed significant gains (p less than 0.01) on the IVA/CPT's Full Scale Response Control Quotient and Full Scale Attention Control Quotient (p less than 0.001).

Improvements in the four sub-quotients of the IVA/CPT were also found to be significant and essentially identical in both groups: Auditory Response Control Quotient (p less than 0.001), Visual Response Control Quotient (p less than 0.05), Auditory Attention Quotient (p less than 0.001), and Visual Attention Quotient (p less than 0.001).

Numerous studies suggest that biochemical heterogeneous etiologies for AD/HD cluster around at least eight risk factors:
food and additive allergies,
heavy metal toxicity and other environmental toxins,
low-protein/high-carbohydrate diets,
mineral imbalances,
essential fatty acid and phospholipid deficiencies,
amino acid deficiencies,
thyroid disorders, and
B-vitamin deficiencies.

The dietary supplements used were a mix of vitamins, minerals, phytonutrients, amino acids, essential fatty acids, phospholipids, and probiotics that attempted to address the AD/HD biochemical risk factors.

These findings support the effectiveness of food supplement treatment in improving attention and self-control in children with AD/HD and suggest food supplement treatment of AD/HD may be of equal efficacy to Ritalin treatment.

Topographic mapping of brain electrical activity in children with food-induced attention deficit hyperkinetic disorder.

Eur J Pediatr. 1997 Jul;156(7):557-61.
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In 15 children suffering from food induced attention deficit hyperkinetic syndrome, topographic EEG mapping of brain electrical activity was carried out following avoidance and ingestion of previously identified provoking foods.

A crossover design was used and recordings were interpreted independently by two investigators, one of whom was blind to the order of testing.

During consumption of provoking foods there was a significant increase in betal activity in the frontotemporal areas of the brain.

This investigation is the first one to show an association between brain electrical activity and intake of provoking foods in children with food-induced attention deficit hyperactivity disorder.

CONCLUSIONS: These data support the hypothesis that in a subgroup of children with attention deficit hyperactivity disorder certain foods may not only influence clinical symptoms but may also alter brain electrical activity.

Long-chain polyunsaturated fatty acids in children with attention-deficit hyperactivity disorder.

Am J Clin Nutr. 2000 Jan;71(1 Suppl):327S-30S.
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Attention-deficit hyperactivity disorder (ADHD) is the diagnosis used to describe children who are inattentive, impulsive, and hyperactive. ADHD is a widespread condition that is of public health concern.

In most children with ADHD the cause is unknown, but is thought to be biological and multifactorial. Several previous studies indicated that some physical symptoms reported in ADHD are similar to symptoms observed in essential fatty acid (EFA) deficiency in animals and humans deprived of EFAs.

We reported previously that a subgroup of ADHD subjects reporting many symptoms indicative of EFA deficiency (L-ADHD) had significantly lower proportions of plasma arachidonic acid and docosahexaenoic acid than did ADHD subjects with few such symptoms or control subjects.

In another study using contrast analysis of the plasma polar lipid data, subjects with lower compositions of total n-3 fatty acids had significantly more behavioral problems, temper tantrums, and learning, health, and sleep problems than did those with high proportions of n-3 fatty acids.

The reasons for the lower proportions of long-chain polyunsaturated fatty acids (LCPUFAs) in these children are not clear; however, factors involving fatty acid intake, conversion of EFAs to LCPUFA products, and enhanced metabolism are discussed. The relation between LCPUFA status and the behavior problems that the

children exhibited is also unclear.

We are currently testing this relation in a double-blind, placebo-controlled intervention in a population of children with clinically diagnosed ADHD who exhibit symptoms of EFA deficiency.

Foods and additives are common causes of the attention deficit hyperactive disorder in children.

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The attention deficit hyperactive disorder (ADHD) is a neurophysiologic problem that is detrimental to children and their parents. Despite previous studies on the role of foods, preservatives and artificial colorings in ADHD this issue remains controversial.

This investigation evaluated 26 children who meet the criteria for ADHD. Treatment with a multiple item elimination diet showed 19 children (73%) responded favorably, $P < .001$.

On open challenge, all 19 children reacted to many foods, dyes, and/or preservatives. A double-blind placebo controlled food challenge (DBPCFC) was completed in 16 children.

There was a significant improvement on placebo days compared with challenge days ($P = .003$). Atopic children with ADHD had a significantly higher response rate than the nonatopic group.

This study demonstrates a beneficial effect of eliminating reactive foods and artificial colors in children with ADHD. Dietary factors may play a significant role in the etiology of the majority of children with ADHD.

How memories build during sleep

Duke University Medical Centre
26 January, 2004

The brain uses sleep to store memories

Evidence is growing that the brain uses sleep time to consolidate memories acquired during the day.

Scientists who measured the brain signals of rats found distinctive patterns of activity in certain areas of the brain during sleep.

Their analysis suggests that the signals are "reverberations" lasting up to 48 hours after a novel experience.

The finding, at Duke University Medical Centre, will help scientists hunting genes key to memory formation.

The research team used a network of 100 recording electrodes placed in the brains of their rats, in four regions of the brain areas traditionally linked with memory.

The rats were put in dark environments which they then proceeded to explore. Various different objects were placed in the environment for them to "find".

Sleep phases

The scientists then looked for signs of activity during a sleep phases called slow-wave sleep and "rapid eye movement" sleep.

The former is a deep dreamless sleep while REM sleep is linked to dreaming.

After the rats had been looking at an unfamiliar environment, there was a distinctive pattern of brainwave activity, particularly in slow-wave sleep.

This differed from the brainwave patterns that followed activity in a familiar environment.

Previous studies had found that during REM sleep, genes are activated that appear to have a role in memory consolidation.

Two-stage

Dr Sidarta Ribeiro, one of the study authors, said: "We're proposing that the two stages play separate and complementary roles in memory consolidation.

"Periods of slow-wave sleep are very long and produce a recall and probably amplification of memory traces.

"Ensuing episodes of REM sleep, which are very short, trigger the expression of genes to store what was processed during slow-wave sleep."

The next stage of their research is to conduct experiments over longer periods - and perhaps genetically modify the mice in order to work out which genes are key to memory storage.