

Corn Extract for Waxing Paper

Zein is a corn protein making up about half of the protein found in the corn kernel. Unlike other corn proteins, which are water soluble, zein repels water, making it an ideal coating material. It was discovered when researchers, at work on reducing the cost of distilling ethanol from corn, isolated it as a zein-lipid mixture. They found it had good grease resistance and water barrier properties.

Extracting such mixtures from ground corn should cost about \$1 to \$2 per pound. The zein coating would be suitable for most packaging material requiring waterproofing, such as boxes for perishable fruits, vegetables, or fish. *Nicholas Parris, USDA-ARS Engineering Science Research Unit, Wyndmoor, Pennsylvania; phone (215) 233-6453, e-mail nparris@arserrc.gov.*

What Do You Get When You Cross a Plum With an Apricot?

Why, a plumcot, of course. And this one, named “Spring Satin,” is the first such fruit well adapted to the medium-high chill areas of the Southeast. It produces beautiful white blooms in mid-March that mature into large, high-quality, reddish-black fruit in late May. The yellow flesh takes on a reddish hue as it ripens and develops very good flavor when soft.

This unique cross is tolerant of major plum diseases—like bacterial spot, bacterial canker, and plum leaf scald—that limit an orchard’s life-span in the Southeast.

Though the Spring Satin plumcot is now available to commercial growers, consumers won’t be seeing the fruit in grocery stores for about 3 years. It will take that long for the trees to mature for large-scale harvest. *William R. Okie, USDA-ARS Southeastern Fruit and Tree Nut Research Laboratory, Byron, Georgia; phone (478) 956-6405, e-mail dokie@saa.ars.usda.gov.*

Speedier Fat Analysis in Foods

Certain kinds of fats, called triglycerides, play a key role in the flavor and texture of food formulations. Seed oils—canola, corn, soybean, and sunflower—are a complex mixture of triglycerides, and predicting how they will change during food processing and storage is a complicated and time-consuming task.

Now the chore has been simplified by a new analytical technique that can show how triglycerides change under different circumstances. The technique is called reverse-phase high-performance liquid chromatography (HPLC)/atmospheric pressure chemical ionization (APCI) with mass spectrometry (MS)—or HPLC/APCI-MS.

The researchers can see intact triglycerides before they break down to form negative byproducts during storage or high-temperature frying. They’ve been able to identify from 35 to over 100 triglycerides in just 2 hours and to correlate their composition with the physical properties of food, such as melting range, mouth feel, and reaction to refrigeration. Eventually, the new technique could lead to margarines, shortenings, and cooking oils with good taste and longer shelf life. *Gary R. List, USDA-ARS Food Quality and Safety Research Unit, Peoria, Illinois; phone (301) 681-6388, e-mail listgr@mail.ncaur.usda.gov.*

Multiplying Macrophages the Easy Way—in Cell Culture

In humans and livestock, such as pigs, these amoebalike white blood cells help eliminate dead cells, used proteins, and other refuse. They also attack bacteria, viruses, fungi, or other disease-causing, or pathogenic, organisms at infection sites. And by “wearing” a dead pathogen’s proteins, macrophages also mobilize the immune system’s T-cells and antibody-producing B-cells.

The standard way of obtaining macrophages has been to flush them from fluids pumped into an animal’s lungs or peritoneal cavity. The new method begins with culturing precursor cells called monocytes from just 10 drops of blood on a special layer of “feeder cells.”

After several weeks, a bumper crop of hundreds of millions of mature macrophages is ready for storage or immediate research use. It doesn’t harm animal donors and yields cells similar to those found in the animals’ bodies.

Researchers are using cultured macrophages to study the virus that causes porcine reproductive and respiratory syndrome, which leads to late-term abortions, stillbirths, and other costly problems in pigs. *Neil Talbot, USDA-ARS Gene Evaluation and Mapping Laboratory, Beltsville, Maryland; phone (301) 504-8216, e-mail nthalbot@lpsi.barc.usda.gov.*

Shedding New Light on Deadly Bacteria

A prototype of a newly patented device tested at a large midwestern beef packing plant can successfully detect small amounts of fecal matter on meat animal carcasses. Invented cooperatively by ARS and Iowa State University (ISU) researchers, the instrument uses specific wavelengths of light to illuminate each carcass and then electronically analyzes the light that is reflected.

Work to commercialize the technology is being done under a cooperative research and development agreement with ISU and eMerge Interactive, Inc., of Sebastian, Florida. Optical and electronic engineers are working with scientists to develop both large-cut and whole-carcass detection systems. *Mark A. Rasmussen, Thomas A. Casey, USDA-ARS National Animal Disease Center, Ames, Iowa; phone (515) 663-7350, e-mail rasmuss@nadc.ars.usda.gov, tcasey@nadc.ars.usda.gov.*