

Diet's Twin Benefits

A recent study showed that not only did a low-fat, low-calorie diet lead to weight loss in volunteers with high cholesterol and/or triglycerides, it also reduced their cholesterol level and enhanced their immune response. The 10 volunteers consumed different diets during four test phases lasting more than a month each. All but the last phase were designed to maintain body weight.

First, as a baseline, the volunteers consumed an “average American diet” composed of 35 percent fat, 49 percent carbohydrate, and 16 percent protein. Next, the diet changed to provide 26 percent fat (reduced); then, 15 percent (low-fat); and finally, 15 percent fat combined with reduced calories. Cholesterol levels fell significantly during all phases, except for the baseline phase. And skin-patch tests for immune activity showed it to be significantly better after the last, weight-reducing phase, as was confirmed by blood tests. *Simin Nikbin Meydani, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, Massachusetts; phone (617) 556-3129, e-mail simin.meydani@tufts.edu.*

“Heat” Fends off Mold

A potent substance found in cayenne peppers may one day battle molds that too often spoil berry or grape crops. Last year, a patent was issued for a novel fungicide called CAY-1. It's a saponin—a compound with detergentlike properties—derived from cayenne peppers. Now, scientists are studying just how well it can protect strawberry plants against destructive molds. At low levels, it appears to be active against *Collectotrichum* and *Phomopsis*—two fungal pathogens especially troublesome to small-fruit growers.

Researchers think that CAY-1 might have broader applications, too. Several commercial companies are paying close attention to CAY-1's antifungal activity. They are testing it as a preservative for

baked goods and other foods and feeds. It might find use as a larvicide to control mosquitoes, a molluscicide to curb the zebra mussels running amok in the Great Lakes, or even as a mildew-fighting product for bathroom tiles. *Anthony J. De Lucca, USDA-ARS Food and Feed Safety Research Unit, New Orleans, Louisiana; phone (504) 286-4253, e-mail adelucca@srrc.ars.usda.gov.*

Orange Peel's Got Curative Powers

There's more good stuff lurking in an orange than just its vitamin C-rich juice. Studies show that carbohydrates in its peel have health-promoting effects. One of them, pectin, has prebiotic properties. Prebiotics are nondigestible foods or nutrients that increase growth of beneficial, probiotic bacteria in the large intestine, where they stimulate health and help curb foodborne pathogens.

Prebiotic carbohydrates, also known as oligosaccharides, are found in certain fruits and vegetables and are beginning to be used in food products and animal feeds. Now, antiadhesive prebiotics have been discovered that may prevent pathogens from binding to intestinal walls. Work is under way to find new, cost-effective methods to extract pectic prebiotics from orange peel, a low-value, abundantly available processing by-product. A commercial partner's being sought to further develop and commercialize this technology. *Arland T. Hotchkiss, USDA-ARS Crop Conversion Science and Engineering Research Unit, Wyndmoor, Pennsylvania; phone (215) 233-6448, e-mail ahotchkiss@arserrc.gov.*

Tiny Wasp Marks Whitefly Victims

The silverleaf whitefly, *Bemisia argentifolii*, causes far more damage than its size suggests it could. The minuscule, 16th-inch fly feeds on many plants, costing growers millions each year. And its emerging resistance to insecticides is

necessitating a search for alternatives for controlling the pest. One possibility is a parasitic wasp, *Eretmocerus mundus*. Its heat tolerance, host-specificity, and fecundity make it an appealing bio-control candidate.

Now researchers have found that *E. mundus* produces specialized lipids. The female uses these lipids to mark the backs of whitefly nymphs it has chosen for egg deposition. This cue warns away other wasps, thereby avoiding a duplication of reproductive effort. The deposited egg hatches into a wasp larva that then enters and consumes the fly nymph. This discovery may help improve efficiency of mass-producing *E. mundus* as a bio-control. *James S. Buckner, USDA-ARS Red River Valley Agricultural Research Center, Fargo, North Dakota; phone (701) 239-1280, e-mail bucknerj@fargo.ars.usda.gov. Walker A. Jones, USDA-ARS Beneficial Insects Research Unit, Weslaco, Texas; phone (956) 969-4851, e-mail wjones@weslaco.ars.usda.gov.*

Smooth-Root Sugar Beets

Most sugar beets are rough and grooved, so lots of soil sticks to them when they're pulled from the ground. The roots hold that soil through transport and processing, causing costly disposal problems. Sugar beets with smooth roots—more like those on regular red beets—would be a welcome improvement all along the way.

Two new breeding lines of smooth-root beets, known as SR-96 and SR-97, are ready for development into commercial varieties. Their sugar content is near the 17.5 to 18 percent in today's commercial varieties. The American Crystal Sugar Company of Moorhead, Minnesota—a farmer-owned cooperative—provided a high-sucrose line to help breeders raise the sugar content of smooth-root beets. *J. Mitchell McGrath, USDA-ARS Sugar Beet and Bean Research Unit, East Lansing, Michigan; phone (517) 432-2355, e-mail mitchmcg@msu.edu.*