“Men and women who eat two or more servings of tofu per week in midlife are more likely to experience cognitive decline, senile dementia and brain atrophy later in life than those who eat little or none. This startling announcement sent shock waves through the soy industry when announced at the Third International Symposium on the Role of Soy in the Prevention and Treatment of Chronic Disease in Washington, DC, in 1999.

Lon R. White, M.D., a neuro-epidemiologist with the Pacific Health Institute in Honolulu, procured his initial data from a group of 8,006 Japanese-American men born between 1900 and 1910. All had been enrolled in the Honolulu Heart Project, a longitudinal study established in 1965 for research on heart disease and stroke. Researchers carried out standardized interviews in 1965-67 and again in 1971-74 to learn details about their diets in mid-life.

From 1991 to 1993 Dr. White and his team completed cognitive testing on 3,734 men, magnetic resonance imaging on 574 and autopsies on 290. They also analyzed cognitive test data for 502 wives on the assumption that they had eaten the same meals as their husbands. The results? Men and women who ate tofu at least twice per week experienced accelerated brain aging, diminished cognitive ability and were more than twice as likely to be clinically diagnosed with Alzheimer’s disease. MRI scans showed enlarged ventricles while autopsies revealed atrophied brains with lower weights. Subjectively, the researchers couldn’t help but notice that by age 75 to 80 the tofu eaters looked about five years older than those who abstained.

The industry claims “the tofu effect” is just a fluke but the statistical probability of the results being true varied from 95 to 99.9 percent, depending upon the particular brain aging endpoint. The investigators also searched for – but failed to find – confounding factors such as age, education, obesity or other food and drinks. Although tofu eaters were more likely to have been born in Japan, nothing about their early upbringing such as diet or education could explain the finding. Both miso and tofu correlated with measures of senility, but the miso effect shrank into statistical insignificance while the tofu effect remained strong. Indeed, the more tofu eaten the more cognitive impairment and/or brain atrophy.

The study has earned high marks from researchers not on the soy industry’s payroll, including Don Sheehan, Ph.D., and Daniel Doerge, Ph.D., at the FDA’s National Laboratory for Toxicological Research: “Given the great difficulty in discerning the relationship between exposures and long latency adverse effects in the human population, and the potential mechanistic explanation for the epidemiological findings, this is an important study. It is one of the more robust, well-designed prospective epidemiological studies generally available.
Dr. White hypothesizes that it is the isoflavones in tofu and other soy foods that cause so many adverse effects in the brain. Numerous animal studies show that soy isoflavones interfere with an enzyme called tyrosine kinase in the hippocampus, a brain region involved with learning and memory. Elevated levels of phytoestrogens in the brain also cause decreases in brain calcium-binding protein (needed for protection against neurodegenerative diseases) and in brain-derived neurotrophic factor (essential for the survival and genesis of brain cells). Finally, genistein reduces DNA synthesis in the brain, reducing the birth of new brain cells and promoting apoptosis and cell death.

Of soy phytoestrogens, Dr. White says, “The bottom line is these are not nutrients. They are drugs.”

[From pages 307-308 – reference cites included in the copy.]