Attention-deficit/hyperactivity disorder (ADHD) affects approximately 2 to 3 million children in the United States. Stimulant medication is one of the most common treatments for ADHD; however, adverse reactions from its use cause many parents to seek complementary or alternative treatments. Many individuals use complementary and alternative medicine (CAM) because they are attracted to CAM philosophies and health beliefs, dissatisfied with the process or results of their conventional care, or concerned about adverse effects of stimulants. The success of CAM in treating children with ADHD varies, and parents typically use a trial-and-error method when evaluating CAM. Alternative treatments often include neurofeedback, homeopathy, herbal medicines, iron supplements, and dietary modifications or supplements. Although anecdotal and empirical evidence is surfacing to support the efficacy of these alternatives, further research is needed before they can be regarded as effective, reliable treatments for ADHD. Therefore, the use of more conventional treatments should be considered if alternative interventions prove unsuccessful. (Altern Ther Health Med. 2002;8(1):68-74)
The use of neurofeedback may result in increased attention, impulse control, and speed of information processing. Questionnaires completed by mothers confirm a reduction in ADHD symptoms. Neurofeedback training has approximately an 85% success rate in reducing ADHD symptoms. However, it is unknown whether long-term effects are sustained.

Rossiter and LaVaque compared the effects of neurofeedback and stimulant medication on the behavior of 46 individuals aged 8 to 21 years with ADHD. Twenty-three participants received 20 sessions of EEG biofeedback, while another 23 received medication. The Test of Variables of Attention was administered before and after treatment. Both groups of children showed a significant decrease in inattentiveness and impulsivity, providing support for neurofeedback as an effective alternative to stimulant medication.

The effectiveness of neurofeedback with 19 children and youths aged 8 to 19 years was examined in another study. Before treatment, each subject’s parent completed the Attention Deficit Disorders Evaluation Scale: Home Version. After an average of 40 sessions of neurofeedback training, reports from parents on the evaluation scale showed a significant decrease in inattentive, impulsive, and hyperactive behaviors.

Linden et al investigated the effectiveness of neurofeedback on children with ADD/ADHD and learning disabilities over a 6-month period. Eighteen children aged 5 to 15 years were randomly assigned to either a group receiving neurofeedback training or a group receiving no training. Before and after treatment, parents were asked to complete a Swanson, Nolan, and Pelham (SNAP) questionnaire and an Iowa-Conners’ Parent Rating Scale, which measure inattentive and hyperactive behaviors. Study results indicate that children who received neurofeedback training significantly reduced their inattentive behaviors as rated by their parents.

Captain’s Log is a computerized cognitive-training program containing cognitive exercises that develop better...
Attentions, concentration, and other behaviors. Research using this program was conducted with 4 severely emotionally disturbed children aged 7 to 11 years who were diagnosed with ADHD. The multilevel cognitive exercises in this program provide feedback to participants and help them to reduce their ADHD-related behaviors. Before and after implementation of the program, each child was rated using behavior scales including the Child Behavior Checklist, Teacher Report Form (TRF), Conners’ Parent Rating Scale (CPRS), and Conners’ Teacher Rating Scale (CTRS), plus the Intermediate Visual and Auditory Test (IVA), a computerized auditory and visual continuous-performance test. Intelligence and achievement tests also were administered.

All 4 children showed improvement in response control according to the IVA, and improvement in controlling impulsive and hyperactive behaviors based on the CPRS and CTRS results. The completed TRF showed that 3 of the 4 children displayed an improvement in attention. Another study using Captain’s Log with a 13-year-old boy who had ADHD also resulted in an improvement on all subscales on the CPRS, though results from the TRF were less conclusive.

DIET

It is suspected that diet is related to hyperactivity among children; in 1 study it was the most commonly used alternative treatment for children with ADHD. Children have been placed on oligoantigenic diets, in which little variety is allowed, to determine the effects on behavior. Some people believe that removal of substances such as food dyes and preservatives can ameliorate symptoms of ADHD.

Forty-nine children were included in a placebo-controlled, double-blind study that investigated the effect of an oligoantigenic diet on hyperactive behavior. A paired-associate learning task, continuous-performance task, and Conners’ Abbreviated Parent-Teacher Questionnaire were used to detect changes in behavior. Whereas more children taking methylphenidate showed an improvement over those on the diet (44% vs 24%), results indicate that diet can have positive effects on behavior.

The Feingold diet, created in the 1970s by pediatrician Ben Feingold, informs parents how children with behavioral, learning, and health problems may be helped through the elimination of certain foods and synthetic chemicals. This diet received widespread support despite a lack of corroborating controlled clinical trials, because many parents believed that their children were reacting adversely to ingested synthetic colorings.

Williams and colleagues conducted a study in which 26 hyperactive children aged 6 to 14 years who already received stimulant medication were put on a diet that excluded food additives and salicylates. Children were randomly assigned to an experimental group that received chocolate cookies with food dye containing either a stimulant or a placebo; the control group received chocolate cookies without dye, stimulant, or placebo. Results indicate that children who received the placebo with food dye displayed the most disruptive behavior, based on parent and teacher reports, suggesting that food dyes had a deleterious effect on behavior in some children.

In a double-blind, crossover study undertaken to detect the effects of food dye, 22 children were given either a soft drink with food dye or a soft drink with a placebo. One child displayed more negative behaviors following ingestion of the food dye. However, 20 children did not have any behavior change after ingestion of a drink with or without the dye, and 1 child displayed only a small change in behavior following ingestion of the dye.

In general, research investigating food additives as the cause of hyperactivity or learning problems in children has been mixed. Some empirical research supports a diet as proposed by Feingold, whereas other empirical studies have either discredited the relationship between substances such as food dyes and ADHD-related behaviors or yielded inconclusive results.

