Soy's Effects on Cognition, Bones Disappointing

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Soy supplementation was not associated with significant improvements in cognition, bone density, or lipid profiles, compared with placebo, in more than 200 older postmenopausal women followed for 1 year, Dutch investigators reported.

The findings conflict with those of previous studies on the subject. "Before now, there were a few clinical trials that suggested some benefits of soy for bone, and at least four that suggested cognitive benefits, and some strong suggestion of lipid improvements, but a lot of those trials were both small and only about 3 months long," Pauline Maki, Ph.D., of the Center for Cognitive Medicine at the University of Illinois at Chicago, said in an interview.

The current study, a randomized, double-blind, placebo-controlled trial, included 202 healthy women aged 60-75. But because only older women participated in the study, Dr. Maki, who was not involved in the research, said she was not ready to write off the possible benefits of soy in younger postmenopausal women. "There might indeed be some benefit of soy for women if they start it early enough," she noted.

Study participants were randomly assigned to receive a daily supplement consisting of either 36.5 g of isoflavone-rich powdered soy protein (containing genistein, daidzein, and glycitein) or an equal amount of a powdered milk protein placebo, said Sanne Kreijkamp-Kaspers, M.D., of University Medical Center, Utrecht, the Netherlands, and associates.

Supplementation continued for 12 months. Adherence was checked by measuring plasma genistein levels in the final blood sample. A total of 49 participants dropped out of the trial, divided equally between the soy and placebo groups. Of those who remained, 90% of the women used at least 80% of their supplements over the course of the study (JAMA 2004;292:65-74).

At baseline, both groups performed similarly on cognitive function tests of short-term and long-term verbal and visual memory, naming and verbal fluency, and complex attention. At the end of the study, there were no statistically significant differences in test scores between groups. Body mass index, history of estrogen use, and smoking status did not affect these results.

Plasma lipids were also similar between groups at baseline. At the end of the study the LDL and total cholesterol levels remained constant in the soy group, and the placebo group experienced a small but statistically insignificant decrease.

Overall, bone mineral density (BMD), measured at the hip and lumbar spine using dual-energy x-ray absorptiometry (DXA), had decreased in both groups at the end of the 12 months. One BMD measurement, the intertrochanter region of the hip, was 1.3% higher in the soy group— a significant difference— but "it was only one comparison among 13 BMD measurements and may well be a chance finding," the investigators said.

When the results were analyzed according to the number of years since a woman's menopause, there was a hint that the timing of soy supplementation may be important—at least for bone. "In women who were recently menopausal, our intervention seemed to improve BMD while in the late menopausal women such effect was absent," the authors wrote. "However, only the intertrochanter region of the hip showed a statistically significant interaction" with years since menopause.

This subgroup of newly menopausal women did not experience any differences with soy supplementation on their lipid levels or cognitive function, but Dr. Maki holds out hope that earlier supplementation may have a positive effect on cognition.

"The bone data show that the 'estrogenicity' of soy, if you will, was only observed in the younger women. Even though this study does not show a similar effect on cognition, my hope for the cognitive benefits for younger women comes from two other randomized trials that were composed of younger women between the ages of 50 and 65, which did show a cognitive benefit," she said.

For their part, the researchers acknowledged that their 1-year study might have been too short to fully capture any positive effect of soy supplementation on bone. They also pointed out that many previous studies in men have reported a positive effect of soy supplementation on lipids. ■