Phytochemicals Keep The Doctor Away

ITHACA, N.Y. -- Time to adjust an old adage: It's the phytochemicals in the apple each day that keep the doctor away.

A combination of plant chemicals, such as flavanoids and polyphenols --collectively known as phytochemicals -- found both within the flesh of apple and particularly in the skin -- provide the fruit's anti-oxidant and anti-cancer benefits, say Cornell food scientists.

Their laboratory study, funded by the New York Apple Research Development Program and New York Apple Association, is published in the June 22 issue of the journal Nature.

Although it has long been known that apples provide anti-oxidant and health benefits, "this concept is different," says Rui Hai Liu, Cornell assistant professor of food science and lead author on the Nature article, "Anti-oxidant activity of fresh apples."

Says Liu: "Scientists are interested in isolating single compounds – such as vitamin C, vitamin E and beta carotene -- to see if they exhibit anti-oxidant or anti-cancer benefits. It turns out that none of those works alone to reduce cancer. It's the combination of flavonoids and polyphenols doing the work."

An anti-oxidant is one of many chemicals that reduce or prevent oxidation, thus preventing cell and tissue damage from free radicals in the body.

"In this research, we have shown the importance of phytochemicals to human health," says Liu's collaborator, Chang Yong Lee, Cornell professor of food science at the university's New York State Agricultural Experiment Station in Geneva, N.Y. "Some of the phytochemicals are known to be anti-allergenic, some are anti-carcinogenic, anti-inflammatory, anti-viral, anti-proliferative. Now I have a reason to say an apple a day keeps the doctor away."

Marian V. Eberhardt, a graduate student in food chemistry who works in Liu's laboratory, also was part of the research team.

The researchers found that vitamin C in apples is only responsible for a small portion of the anti-oxidant activity. Instead, almost all of this activity in apples is from phytochemicals. Indeed, previous studies have shown that a 500 milligram vitamin C pill might act as a pro-oxidant. The Cornell researchers found that eating 100 grams of fresh apple with skins provided the total anti-oxidant activity equal to 1,500 milligrams of vitamin C.

"Eating fruits and vegetables is better than taking a vitamin pill," says Liu. "You can obtain enough anti-oxidants from food without worrying about toxicity. What this study shows is the combination of phytochemicals plays a very important role in anti-oxidant and anti-cancer activity, and the real health benefits may come from a phytochemical mixture."

The researchers used red delicious apples grown in New York state to provide the extracts to study the effects of phytochemicals. The researchers compared the anti-cancer and anti-oxidant activity in the apple flesh, and they also studied the fruit's skin.

Using colon cancer cells treated with apple extract, the scientists found that cell proliferation was inhibited. Colon cancer cells treated with 50 milligrams of apple extract (from the skins) were inhibited by 43 percent.

The apple flesh extract inhibited the colon cancer cells by 29 percent. The researchers also tested the apple extract against human liver cancer cells. At 50 milligrams, the extract derived from the apple with the skin on inhibited those cancer cells by 57 percent, and the apple extract derived from the fruit's fleshy part inhibited cancer cells by 40 percent.

"The consumption of whole fruits may provide the balanced anti-oxidants needed to quench reactive oxygen species," write the researchers in the Nature article. "Phytochemicals other than ascorbic acid (vitamin C) ..contribute significantly to the anti-oxidant activity of apples and to the capacity to inhibit tumor cell proliferation."

Lee began studying the enzymatic browning action of apples about 15 years ago, identifying a variety of phenolic compounds and learning how these chemicals work during the apple's browning action. Liu and Lee are working to study the antioxidant activity of various fruits and vegetables. The researchers learned that the amount of phenolic compounds in the apple flesh and in the skin varied from year to year, season to season and from growing region to growing region.

