

Biomedical Update:

Diet markedly improves autism symptoms

More evidence that dietary changes aid many autistic individuals comes from a study by Ted Kniker and colleagues.

Kniker et al. conducted a two-part study involving 28 autistic children and adults. In the first part of the study, the researchers removed dairy products and wheat gluten from participants' diets, and found that five of their subjects improved dramatically.

During the second phase of the study, Kniker and colleagues removed additional suspect foods from subjects' diets, and report that eight of their subjects showed clear improvements. "The improvements were really exciting," Kniker says.

The researchers note that a few subjects showed worsened behavior during each phase of the study, and theorize that those who deteriorated "are still eating potentially allergenic foods."

"Diet changes may ease autism symptoms: study," John Griffiths, Reuters Health, June 13, 2001.

Probiotic milk reduces infection rate, need for antibiotic treatment

Many autistic children are prone to respiratory and ear infections, and many react badly to the antibiotics often used to treat these infections. A recent study in the *British Medical Journal* indicates, however, that both the incidence of infections and the development of complications requiring antibiotic treatment can be reduced by the use of probiotic milk.

Finnish researcher Katja Hatakka et al. studied more than 500 preschool children over a seven-month period (including peak infection months), randomly assigning them to receive probiotic or regular milk. The probiotic milk contained *Lactobacillus GG*, bacteria that improve the microbial balance in the intestine and appear to enhance immune response.

The researchers report that fewer children in the probiotic group suffered from respiratory infections with complications, and that children in this group had 21 percent fewer ear infections and fewer days of illness-related absence from day care. The results were significant before the researchers controlled for age, and approached significance after age was factored in. Hatakka et al. conclude that the use of probiotic milk could reduce the incidence of infections in young children by

10 to 20 percent, with "important clinical, public health, and economic consequences."

"Effect of long-term consumption of probiotic milk on infections in children attending day care centres: double blind, randomised trial," Katja Hatakka, Erkki Savilahti, Antti Pönkä, Jukka H. Meurman, Tuija Poussa, Leena Näse, Maija Saxelin, and Riitta Korpela, *British Medical Journal*, Vol. 322, No. 7298, June 2, 2001, 1327. Address: R. Korpela, riitta.korpela@valio.fi.

Fragile X hyper-reactivity to sounds investigated

Individuals with fragile X syndrome often exhibit autistic symptoms including hyperarousal, aggression, and increased sound sensitivity. Recent research by L. Chen and M. Toth indicates that these behavior problems may stem in part from abnormal auditory processing.

Fragile X syndrome results from inactivation of the FMR-1 gene on the X chromosome, leading to an absence of a protein known as FMRP. Chen and Toth studied "knockout" mice, missing the FMR-1 gene. They found that the mice exhibited an abnormally strong response to the prepulse tone used in their test, and had a higher susceptibility to seizures caused by auditory stimuli. Tests indicated that these seizures involved the auditory brainstem and thalamus.

"[This] auditory hypersensitivity suggests an abnormal processing in the auditory system of fragile X mice," the researchers say, "which could provide a useful model to study the molecular and cellular changes underlying fragile X syndrome."

"Fragile X mice develop sensory hyperreactivity to auditory stimuli," L. Chen and M. Toth, *Neuroscience*, Vol. 103, 2001, 1043-50. Address: Miklos Toth, Department of Pharmacology, Weill Medical College of Cornell University, 1300 York Avenue, LC 522, New York, NY 10021.

NOW AVAILABLE:

Spanish version of Mercury Detoxification Protocol (translation courtesy of Jenny Hill and the Angel's Purse charitable foundation). \$3.00.

DAN! information in Arabic. Dr. Abeer Awadh of Kuwait, who has been using the DAN! approach very successfully in treating autism spectrum disorder children, has prepared an 18-page document presenting a good deal of information on the DAN! procedures, in Arabic. Thank you very much, Dr. Awadh, for this great service to Arabic-speaking families and physicians! \$3.

Mirror neuron deficit in autism hypothesized

Several years ago, researchers identified certain cells in monkeys' brains that fire when a monkey performs a specific action (for instance, picking up a peanut)—and also fire if the monkey observes *another* monkey, or even a human, performing the same action. The researchers hypothesized that these "mirror" neurons, also identified in humans, play a crucial role in humans' ability to imitate, to learn speech, and to understand other people's thoughts and feelings.

J. H. G. Williams and colleagues now speculate that malfunctioning mirror neurons may underlie many symptoms of autism. Such dysfunction, they say, could explain autistic individuals' defects in imitation skills. More globally, they say, a deficit in mirror neuron function could lead early in development to a failure to develop an understanding of "self/other," which "could explain the failure to develop reciprocal social abilities involving shared/joint attention, gestural recognition and language... [and] breakdowns in the development of empathy and a full 'theory of mind'." (Theory of mind is the ability to understand that other people have mental states such as thoughts and feelings.)

The researchers note that the stereotyped autistic movements and echolalia often seen in autistic individuals may represent poor modulation of mirror neurons. In nondisabled individuals, research suggests, there is an inhibitory system that allows the mirror neurons to "work off-line" so that a behavior is not overtly imitated. "If damage extends to such inhibitory components," the researchers say, "then certain forms of mimicry might occur, yet be oddly performed."

Williams and colleagues say a mirror neuron abnormality could stem from genetic or other inborn causes, from environmental insults, or from an interaction between the two.

"Imitation, mirror neurons and autism," J. H. G. Williams, A. Whiten, T. Suddendorf, and D. I. Perrett, *Neuroscience and Biobehavioral Reviews*, Vol. 25, 2001, 287-95. Address: justin.williams@abdn.ac.uk.

FDA 'fast tracks' secretin

The U.S. Food and Drug Administration has granted Fast Track status for the hormone secretin as a treatment for autism. This means that the FDA will facilitate the development and expedite the review of secretin if research shows that it has potential as an autism treatment. The Repligen Corporation recently completed a Phase 2 clinical trial of secretin.