

## HEALTH

### Israeli researchers show that green tea has rejuvenating effect on damaged brain cells

By David Brinn October 14, 2007

The old British adage - 'have a cuppa tea' - has gained some powerful backing as a cure for life's ailments, thanks to the results of an Israeli study.

Researchers at the Technion Institute of Science in Haifa have shown that feeding green tea extract to mice with Parkinson's and Alzheimer's disease protects brain cells from dying, and helps 'rescue' already damaged neurons in the brain.

Numerous studies around the world have suggested that drinking tea may help support the brain as people get older. Tea consumption is inversely correlated with the incidence of dementia, Alzheimer's disease and Parkinson's disease, which may help to explain why there are significantly lower incidence rates of age-related neurological disorders among Asians than in Europeans or Americans.

But, according to Dr. Silvia Mandel of the Technion's Eve Topf Center for Neurodegenerative Diseases, the study she led was one of the first to show how the main antioxidant polyphenol of green tea extract, EGCG, actually works when it gets access into the brain. Mandel presented her findings last month in Washington DC to a rapt audience of colleagues at the Fourth International Scientific Symposium on Tea and Human Health.

"It was received really well, and I was told there was extreme interest in it," Mandel told ISRAEL21c. "It was novel in the sense that most studies presented dealt with how the consumption of tea impacts several parameters in patients affected with different maladies like cancer, diabetes and cardio-vascular diseases. Our study was the only one that went inside the mechanism of action of EGCG at the molecular level - what it does once it enters the neurons."

In a preliminary study, Mandel's group provided an amount of purified EGCG equal to about two to four cups of green tea per day to mice with induced Parkinson's disease. They found that the EGCG prevented brain cells from dying, and showed improvements in reducing compounds that lead to lesions in the brains.

"More recently, a PhD student of mine - Lydia Reznichenko - conducted a "neurorescue" study that closely resembles what happens in humans - first the disease is diagnosed and then the doctors prescribe medication," said Mandel. "We induced Parkinson's in mice and waited until the damage was evident. Then we began to administer the EGCG to the animals. The results showed that the EGCG not only prevented further deterioration, but it helped to regenerate the already damaged neurons in the brain. This phenomenon is called neurorescue or neurorestoration, and we're the first to show

that green tea is effective in doing this. In the past, it was thought that once brain cells were damaged, there was no way to repair them. The major question is whether these promising results are reproducible in humans."

"Researchers have been actively searching for better ways to support brain cell repair for many years," said tea and health expert Dr. Carol Greenwood who attended the DC conference. "This finding that tea, a natural product consumed by millions of people every day, can help repair them is especially exciting."

In her native Uruguay, Mandel majored in medicine in her high school studies, and upon moving to Israel in 1979, attended Ben-Gurion University, gaining a degree in Biochemistry. She received her masters and PhD in Pharmacology from the Technion before joining the center.

"When I starting working there 10 years ago, I was told by my boss Prof. Moussa Youdim, that the most acknowledged hypothesis regarding neurodegenerative diseases such as Alzheimer's and Parkinson's, is an excessive accumulation of highly reactive molecules known as oxygen free radicals, and iron. In the brain, the radicals and iron can hit genetic material and critical proteins - a "corrosive" oxidative effect. Therefore, one would expect that molecules capable of neutralizing free radicals and trapping excess of iron could be considered potential candidates for treating Parkinson's disease," said Mandel.

"At that time I stumbled upon a research paper dealing with a green tea extract which showed that it prevents damage to red blood cells. By a closer examination of the components in green tea, I discovered that the most active ingredient of the extract, EGCG, is a potent antioxidant and iron complexing agent. I looked up some more articles, and decided that maybe I could study this compound - in any event, it is natural so it can't do any harm, and it would be nice to tell people that they can drink something pleasant like tea and get beneficial effects from it," she added.

The years of research into tea are beginning to pay off for Mandel. Based on her initial findings in 2001 about the connection of green tea to cell protection, tests are underway now in China, under the auspices of the Michael J. Fox Foundation, on early Parkinson's patients to check whether green tea extract is slowing down the progression of the disease.

And don't think that Mandel doesn't take her own advice.

"I try to drink at least two cups of green tea a day. And I like regular dark tea too, so I drink another two cups of that."