

YOUR SNACK CHOICE IS MORE IMPORTANT THAN YOU THINK. NEW RESEARCH INDICATES THAT IN ADDITION TO AFFECTING YOUR WAISTLINE, FOOD ALSO CAN INFLUENCE YOUR BRAIN. SOME DIETS APPEAR TO AID MENTAL FUNCTIONING WHILE OTHERS HARM IT. ALTOGETHER THE STUDIES SHOW THE IMPORTANCE OF DIET ON MENTAL HEALTH AND ALSO MAY HAVE IMPLICATIONS FOR THOSE WHO SUFFER FROM CERTAIN BRAIN AILMENTS.

DIET AND THE BRAIN

Loathe anything leafy and green? Obsess over cream-filled cupcakes?

Junk food junkies take notice. What you eat does more than influence your gut. It also may affect your brain. Increasing evidence shows that certain fruits and veggies produce brain benefits, while some types of fat appear to cause harm. The new studies are leading to:

- A better understanding of food's complex actions.
- The development of diets that may improve brain functions and help prevent or treat brain ailments.

Mentally healthy foods include strawberries, blueberries and spinach, according to some of the work. In one example, researchers fed aging rats the daily equivalent of a pint of strawberries, pint of blueberries or a spinach salad for two months. Compared with aging rats on a regular diet, molecular measures of brain cell communications showed that the supplemented animals had better cell function. They also performed better on a memory test. In addition, preliminary findings indicate that the food

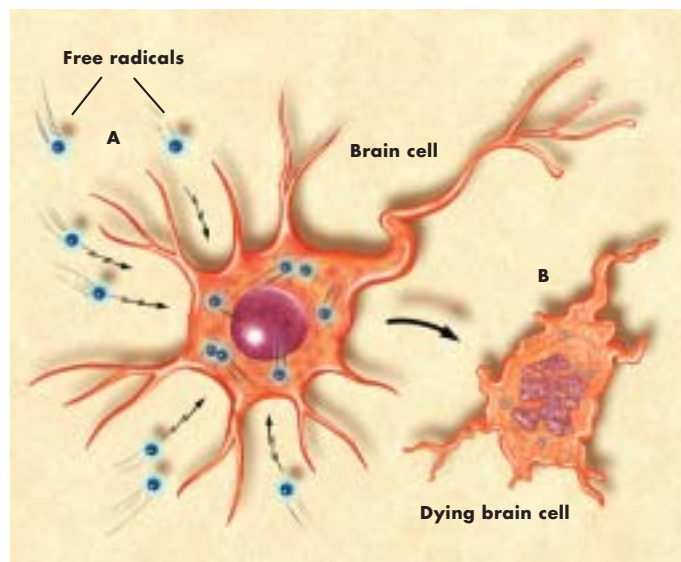


ILLUSTRATION BY INDIA KIBIUK

▲ ONE WAY CERTAIN FOODS MAY HELP THE BRAIN IS BY FIGHTING OFF HARMFUL FREE RADICAL MOLECULES (A), WHICH ROAM AROUND ANXIOUSLY LOOKING TO COMBINE WITH OTHER MOLECULES. THEIR RUSH FOR A MATE IS THOUGHT TO CAUSE CELL DAMAGE OR EVEN CELL DEATH (B) AND CONTRIBUTE TO A VARIETY OF BRAIN FUNCTION PROBLEMS. RESEARCHERS BELIEVE THAT FOODS, SUCH AS STRAWBERRIES, BLUEBERRIES AND SPINACH, PROVIDE THE BRAIN WITH EXTRA PLATOONS OF ANTIOXIDANTS. THESE PROTECTIVE MOLECULES CAN TAKE THE FREE RADICALS OUT OF COMMISSION, ENDING THEIR ASSAULT.

possibly may have an effect on Alzheimer's disease (AD), a memory-impairing disorder that hits in old-age. Mice bred to develop AD perform better on a memory task when they receive a blueberry supplement. Their brain cell communication also enhances. Plans to study supplements of the foods in humans are under way.

Researchers surmise that the benefits of these produce items stem, at least in part,

from their high antioxidant content. In the brain, antioxidant molecules wage war against troops of molecules, known as free radicals, which can harm brain cells and brain function (see illustration). Many scientists believe that, as we age and during various disease-related circumstances, our internal antioxidant defenses can become overpowered by the free radical force. The antioxidant-rich foods are thought

HUDA AKIL, Ph.D.

President
University of Michigan, Ann Arbor

STORY C. LANDIS, Ph.D.

President-Elect
NINDS NIH

FRED H. GAGE, Ph.D.

Past President
The Salk Institute

FOR MORE INFORMATION

please call Leah Ariniello,
science writer, or Joseph Carey,
senior director, communications
& public affairs, at 202-462-6688

PAST ISSUES

<http://www.sfn.org/briefings>

to offer brain protection during these times by providing an extra boost in defense, keeping the free radicals in check.

General diets rich in antioxidants also have benefits. By following a group of people aged 65 and over for about four years, researchers recently found that a diet packed with high levels of the antioxidant, vitamin E, was associated with a lower risk of developing AD in some people.

On the other end of the spectrum, a crop of studies finds evidence that gorging on foods that contain high levels of saturated fat—think french fries and donuts—can hinder brain function. Even though some fat is important for health, many Americans go overboard, especially with the saturated form. Studies indi-

cate that rats kept on a comparable diet, where approximately 40 percent of their daily calories come from saturated fats, perform poorly on tests of memory and learning.

Human studies also report negative effects. In one study researchers examined the food intake of some 5,000 participants. People who ate diets high in saturated fat had an increased risk of dementia.

It's not clear how excessive saturated fat harms the brain, but there are many theories. Some blame its effect on glucose, a sugar that provides energy to the body and brain. While a short-term supply of glucose can help the brain, excess fat may create a situation where brain cells receive a long-term, harmful exposure to glucose. Research on

people with diabetes, a disease marked by problems with glucose, fits with this idea. For example, one report found that diabetics perform poorly on memory tests.

Other research indicates that excess fat affects certain brain memory molecules. One of the studies on rats found that the high fat diet cut levels of brain-derived neurotrophic factor and other related molecules in the brain, which are thought to aid the formation of memories.

More research is needed to sort out all the complicated effects of food, but scientists hope eventually to develop specific dietary guidelines that aid brain health. For now, researchers say it can't hurt to eat more fruits and veggies and cut down on saturated fat.

COPYRIGHT © 2003 SOCIETY FOR NEUROSCIENCE

**SOCIETY FOR
NEUROSCIENCE**

11 Dupont Circle
Northwest
Suite 500
Washington, D.C.
20036

**NON-PROFIT
US POSTAGE PAID
WASHINGTON DC
PERMIT 4929**