NUTRITION

Too Much Spinach Bad If Taking Anticoagulants

➤ EAT YOUR SPINACH, but not too much, if you have had a coronary heart attack and are taking anticoagulant drugs. The reason is that spinach and other leafy vegetables contain vitamin K, too much or too little of which can be dangerous.

The delicate balance of vitamin K, which helps in clotting the blood, and the drug Dicumeral, given orally to slow up blood clotting, must be carefully watched, Dr. Armand J. Quick of Marquette University, Milwaukee, warned at the international symposium on the use of anticoagulants in Miami Beach, Fla.

Too little attention has been paid to the diet of patients on long-term anticoagulant therapy, claimed Dr. Quick, who is known for the "quick test" used in estimating clotting time. The big danger to heart patients who have blood clots is that they can block the coronary arteries.

He reported the case of a man on anticoagulant drugs for almost three years who increased his intake of green leafy vegetables. The man's blood clotting time returned to normal, interrupting the effect of the drugs.

The more vitamin K stored in the tissues, the more resistant the body becomes to anticoagulants, Dr. Quick explained. He said that it is even worse, however, if the patient loses his appetite and gets too little vitamin K.

Taking aspirin further complicates the balance between anticoagulants and vitamin K because aspirin itself is a mild "antagonist" of vitamin K.

• Science News Letter, 85:56 Jan. 25, 1964

CHEMISTRY

New Batch of Man-Made Rare Elements Created

➤ A NEW BATCH of highly valuable man-made atoms which do not exist in nature has been separated in the University of California Lawrence Radiation Laboratory, Berkeley.

The atoms—of elements 97 (berkelium), 98 (californium), 99 (einsteinium), and 100 (fermium)—were created in a "bootstrap" operation that began over a decade ago as part of the Atomic Energy Commission's national research program. They are being used in the exploration of a synthetic world of matter.

The exotic elements were contained in a tiny aluminum capsule (slug), about an inch high and half an inch in diameter, which has been "cooking" for over four years in the high flux of neutrons in the materials testing reactor at the AEC's National Reactor Testing Station in Idaho Falls, Idaho.

Heavily shielded, the hot slug was brought to a special miniature chemistry laboratory at the Lawrence Radiation Laboratory, surrounded by a six-foot-thick wall of water tanks.

There chemists, working outside the water wall and using master-slave manipulators, conducted the complicated chemical procedures used to extract the precious heavy elements from the fission products that are also created in the reactor "cooking" process.

The scientists obtained 50 micrograms of californium-252, 0.2 micrograms of einsteinium-253, 0.0005 ng nanogram—billionth of a gram) of fermium-255, 6 micrograms of berkelium-249, and 150 milligrams of curium-244.

The curium-244 has been repackaged and returned to the reactor, where it will be transmuted into heavier elements during the next two years.

Production of elements heavier than curium was started in 1945 under a program which was the primary responsibility of Dr. Stanley Thompson, chemist at the Lawrence Radiation Laboratory. The present program got under way a decade ago when plutonium-239 was put into the Idaho reactor. Over the years the atoms capture one neutron after another (multiple neutron capture) and are converted to successively heavier elements. More fission products are formed than heavy elements, however.

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OCEANOGRAPHY

Sea Nocturnally Noisy, Fish 'Talk' More at Night

➤ IT IS THE nocturnal fish, gossiping, talking and whooping it up during the night hours, that make the most fish noise in the not-so-silent sea.

The noisiest night prowler in the ocean may be the squirrel fish, reported Marie Poland Fish of the Oceanography Graduate School, University of Rhode Island. This curious, red-colored fish usually remains hidden in the rocky crevices of his home during the day, but begins to prowl for food and company after the sun goes down.

Another noisy family of fish is the croaker family, pointed out Mrs. Fish who has been studying marine noises for the past 17 years. These edible fish get their name from the croaking sounds they make when pulled out of water. Under water they sound just like a pneumatic drill boring into concrete, she added.

Croakers are especially noisy during their breeding season. A grunting croaker can be heard through at least 25 feet of water. He makes his odd noise by rapidly vibrating two special muscles attached to the walls of his air bladder. This bladder seems apparently designed for noise-making, for it has two hornlike extensions at the front end and a single taillike one at the rear.