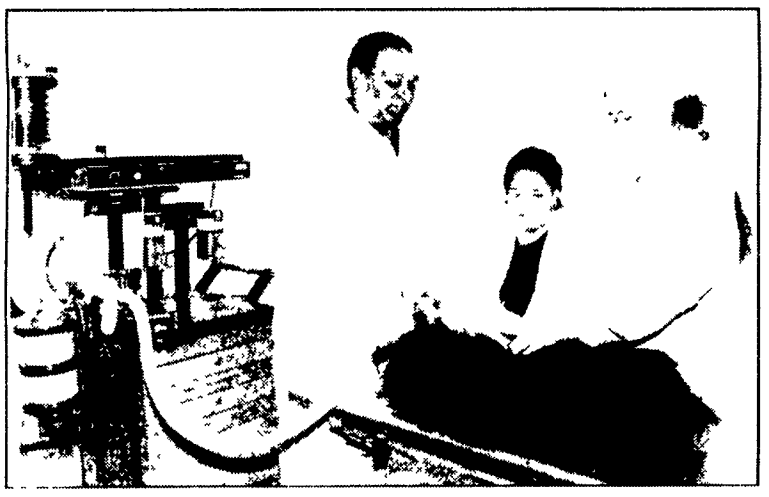
NY Farm Bureau Support Conservation District Priorities

Glenmont, New York, June 19, 2000...New York Farm Bureau, the state's largest general farm advocacy organization, is pleased with legislation that supports the Department of Agriculture and Market's Agricultural Environmental Management program and the indemnification of county Soil and Water Conservation district employees, who provide technical advice and assistance at the request of state agencies. Senate Agriculture Committee Chair, Nancy Larraine Hoffmann and Assembly Agriculture Committee Chair, William Magee have both been instrumental in their support for these efforts. Both bills await Governor George E. Pataki's approval.

"The passage of these two bills in both the Senate and the Assembly is significant for the agricultural industry and water quality for the entire state," stated John W. Lincoln, President of New York Farm Bureau. "Soil and Water Conservation employees deserve this much needed liability protection, as they help farmers and state agencies to improve and preserve our water quality."

The Agricultural Environmental Management (AEM) legislation will use a voluntary, case by case approach to water quality improvement, with an emphasis on local farmer involvement. AEM will bring technical expertise together with financial assistance to ensure that we maintain our state's water supply. Programs that are similar in concept to AEM have already been successfully implemented in areas such as the New York City Watershed, the Lake Champlain Watershed and the Skaneateles Watershed. These programs place New York State as a leader in incorporating this type of program for the betterment of agriculture and water quality.

New York Farm Bureau was pleased to work in tandem with the Soil and Water Conservation Districts as well as the Department of Agriculture and Markets on these important bills.



Substantial renovations have been made in the Agriculture Science Building at Alfred State College to accommodate the new veterinary technology program. Here, Dr. Melvin C. Chambliss, DVM (doctor of veterinary medicine), program coordinator, demonstrates operating room equipment for from left, Andrea Davis of Pine Bush,

College Offers NewVet Tech Program

ALFRED, N.Y. — A much-anticipated new program in veterinary technology will be offered at Alfred State College beginning this fall.

The State University of New York (SUNY) and the New York State (NYS) Education Department granted approval for the program, which will prepare graduates to pass the NYS Veterinary Technician Licensing Examination.

Veterinary technology, to be taught in the Agriculture and Horticulture Department, will prepare graduates to become trained members of the veterinary health care team. Graduates, who will receive an associate in applied science degree, will be knowledgeable in each facet of the anatomy, physiology, pathophysiology, and disease of companion, domestic, laboratory, and commonly seen exotic species. The graduates will also be proficient in animal care and management procedures as well as client communications.

Veterinary technicians, described by Alfred State College as compassionate, positive, highly motivated professionals dedicated to animal health care, find employment in private practice, biological research, laboratory animal research, zoological gardens, and other related scientific areas. The "vet-tech" is a vital member of the veterinary health care team and is trusted with diverse medical responsibilities.

Students who wish to pursue the veterinary technology program must have an excellent background in the sciences, mathematics, social sciences, and communications, both oral and written.

Some of the courses included in the new two-year curriculum are laboratory animal management, anatomy and physiology of large animals, animal disease control, animal health care, anesthesia and surgical nursing, radiography, and clinical laboratory techniques.

Alfred State officials believe that enrollment for the new program will come mostly from western New York and northern Pennsylvania.

Some 247 veterinarians in western New York were surveyed regarding the need for a vet tech program. Of those polled, 133, or 54 percent, responded. Of those responding, 83 percent said there is a need for more graduate veterinary technicians and 64 percent said there is a shortage of licensed veterinary technicians in western New York.

