Nutritional Supplement Boosts Cognition in Healthy Women

Citicoline, a naturally occurring substance found in the brain and liver and marketed as a nutritional supplement, enhanced aspects of cognition in healthy women and may have a role in mitigating the cognitive decline associated with normal aging, new research suggests.

It may also improve the attention deficits associated with psychiatric disorders, said Erin McGlade, PhD, from the University of Utah Brain Institute, Salt Lake City, who led the study.

Dr. Erin McGlade

"We chose to study citicoline because in prior research it showed cognitive-enhancing effects with very few side effects, which is very important when using a supplement," Dr. McGlade told *Medscape Medical News*.

"We think these changes in cognition include improvement in attention, perhaps due to an increase in brain dopamine levels, but findings regarding dosing in healthy individuals have not been conclusive."

The study was presented here at the New Clinical Drug Evaluation Unit (NCDEU) 51st Annual Meeting, sponsored by the American Society of Clinical Psychopharmacology (ASCP).

Improvement 'Noteworthy'

Dr. McGlade and colleagues recruited 60 women age 40 to 60 years and screened them to rule out axis 1 or axis 2 psychiatric disorders, as well as any kind of cognitive deficits beyond the average cognitive decline associated with aging.

The women were divided into 3 groups of 20 and randomly assigned to receive a daily oral citicoline dose of 250 mg (low dose) or 500 mg (high dose) or placebo for 28 days.

They were evaluated with the Continuous Performance Test II (CPT-II) to measure attention functioning just after randomization and at the end of the study period.

The investigators found that participants who received low- or high-dose citicoline showed improved attention, demonstrating fewer commission and omission errors on the CPT-II compared with the placebo group.

"Women receiving the supplement made fewer errors in response to nontarget stimuli over the course of the study," Dr. McGlade said.

"Interestingly, the 250 dose produced similar results to the larger dose. The improvement was quite noteworthy, with a *P* value equal to .02 for the 250-mg dose and a *P* value equal to .03 with

the 500-mg dose, and this was just after 28 days, so the effect was relatively rapid as well," she said.

It is important to know that a supplement such as citicoline can affect attention without side effects, she added.

Future work will determine the utility of citicoline in psychiatric disorders to see whether it will lessen some of the associated attention deficits that are associated with these disorders, Dr. McGlade said.

Large Potential Market

Citicoline is one of the few pyrimidines available as a nutritional supplement in the United States and Canada, noted Perry Renshaw, MD, PhD, professor of psychiatry at the University of Utah, Salt Lake City.

"Among other things, pyrimidines increase brain phospholipid synthesis, which is responsible for the therapeutic efficacy of citicoline as a treatment for stroke and head trauma, and they also increase catecholamine synthesis, which probably is responsible for citicoline's effect on attention," said Dr. Renshaw, who was not part of the current study.

"The study by McGlade and colleagues is significant in that it documents pro-attentional effects at a dose as low as 250 mg. Pharmaceutical doses as high as 4000 mg have been evaluated. If this effect can also be documented in other populations, such as children and teens, it suggests that citicoline would have a large market in the brain health area," he said.

The study was funded by Kyowa Hakko Bio Co., Ltd, the manufacturers of the citicoline that was used in the study. Dr. McGlade has disclosed no relevant financial relationships. Dr. Renshaw has reported financial relationships with Ridge Diagnostics and Kyowa Hakko.

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