

## CSPI report links diet, behavior problems

A new report by the Center for Science in the Public Interest (CSPI) concludes that diet plays an important role in attention deficit hyperactivity disorder (ADHD), and charges that government agencies, physicians, and the food industry have disregarded strong research evidence pointing to a diet-hyperactivity link.

ADHD is typically treated with Ritalin (methylphenidate) and other amphetamine-like medications, but the research review by CSPI argues that such drugs can have adverse effects, and that their long-term health con-

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sequences are unknown. In particular, the report notes, one animal study has linked Ritalin to liver tumors (even at dosages only 2.5 times as high as the maximum recommended human dose). In addition, the study authors note, Cylert (pemoline)—another popular drug used to treat ADHD—is associated with fatal liver failure (see related article on page 4), and Ritalin is reported to cause Tourette's syndrome in some children.

Dietary interventions, the report states, should be considered as a first-line treatment for ADHD, particularly when combined with behavior modification techniques. CSPI researchers reviewed 23 controlled studies of the effects of diet, and in particular food dyes and additives, on the behavior of children with ADHD or other behavior problems. "Though the studies are limited due to the number of subjects, extent of dietary changes tested, assessment techniques, and other factors," their report concluded, "17 of the 23 studies found evidence that some children's behavior significantly worsens after they consume artificial colors or certain foods, such as milk or wheat." In addition, they say, "Limited research with such tools as electroencephalography (EEG) indicates that certain foods trigger physiological changes in sensitive individuals."

CSPI is urging the government to sponsor well-designed, well-controlled research into the effects of diet on behavior, and to develop methods for identifying children most likely to be vulnerable to dyes and additives. CSPI also is recommending that the government consider banning synthetic dyes in products widely consumed by children, including cupcakes, candies, sugary breakfast cereals,

vitamin pills, drugs, and toothpaste. The production of such dyes, the report notes, has increased four-fold in the past forty years.

"Denying that food ingredients can exacerbate ADHD or other behavioral effects reflects ignorance of the scientific research," the report concludes, "and ignoring that research jeopardizes children's well-being.... Parents, physicians, teachers, and school officials need to know that some children benefit from avoiding certain additives and foods, and it makes sense to remove from children's diets unnecessary contributors to behavioral problems."

CSPI's report on diet and hyperactivity highlighted the concerns many researchers have about the increasingly widespread use of Ritalin, now given to several million children with ADHD and other behavioral problems. Samuel Epstein, professor of occupational and environmental health at the School of Public Health at the University of Illinois, told the CSPI report authors that the occurrence of hepatoblastomas (normally rare liver tumors) in mice given Ritalin is particularly alarming. This finding, Epstein says, "sends a strong warning that Ritalin may cause cancer—in the liver or other organs—in humans. Millions of young children take Ritalin for years on end, and children may be especially vulnerable." Epstein adds, "It would be prudent for the FDA to discourage doctors from prescribing Ritalin as the first choice of treatment for ADHD."

"Diet, ADHD, and Behavior: A Quarter-Century Review," Michael F. Jacobson and David Schardt, Center for Science in the Public Interest, September 1999. Copies of this report are available for \$8 each (including postage and handling) from CSPI-Behavior, Suite 300, 1875 Connecticut Avenue, Washington, DC 20009. A separate report, "A Parent's Guide to Diet, ADHD and Behavior," is available for \$1.50 per copy. The reports also can be accessed at [www.cspinet.org](http://www.cspinet.org).

ARI maintains a list of schools and other resources for autistic persons. If you provide a service that should be on our referral list, send a self-addressed, stamped envelope with a request for our "Services/School Referral List Questionnaire."

ARI also has a list of nutritionally-oriented physicians who use drugs only as a last resort with their autistic patients, and who are interested in the DAN! approach to diagnosis and treatment. If you are a physician who should be on that list, send a self-addressed, stamped envelope with a request for our "Doctor Referral List Questionnaire."

## Large studies fail to find 'autism genes'

(continued from page 1)

• The IMGSAC study, in which an international consortium tested an initial group of 39 families with follow-up in an additional 60, using a broad definition of autism. This study found some evidence of linkage on chromosome 7q, and another positive region on chromosome 16p (the short arms of chromosomes are called "p," and the long arms are designated "q"). However, neither finding was statistically significant.

• The PARISS study, by a consortium of French researchers. The consortium studied 51 families and found some evidence of linkage on 6q and 7q, but again, the results were not statistically significant.

• A U.S. study by researchers from Tufts, the University of Iowa, Johns Hopkins, and Vanderbilt. This consortium studied 75 families. Their most positive findings involved chromosome 13q, but, again, these fell short of statistical significance. In addition, this group reported some evidence of linkage on chromosome 7q.

Spiker concludes, "Based on the findings of all of the autism linkage scans published to date, including the four described above, it is now apparent that no single region contains a gene with a large effect on the risk of autism in most families. Indeed, the most notable linkage results published to date have been for different chromosomal locations in each of the studies. Moreover, none of these locations has reached a level considered statistically significant for this type of genetic linkage study."

"A genomic screen of autism: evidence for a multilocus etiology," Neil Risch, Donna Spiker, Linda Lotspeich, Nassim Nouri, David Hinds, Joachim Hallmayer, Luba Kalaydjieva, Patty McCague, Sue Dimiceli, Tawna Pitts, Loan Nguyen, Joan Yang, Courtney Harper, Danielle Thorpe, Saritha Vermeer, Helena Young, Joan Hebert, Alice Lin, Joan Ferguson, Carla Chiotti, Susan Wiese-Slater, Tamara Rogers, Boyd Salmon, Peter Nicholas, P. Brent Petersen, Carmen Pingree, William McMahon, Dona L. Wong, L. Luca Cavalli-Sforza, Helena C. Kraemer, and Richard M. Myers, *American Journal of Human Genetics*, Vol. 65, 1999, pp. 493-507. Address: Neil Risch, Department of Genetics, M322, Stanford University School of Medicine, Stanford, CA 94305-5120.

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