

## Beware the sprouts of sorghum

Several years ago, some researchers recommended germinating sorghum sprouts from seeds at home as a nutritious alternative to the more common sprouts. But research reported in the current (May-June) *JOURNAL OF FOOD SCIENCE* shows that doing so could risk cyanide poisoning. "The average fatal dose of HCN [hydrocyanic acid] is 50 to 60 milligrams, and this amount was readily obtained under laboratory conditions from sprouts grown from 100 grams of sorghum seed," say Oksana Panasiuk and Donald Bills of the Agricultural Research Service in Philadelphia. That's important, they explain, since "consumption in a single meal of sorghum sprouts or a dried product of sorghum sprouts derived from 100 g of seed is entirely possible."

Their research focused on eight sorghum-seed varieties — four cultivars each of grain and sweet sorghum. In all cases they found sprouts yielded much more HCN than the seeds from which they were grown. Incubating temperature was important: One cultivar known as Bird-a-boo, for example, developed a maximum HCN level of 614 parts per million (ppm) when sprouted at 25°C, of 671 ppm when sprouted at 30°C and of only 385 ppm when sprouted at 35°C. (For reference, the allowable HCN level for lima beans in the United States is 200 ppm.)

Rehydrated flour or meal had the same HCN concentration as fresh sprouts. "Since HCN has a boiling point of 25.7°C," they say, "the observation that drying at 50°C did not reduce the amount of cyanide suggests that cyanide in the sprouts exists largely in ... the heat-stable non-volatile [form]."

Already an estimated one billion people in developing countries suffer from chronic cyanide poisoning as a result of diets that rely on cyanide-rich cassava and sorghum grain. For these persons, sprouted sorghum offers a special risk, Panasiuk and Bills say, noting it could increase their already serious dietary cyanide loading by as much as 500 to 1,000 fold.

## Beef: Slow poaching beats roasting

How do you get the most tender, flavorful and juicy roast? Research shows that it's by slow cooking at relatively low temperatures — as low as 60°C (140°F). However, the slow heating associated with such temperatures has fostered fear among cooks that the meat might also incubate pathogenic microbes. Hence, most slow-roasted beef is today cooked at 90°C or higher. However, new research by food scientists at the University of Massachusetts in Amherst and Chesebrough-Pond's Inc. in Shelton, Conn., suggests cooks are remiss to dismiss one slow-cooking option: the waterbath. Waterbathed meat is sealed in a nylon wrapper, then immersed in hot water.

Earlier studies have shown 60°C waterbath cooking to be as microbiologically safe as low-temperature (90°C) oven roasting. Moreover, because water transfers its heat to meat roughly 20 times more efficiently than does air, meat cooked in a waterbath tends to be more uniformly rare in cross-section and produces greater cooked yields than meat oven roasted at 90°C.

But the most important issue is how it tastes. And according to new research by Mark Dinardo, Ernest Buck and Fergus Clydesdale, the discriminating palate will not be disappointed.

Their taste panels compared beef oven roasted at 90°C with waterbath-cooked meat; all meat was cooked to an internal temperature of 60°C. Waterbath-cooked roasts were "more juicy, equally flavorful, more rare overall and more uniformly rare in cross-section as compared to the oven-prepared samples," the researchers report in the current (May-June) *JOURNAL OF FOOD SCIENCE*. What's more, judges rated waterbath-cooked beef as tasting more like roast beef and less like pot roast than the true oven-roasted meat. Finally, they found that once the meat reaches 60°, it can be "bathed" up to four hours more — extending the time meat can be served hot — without jeopardizing taste or tenderness, relative to oven-roasted meat.

AUGUST 18, 1984

## Type A: A change of heart and mind

It appears that the heart, once thought to be the repository of emotions, is more likely to be either aided or victimized by them. A study released last week indicates that "Type A" individuals — characterized by impatience, competitiveness, insecurity and a quick temper — can cut in half their chances of suffering a heart attack by changing their behavior with the help of psychological guidance.

Researchers at Mt. Zion Hospital and Medical Center in San Francisco and Stanford University School of Education began their study of 862 predominantly male heart attack victims in 1978. Along with standard cardiological advice about diet and exercise, 592 participants received group counseling to ease the intensity of their Type A behavior and improve their self-esteem. After three years, only 7 percent of those who underwent counseling had another heart attack, compared with 13 percent of a matched group of 270 subjects who received only cardiological advice. Among 328 men who stuck with the counseling for the full three years, 79 percent reduced their Type A behavior. About half of the comparison group was similarly able to slow down their lives and cope better with stress.

"Type A behavior stems from insecurity and inadequate self-esteem," says study director Meyer Friedman, a cardiologist at Mt. Zion and a member of the team that first formulated the Type A concept. "These people often deny that they have any problems, but we've shown that it is possible for them to change their destructive habits." The results also apply to Type A adults who have not yet had a heart attack, adds Friedman. He estimates that at least half of the adult urban population displays varying degrees of Type A behavior.

Counseling not only helps these people to calm down and enjoy life more, says Friedman, it makes them aware of some of the underlying emotional forces in their lives. "About 70 percent of our sample said they received inadequate parental love and then tried to compensate by being aggressive and overcompetitive," he told *SCIENCE NEWS*.

The theory about Type A behavior, developed by Friedman and cardiologist Ray H. Rosenman in 1959, has gained wide public and scientific acceptance, although the American Heart Association ranks Type A behavior as only a secondary risk factor for heart disease, behind smoking, high blood pressure, high blood cholesterol and diabetes.

"Friedman's study is important because this is the first evidence that a modification program aimed at Type A behavior actually helps to reduce coronary disease," says Redford Williams of Duke University in Durham, N.C., a long-time investigator of Type A behavior. The study needs to be repeated elsewhere, he notes, to see if the findings hold up. Further studies face roadblocks, says Friedman, since it is difficult to recruit subjects, obtain experienced counselors and maintain participation over several years.

Like any reformed Type A individuals, the researchers are waiting patiently to see if the reported changes in behavior and health continue now that counseling has stopped.

## Teacher ratings get poor grades

Most teacher evaluation systems now in use are not adequate for rating teachers for the merit pay programs being considered by many school districts, according to a study by the Rand Corporation in Santa Monica, Calif. A team of researchers surveyed 32 school districts with reputations for having advanced evaluation mechanisms. Only four districts committed the administrative time, money and care in planning necessary to identify incompetent teachers and improve teacher performance. If good teachers are to be rewarded, evaluation systems must reliably measure higher levels of teacher competence, concludes the study.

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