

## Foods that fool the body with low fat

Nutritionists and food companies may have more success promoting healthy diets if they concentrate on reducing fat in specific foods. Unfortunately, ice cream isn't one of them.

People can judge the fat content of milk-based products much more easily than the fat in mixed foods, such as chicken salad, report Beverly J. Tepper and Susan E. Shaffer of Rutgers University in New Brunswick, N.J.

Tepper and Shaffer tested the ability of 73 people to judge the richness of various foods. Each person visited the research lab twice weekly for two weeks. At each visit, participants tasted five versions of six common foods. The different versions looked and tasted the same but varied in fat content and texture. In one test, participants judged the relative fat contents of the different versions by comparing them to one another; in another test conducted on a different day, they estimated the fat content of each version separately.

In neither test could participants accurately judge the fat content of scrambled eggs or chicken spread, Tepper says, but in both tests they succeeded in ranking mashed potatoes and pudding — two milk-based foods. They also distinguished the relative richness of crunchy snacks fried in different oils.

"In some foods, people are going to notice the difference [in fat content], but in others, you can make relatively large changes without people noticing," Tepper concludes.

## Alzheimer's disease: Does the nose know?

An insidious disease, Alzheimer's can start to develop long before one can detect troublesome losses in cognitive function. However, people with this disease also lose some of their sense of smell. Researchers hope that monitoring changes in this sense will help them detect the disease earlier and aid in tracking its progression.

"The goal is to develop an early marker or something that could [change] along with the disease," explains Jack Pearl of the National Institute on Deafness and Other Communication Disorders in Bethesda, Md. "An olfactory test is a relatively noninvasive way of testing."

Toward that end, several research groups have begun studying the ability of older people, with and without Alzheimer's, to detect and remember odors.

In a study conducted at the University of California, San Diego, Medical Center, 65 people with Alzheimer's disease and 82 healthy people of similar ages and backgrounds underwent vision, taste, and odor tests. The vision and taste components helped the scientists determine whether the participants were of sound enough mind for testing and whether deterioration had occurred in more than one sense.

One of the odor tests required participants to sniff alcohol from pairs of plastic squeeze bottles and pick out the one with the stronger scent. By supplying bottles with different concentrations of alcohol, the researchers could tell at what concentration the person first detected the odor. The same people also sipped sugar water samples with differing degrees of sweetness and were asked to spit out the sweeter one.

Participants with Alzheimer's needed much stronger odors than the healthy sniffers, say Claire Murphy and Steven Nordin, who led the study. "The more demented [the person], the higher the threshold, but there was no such correlation for taste," adds Nordin. "The research suggests there is a specific detection dysfunction to odors."

Furthermore, he notes, in the seven people with Alzheimer's disease who have now been tested for three years, the average yearly change in the odor-detection threshold has correlated with the progression of dementia.

A second experiment assessed the participants' ability to recognize odors they had smelled earlier. Each person looked

at 10 faces of presidents and 10 engineering symbols and smelled 10 common household odors. They then examined a second set of faces, symbols, and odors, half of which came from the first set. Participants tended to score the same when rating familiar faces and symbols as when rating odors they had sniffed earlier. But Alzheimer's patients scored lower overall, indicating a general decline in memory, says Nordin.

At Duke University in Durham, N.C., psychologist Susan S. Schiffman and her colleagues track changes in healthy people who are at risk of developing Alzheimer's. So far, the study involves 22 such individuals and 22 people matched for age, gender, race, level of education, and handedness who are not considered at risk for the disease. Participants undergo several tests, including ones in which they pick the stronger of two flavors or odors and are asked to remember familiar ones.

The two groups differ only in their ability to remember odors, reports Breck G. Graham of Duke.

"I wouldn't suggest that [odor testing] would ever replace any of the cognitive measures, but it might be used in addition to other things for early diagnosis of Alzheimer's," he says.

## There's no accounting for taste

Countless studies have indicated that animals avoid bitter foods. But some actually prefer acrid flavors, reports John I. Glendinning of the University of Arizona in Tucson.

While Glendinning was at Florida State University in Tallahassee, he studied the eating habits of two species of wild Mexican mice. He discovered that while none of the *Peromyscus melanotis* mice liked bitter flavors, seven of 64 *Peromyscus aztecus* mice preferred quinine water over regular water. He then offered both species hop extract, tannic acid, and two other bitter substances. "These chemicals are really different, but nevertheless they all elicit similar responses," Glendinning told SCIENCE NEWS. "Individuals that prefer quinine were more likely to prefer other bitter chemicals," up to a certain concentration.

Glendinning calls this the "Schweppes effect," after the tonic water that some people prefer over regular water. Citing other studies showing that some goats, opossums, and squirrel monkeys like bitter foods, he suggests that many animals exhibit this effect, although he doesn't really know why. He suspects, however, that in foods — particularly plants — bitterness may reflect higher nutritional content.

## How sweet a protein can be

A reddish fruit sold in Nigerian markets has provided scientists with yet another supersweet protein. Ounce per ounce, this 52-amino-acid protein, called brazzein, provides 2,000 times the sweetness of sugar, reports Ding Ming, a biochemist at the University of Wisconsin-Madison. He and Wisconsin colleague Göran Hellekant isolated the protein from *Pantadiplandra brazzeana*, a vine plant that produces a fruit slightly bigger than a grape.

"The sugar [content] is not that high; we guess that the sweet protein plays the same role as sugar," says Ming. Sweetness may encourage animals to eat such fruits and help disperse seeds, he explains.

Brazzein's lysine-rich amino acid sequence bears little resemblance to those of other sweet proteins (SN: 5/19/90, p.315), which tend to contain many more amino acids, says Ming. This protein also proves quite stable, surviving 98°C temperatures for at least two hours and maintaining its sweetness in a wide range of acidic and alkaline solutions, the researchers report. Moreover, electrical recordings from taste nerves of primates reveal that the protein elicits a purely sweet sensation, with no aftertaste. The Wisconsin scientists have applied for a patent for the protein.