

## Biomedical Update:

### Valerian aids sleep

The herb valerian may reduce sleep problems in developmentally disabled children, according to an Australian study.

In an eight-week double-blind, placebo-controlled study, A. J. Francis and R. J. Dempster investigated the effects of valerian on five children with a variety of diagnoses. They report that valerian treatment resulted in significant reductions in the time it took children to fall asleep and the amount of time they spent awake during the night. In addition, the children taking valerian slept longer, and exhibited a better quality of sleep. Hyperactive children appeared to benefit the most.

"Although the findings are preliminary and in need of replication," the researchers say, "there is evidence to suggest that valerian may be useful in the safe and effective long-term treatment of intransigent sleep difficulties in children with intellectual deficits, and therefore warrants further investigation."

"Effect of valerian, *Valeriana edulis*, on sleep difficulties in children with intellectual deficits: randomized trial," A. J. Francis and R. J. Dempster, *Phytomedicine*, 2002, Vol. 9, No. 4, 273-9. Address: A. J. Francis, Department of Psychology and Disability Studies, Royal Melbourne Institute of Technology University, Victoria, Australia, andrew.francis@rmit.edu.au.

### Estrogen can worsen epileptic seizures

Women with epilepsy may experience more violent or more frequent seizures if they take certain estrogen-containing compounds, according to Georgetown University researchers.

Pavel Klein and Julio Cantero studied 183 women with epilepsy who ranged in age from 17 to 55, and report that 21 percent of the women who used birth control pills containing estrogen said that their seizures had worsened. However, long-term progesterone contraceptive methods such as Depo-Provera and Norplant did not lead to more frequent or more severe seizures.

Klein notes, "The study couldn't pinpoint a specific type of estrogen because too many types were used to get any meaningful statistical analysis." However, he says, "If a doctor has a patient with epilepsy, it is worth inquiring whether the epilepsy has been sensitive to hormones. And if that is the case, then it may be worthwhile to be somewhat cautious about using estrogen-containing oral contraceptives."

The researchers also reported a case study of two women who began experiencing more seizures when they began using

estrogen replacement therapy to treat symptoms of menopause.

"Study shows increased link between worsening epileptic seizures and women taking estrogen," press release, Georgetown University, Dec. 12, 2002.

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"Epilepsy may worsen in some women taking estrogen," Reuters Health, December 11, 2002.

### THC safety investigated

Physicians are increasingly using delta-9-tetrahydrocannabinol (Delta(9)-THC), the active ingredient in marijuana, to treat Tourette syndrome, schizophrenia, and other psychiatric illnesses, and anecdotal evidence (ARRI 16/2, 16/3) indicates that it may reduce autistic symptoms as well. However, researchers are concerned by evidence indicating that long-term marijuana use can cause cognitive or memory problems.

To investigate whether or not THC use results in cognitive deficits, K. R. Muller-Vahl and colleagues tested the drug (at a dose of up to 10 mg) on 24 individuals with Tourette syndrome. The researchers studied the subjects during six weeks of treatment, and followed up five to six weeks later.

During the treatment and follow-up, the researchers say, "No detrimental effect was seen on learning curve, interference, recall and recognition of word lists, immediate visual memory span, and divided attention." Results on tests of immediate verbal memory span actually showed a trend toward improvement. The researchers conclude, "Results from this study corroborate previous data suggesting that in patients suffering from Tourette syndrome, treatment with Delta(9)-THC causes neither acute nor long-term cognitive deficits." A previous study by the same research group found that that THC dramatically reduced complex motor tics in individuals with Tourette syndrome, and also reduced obsessive-compulsive behavior.

Another new study, however, suggests that THC can cause birth defects. Italian researchers injected pregnant rats with a THC-like drug and report that their pups showed hyperactivity and learning problems. Vincenzo Cuomo et al. conclude that "both pregnant and lactating women should avoid using marijuana."

See related editorial on page 3.

"Treatment of tourette syndrome with Delta-9-Tetrahydrocannabinol (Delta(9)-THC): No influence on neuropsychological performance," K. R. Muller-Vahl, H. Prevedel, K. Theloe, H. Kolbe, H. M. Emrich, and U. Schneider, *Neuropsychopharmacology*, Vol. 28, No. 2, February 2003, 384-8. Address not listed.

—and—

"Prenatal marijuana exposure may pose health risks," *Science News*, April 5, 2003.

### Vitamin B6, melatonin counter toxic aluminum

Many autistic children exhibit high levels of toxic metals, including elevated levels of aluminum (see ARRI 16/3). New research indicates that children with high aluminum levels can benefit from taking vitamin B6 (pyridoxine) and the hormone melatonin.

In a study of B6's effects on aluminum-caused brain damage, E. Sreekumaran et al. injected aluminum chloride into the cerebrospinal fluid of rats. Post mortem studies of the rats' brains revealed reduced axonal length and dendritic branching in the hippocampus of the rats when compared to controls.

The researchers then supplied aluminum-exposed rats with a diet high in vitamin B6, and discovered that "these perturbations are reversed by supplementing the [rats'] feed with pyridoxine for 30 days."

The researchers say their findings indicate that pyridoxine "may be considered as a potent antidote to aluminum toxicity" and as a potentially valuable treatment for neurodegenerative disorders such as Alzheimer disease.

In a separate study, Chinese researchers Z. Zhang and C. X. Yu injected mice with aluminum chloride, then administered melatonin to the mice for 14 days. They report that melatonin markedly ameliorated the difficulties shown by aluminum-exposed rats on tests of learning and memory.

"The results suggest," the researchers say, "that melatonin improves significantly the learning and memory impairment in mice induced by aluminum chloride, and this effect may be attributed to its antioxidation."

"Loss of dendritic connectivity in CA1, CA2, and CA3 neurons in hippocampus in rat under aluminum toxicity: Antidotal effect of pyridoxine," E. Sreekumaran, T. Ramakrishna, T. R. Madhav, D. Anandh, B. M. Prabhu, S. Sulekha, P. N. Bindu, and T. R. Raju, *Brain Research Bulletin*, Vol. 59, No. 6, February 15, 2003, 421-7. Address: E. Sreekumaran, Department of Life Sciences, University of Calicut, Kerala, India.

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"Effect of melatonin on learning and memory impairment induced by aluminum chloride and its mechanism," Z. Zhang and C. X. Yu, *Yao Xue Xue Bao*, Vol. 37, No. 9, September 2002, 682-6. Address: Z. Zhang, Department of Pharmacology, Fujian Medical University, Fuzhou 350004, China.

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