Some 221 guidance counselors in western and central New York were also queried. Of those, 151, or 68 percent, responded. Eighty-five percent of the responders replied that students in their schools expressed an interest in veterinary technology as a career choice, and 81 percent said that they thought students from their schools would consider enrolling at Alfred State College. The guidance counselors estimated between 214 and 293 students would enroll in such a program.

"The college has shown a great commitment in getting the new vet tech program launched," said Joan Wissert, chair, Agricultural and Horticulture Department. This includes substantial renovations in the Agriculture Science Building, which now includes the anatomy laboratory, laboratory animal, and anatomy / NECROPSY wet laboratory, surgical nursing-anesthesia/ radiology complex, kennell facilities, and faculty offices.

Wissert also noted that the community has been very supportive in the college's efforts to get the vet tech program off the ground.

While enrolled in the program, students will be required to complete a 120-hour "preceptorship" (internship). The preceptorship could be started and/or completed during the summer following the first year of course work. Some 103 veterinarians have expressed initial interest in student recruitment or in the preceptorship experience.

Dr. Melvin C. Chambliss, DVM, is Alfred State's program coordinator for veterinary technology.

For more information on vet tech, contact Chambliss at (607) 587-3009, fax: (607) 587-4721, or e-mail, Chamblm@alfredtech.edu. Or you may contact the Alfred State College Admissions Office at 1-800-4-ALFRED.

Jersey Cattle Field Day

If you are interested in learning more about Jersey cattle or are looking at introducing a grazing system to your operation, plan to attend American Jersey Cattle Association Field Day. This first Jersey Field Day highlights new and innovative ideas for raising calves, speeding milking systems, and techniques to spend less money to yield more profit. The day includes:

• 9:00-10:30 a.m. — PLEASANT VALLEY JERSEYS, Chambersburg. Lester and Douglas Martin and Paul Holderman families, former Holstein dairymen, are now milking over 300 Jerseys with a management intensive grazing system. Data describing the operation's improved profitability will be available and as well as local farmers who have been pasturing for several years.

Farm location: Exit 5 off of I-81, right unto Rt. 316 to New Franklin. Right at crossroads, right on second road (Guilford Springs Rd.) to second farm on right. 717-375-4367 or ptholder@innernet.net

• 1:00-2:30 p.m. — BRYNCOED JERSEYS, Middletown. Tom Williams hosts the next stop on the tour at Bryncoed Farm, one of the earliest Jersey dairies in Pennsylvania. They now milk 150 cows in the Harrisburg suburbs with a management intensive grazing system. Williams is known for his innovative ideas and has done extensive research on robotic milkers. There should be a video on this milking system available on the farm.

Farm location from Pleasant Valley Jerseys: I-81 North to Carlisle exit to PA Turnpike East to Exit 19 (Harrisburg East exit). After toll booth take second ramp to right (Highspire). Bear right onto Eisenhower Boulevard to first traffic light. Right onto Fulling Mill Road, one mile to farm on left. 717-939-7584 or twilliam@epix.net

• 4:30-6:00 p.m. — LONG MEADOWS FARM, Hamburg. Doc and Helene Dreisbach will be the next stop which features 120 Jerseys. These cows have been the high-input marginal return route and now receive the bulk of their roughage through grazing about eight months of the year. The Dreisbachs feel that in addition to improved herd health and a lower cull rate, grazing portrays a positive image of dairying to the public.

Farm location from Pleasant Valley Jerseys: I-283 North to I-83 North to I-81 North to I-78 East. Take exit 8 (Shartlesville), bear to the right to stop sign on Old Rt. 22. Turn left (east) and go through town. Four miles east of Shartlesville, turn left on Walnut Road. At stop sign turn right. 610-562-3966 or hzd94@aol.com.

Preregistration is not required but is requested. Please contact the farms or Paula England at American Jersey Cattle Association (pengland@iwaynet.net) or call 614-861-3636. Also plan to attend the Summer Splash at Meadow View sale on Tuesday. For lunch there are restaurants in Carlisle before the PA Turnpike or after exiting the Turnpike in the Harrisburg area. Dinner will be served at Long Meadows Farm at 6:30 p.m.