Science Update

Spice May Be Nice for Controlling a Chicken Parasite

Adding oil or spice to chick diets can help stave off parasites that cause coccidiosis. The disease costs U.S. poultry producers $350 million a year in losses and antibiotics. One-celled *Eimeria* protozoa cause the disease. They infect a chick's intestines and cause lesions that hamper the bird's ability to absorb nutrients—slowing its growth or killing it. New alternatives for *Eimeria* control are needed. The microbe is becoming resistant to available drugs, and developing new drugs is costly. As new, natural feed additives, ARS researchers have tested high-fatty-acid oils from flaxseed and linseed plants. The oils don't kill *Eimeria*. They trigger oxidative stress, a natural, biochemical response in chicks. The stress results in byproduct compounds that doom *Eimeria* hiding in the cecum, part of the bird's small intestine. Mixed into commercial feed given to newborn chicks for 4 weeks, flaxseed oil cut by 54 percent the number of cecal lesions caused by *E. tenella*. Linseed oil in the diet reduced lesions 64 percent. Also of interest: cucurmin, an antioxidant from turmeric, a cooking spice in curries and other foods. The cucurmin targets protozoa in the mid-gut. Compared to untreated birds, turmeric-fed chicks had 58 percent fewer lesions from *E. maxima* and weighed 35 percent more. *E. tenella* and *E. maxima* are two of seven *Eimeria* species researchers hope to fight with the new strategy. *Patricia Allen, USDA-ARS Parasite Biology and Epidemiology Laboratory, Beltsville, Maryland; phone (301) 504-8772, e-mail pallen@ggpl.arsusda.gov/*

Microscopic Ally Fights Fruit Rot

Grapefruit, oranges, lemons, and limes could get a new ally to resist microbes. Scientists with ARS and Texas A&M University have discovered and patented a beneficial fungus that fought green mold on citrus in lab tests. The easy-to-grow fungus might someday reduce or eliminate the need for certain postharvest fungicides. It's a beneficial strain of *Geotrichum candidum.* In nature, wild or virulent *G. candidum* causes a fruit disease called sour rot. Dipping, spraying, or dusting fruit with a beneficial microbe is not a new anti-rot strategy. But ARS and Texas A&M researchers were first to discover and test the avirulent *G. candidum.* They suspect it could protect fruits other than citrus, such as apples, pears, and strawberries. *Cynthia C. Eayre, USDA-ARS Horticultural Crops Research Laboratory, Fresno, California; phone (209) 453-3162, e-mail ceayre@asrr.arsusda.gov/*

SCOTT BAUER (K5159-17)

Grapefruit infected with green mold.

Low Blood Protein May Mean Infection, Not Malnutrition

Doctors generally interpret a low level of transferrin, a blood protein, to mean a child or elderly person suffers from malnutrition. Recent findings suggest different, though often related, culprits are at work: infections spread by inadequate water and sewer sanitation. Poor sanitation facilities can spread flu and bacterial and other infections that alone may reduce transferrin. The finding comes from a joint study by the ARS-funded Children's Nutrition Research Center and the University of the West Indies in Jamaica. The scientists examined infected and severely malnourished children at the university's Tropical Metabolism Research Unit in Kingston, Jamaica. The finding is important for agencies serving America's poor, as well as for international relief agencies. Many children suffer from protein-energy malnutrition, or PEM. They get enough calories to survive, but their diets are low in protein. Infections can reduce the appetites of these children. And some of the calories they consume are used to fight infection rather than support growth and well-being. As repeated, undiagnosed infections use up the child's stored nutrients, he or she may develop classic hunger symptoms—including low transferrin. But according to the researchers, transferrin levels now used are not a good indicator of protein nutritional status. *Farook Jahoor, USDA-ARS Children Nutrition Research Center, Houston, Texas; phone (713) 798-7084, e-mail fjahoor@bcm.tmc.edu/*