IRON SUPPLEMENTATION

Iron deficiency, the world’s most prevalent nutritional disorder, may cause behavior problems. Children with ADHD often have low levels of iron and other trace elements, leading to the belief that these children may have an iron deficiency. The use of iron supplements for those with this deficiency may improve behavior and academic achievement in children with ADHD.

A review of 116 children with ADHD found a deficiency in iron and other bioelements. Perhaps these bioelements (magnesium, copper, zinc, calcium, and iron) are found less frequently in children with hyperactivity than in those without it.

One study investigated the effect of iron treatment in children diagnosed with ADHD. Fourteen boys aged 7 to 11 years, none of whom had an iron deficiency, were rated by parents and teachers using the Conners’ Rating Scale. Each child was given an iron supplement for 30 days and was again rated using the scale. Results indicate a significant decrease on the parents’ scores, but not on the teachers’ scores.

HOMEOPATHY

Homeopathic treatments have been shown to be effective for both common and chronic ailments, including hyperactivity. Lamont conducted a double-blind, placebo-controlled study of 43 children diagnosed with ADHD. The homeopathic remedy used in the study included Stramonium, a treatment for nervousness and terrors; Cina, a treatment for restlessness; and Hyoscyamus niger, a treatment for poor impulse control. Children were given either the homeopathic remedy or a placebo for 10 days, after which parents or caregivers rated the children on the amount of ADHD-related behaviors they displayed. Those receiving the homeopathic remedy displayed significantly fewer behaviors. More than half of these children continued to display improvement in their behaviors 2 months later, even though they had discontinued treatment.

Judyth Reichenberg-Ullman and Robert Ullman, doctors of naturopathy and authors of several books on homeopathy, claim a 70% success rate using homeopathic methods for at least 1 year with more than 600 children and adults with ADHD, though
they do not specify which remedies were used. Although their research is not based on controlled trials, their extensive work in this area and high response rate indicate that additional work is necessary to verify efficacy and suggest that homeopathic treatment may be a viable alternative for treating ADHD.

HERBAL MEDICINES

Herbal medicines have been shown to ameliorate ADHD-related behaviors in individuals without this disorder. For example, *Ginkgo biloba* is somewhat effective for disorders such as dementia and memory impairment. A review of 40 controlled trials found at least a partial positive outcome in nearly all subjects who had cerebral insufficiency (eg, difficulties of concentration and memory, absentmindedness). This finding may help to provide support for using ginkgo in children with ADHD, especially those who are primarily inattentive. In addition, ginkgo’s ability to improve cerebrovascular blood flow and attention may help to reduce hyperactivity due to boredom and lack of focus.

*Lemon balm* (*Melissa officinalis*) contains nervine principles that are believed to help restore the balance and function of the brain and nerve cells. Its mild relaxing effect makes lemon balm an appealing treatment for children with hyperactivity and inattention.

DIETARY SUPPLEMENTS

Dietary supplements are readily available and thus are used by parents wishing to reduce their children’s ADHD symptoms. Several dietary supplements are used to treat ADHD symptoms, including essential fatty acids, grapine, and L-glutamine.

Essential fatty acids (EFAs) (eg, evening primrose, omega-3, flaxseed oils) are needed for proper cerebral functioning and may aid in the transmission of nerve impulses. Many children with ADHD cannot metabolize or absorb EFAs normally. EFAs have been found in lower concentrations in the plasma polar lipids and in red blood cell total lipids of individuals with ADHD.

Ninety-six boys aged 6 to 12 years with and without ADHD were studied to compare behavior and other problems. Children’s parents and teachers were asked to complete Conners’ Parent Rating Scale and Teacher Rating Scale, respectively. As indicated on the Conners’ scales, a greater number of hyperactivity/impulsivity problems were reported for students who had lower EFA concentrations.

Stevens and colleagues conducted a study in 53 boys. Their parents and teachers also were asked to complete the Conners’ Parent Rating Scale and Teacher Rating Scale. The boys were then placed into either the control or experimental (ADHD) group, based on the scores from these measures. A blood analysis found significantly lower concentrations of essential fatty acids in boys with ADHD compared to those without the disorder.

A double-blind, placebo-controlled, crossover study investigated the effect of EFAs on children with ADHD. Thirty-one children received evening primrose oil supplements for 4 weeks. Following the study, some hyperactive children who previously had a deficiency in EFAs were found to have higher concentrations.

SUMMARY

Complementary and alternative treatments may be a viable choice for parents who prefer to avoid the use of pharmaceuticals with their children. Trial-and-error methods often are used by parents and medical practitioners to determine whether a treatment is effective for a particular child. However, trial-and-error methods may delay the use of an effective intervention, a matter of concern given the severity of symptoms displayed by some children. It therefore may be necessary to use a proven intervention such as medication in cases in which a delay in treatment would have a deleterious effect on a child.

Neurofeedback, essential fatty acids, and diet, in some form, seem to offer the most promise as effective alternative treatments for ADHD. Of the alternatives discussed in this article, these interventions have anecdotal support and well-controlled empirical research behind them. Anecdotal and limited empirical evidence are surfacing to support the efficacy of iron supplementation, homeopathy, ginkgo, lemon balm, grapine, and L-glutamine.

Additional empirical research is needed for all of these alternative treatments, including those currently regarded as effective. This research will either provide further support for an effective intervention or help prevent the use of treatments that are shown to be ineffective. In addition, research is needed to investigate the effect of alternative treatments when used as a complementary intervention with conventional care. Therefore, when considering a treatment for ADHD it is best to rely on proven alternatives or pharmaceuticals until other alternatives are established as effective and reliable.


