

# Tamoxifen May Help, Not Hurt, Brain Function

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**TUESDAY, April 16 (HealthScoutNews)** -- The cancer drug tamoxifen works by blocking estrogen levels to breast tissue. However, does it also block the protection estrogen seems to offer your brain from aging and disease?

Surprisingly, new research says the answer may be no -- and that would be a relief for elderly women who avoid taking tamoxifen because they fear it would send them into mental decline. The findings appear in tomorrow's issue of the Journal of the National Cancer Institute (news - web sites).

In fact, the study, though admittedly small, shows tamoxifen works as well as estrogen therapy in protecting the brain from natural and disease-related brain cell damage.

The research compared the brain scans of 16 breast cancer (news - web sites) survivors who had been on tamoxifen for at least two years, 27 healthy women who had received estrogen therapy for at least two years, and 33 healthy women who had received no treatment. All were between the ages of 65 and 80, and none suffered from brain diseases.

The brain scans specifically showed levels of a brain chemical called myo-inositol, which increases when there is cell damage, either from the aging process or from diseases such as Alzheimer's.

Myo-inositol is considered a valuable marker in assessing brain function. Higher-than-average levels can indicate early brain damage, and exceptionally high levels are usually seen when symptoms such as memory loss or cognitive impairment are experienced.

The comparison of the scans for the three groups of women showed that those on tamoxifen and estrogen therapy had significantly lower levels of myo-inositol than the women who had received no treatment. Moreover, the lowest levels of the chemical were seen among women who had been treated with tamoxifen for longer periods.

"We were working on the hypothesis that, by blocking the effects of estrogen, tamoxifen might reduce the protective benefits of estrogen on the brain, but we were surprised to see results indicating just the opposite," says lead author Thomas Ernst.

Ernst is currently the director of Medical Physics at the Brookhaven National Laboratory (news - web sites) in New York, but the bulk of the research was conducted with co-workers at the Harbor-UCLA Research and Education Institute in Torrance, Calif.

The researchers don't speculate as to how tamoxifen might offer the same kinds of neuroprotective benefits as estrogen, and Ernst stresses the study is too small to draw any strong conclusions.

In an accompanying editorial, Dr. Patricia A. Ganz, director of the University of California Los Angeles Jonsson Comprehensive Cancer Center, further stresses the need to consider alternative explanations for the findings. She says only the conclusions of two much larger ongoing studies -- the Women's Health Initiative Memory Study trial and the Study of Tamoxifen and Raloxifene -- can offer definitive answers about the neuroprotective benefits of tamoxifen.

However, Dr. Lamar McGinnis, senior medical consultant for the American Cancer Society (news - web sites), isn't as dismissive. He argues the findings -- though clearly inconclusive -- are still important developments in tamoxifen research.

"At this point in time, when women are considering whether or not to take tamoxifen and physicians are considering whether to prescribe it, this research offers some reassurance that it is OK, while we wait another four or five years to obtain definitive results," McGinnis says.

While the researchers won't speculate on why tamoxifen might protect the brain in the same way as estrogen, McGinnis gives it a shot.

Tamoxifen -- a member of a class of drugs called selective estrogen receptor modulators - - attaches to the same receptor in the body as estrogen, he says, blocking the hormone and earning its distinction as an "anti-estrogen."

Because of its selective nature, however, while tamoxifen blocks estrogen in breast tissue, it mimics estrogen in the uterus -- and is in fact linked to an increased risk of cancer in the endometrium, the lining of the uterus. However, if tamoxifen can selectively mimic estrogen in the uterus, McGinnis theorizes it might mimic estrogen in the brain.

"Rather than blocking estrogen, as tamoxifen does in the breast, the drug seems similar to estrogen in that it retains concentrations of myo-inositol in the brain," McGinnis says.

"This certainly doesn't offer a definitive answer, but at least it's indicative of something, and that's helpful because people have to make decisions based on current knowledge," he adds.