The study of sounds made by underwater creatures is becoming increasingly important. By patiently analyzing the rasps, grunts, yelps, grindings, squawks and other assorted noises from the sea, scientists are beginning to learn more about the vast oceans that cover two-thirds of our earth.

By tracking down the sounds of certain fish, fishermen may be able to locate schools of commercially valuable fish. Due to the Navy's constant vigil of exploring the sea, noises that once before were mysterious and baffling can now be identified.

• Science News Letter, 85:56 Jan. 25, 1964

IN SCIEN

MATHEMATICS

Corporation Award Goes to Mathematicians

➤ THE RESEARCH CORPORATION AWARD for 1963 will be shared by Drs. Paul J. Cohen of Stanford University and Heisuke Hironaka of Brandeis University, Waltham, Mass.

The announcement of the winners of the $10,000 award, given annually for outstanding achievements in science, was made by J. William Hinkley, president of the foundation. The 1963 award will be presented in New York on January 30. Drs. Cohen and Hironaka have recently resolved by highly original means a famous and important problem in mathematics.

Dr. Cohen, 29, associate professor of mathematics at Stanford University, California, is being cited for his proof of the independence of the continum hypothesis and of the axiom of choice, and initiating a whole series of advances in the field.

Dr. Hironaka, 32, associate professor of mathematics at Brandeis, is being recognized for his work which liquidates the classical problem of algebraic geometry on the resolution of singularities of an algebraic manifold, and pointing the way to new progress in an old field.

Among recipients of this award since 1925, 11 have received Nobel Prizes.

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VETERINARY MEDICINE

Horsemeat Changes Growls to Purrs

➤ SCIENCE is replacing a fierce, snarling personality with sweet temper—but, so far, only with ferrets.

By feeding ferrets a special diet, veterinarians can change the wild antagonistic creatures into gentle pet-like animals.

Usually the small lean ferrets are fierce killers of poultry and small rodents, and have even been known to attack children. They are friendly to no man.

But with a daily diet of three parts of fresh horsemeat, two of dog meal and one of fresh milk, they become gentle.

This personality changeover was noticed by chance at the National Animal Disease Laboraotry in Ames, Iowa, where ferrets are under study because they are highly susceptible to canine distemper.

The full effect of the diet on personality was not known until the keepers changed the diet to a dry mixture to keep the cages cleaner. The gentle ferrets grew fierce again.

To check the surprising personality change, veterinarian A. G. Edward divided 92 ferrets into two experimental groups. Those fed on horsemeat diet remained gentle, while those on the dry diet reverted to their old tricks of snarling and biting.

• Science News Letter, 85:56 Jan. 25, 1964

CE FIELDS

BOTANY

Wineglass-Shaped Tree Seen as Elm Substitute

➤ A WINEGLASS-SHAPED cousin of the crooked Zelkova tree is seen as a replacement for the graceful American elm which is rapidly dwindling due to Dutch elm disease.

The new variety, *Zelkova serrata,* is one of the few trees that looks like the American elm but, like other Zelkova trees, is immune to Dutch elm disease. It also is distasteful to Japanese beetles and certain bark beetles.

Originally from Japan and Korea, most Zelkova trees have crooked trunks and drooping heads. In the United States, there are some Zelkovas in Cleveland, Ohio, and Rochester, N. Y., and in almost every botanical garden, William Flemer III of Princeton, N. J., who developed the new variety, told SCIENCE SERVICE.

The new Zelkova grows rapidly and has a straight, smooth trunk that branches into a graceful spray. In the fall, its exceptionally large, thick dark-green foliage turns a rusty red. The saw-toothed leaf looks almost exactly like an elm leaf.

Although Zelkova trees in Japan have been said to reach 150 feet, those in the United States usually reach only 50 to 60 feet, he said.

Mr. Flemer developed the tree by crossing different species of Zelkova seedlings obtained from the Institute of Forest Genetics in Korea. The U.S. Patent Office awarded him plant patent 2,337 for the variety.

At the same time, he received patents for two other tree varieties—a pagoda tree that adapts easily to city life because its dark, glossy green foliage resists soot and fumes, and a sugar maple hybrid, with much finer foliage, obtained by crossing a sugar maple with a black maple.

He received U.S. plant patents 2,338 and 2,339 for the pagoda and maple trees respectively. Rights to all three patents were assigned to his partnership, the Princeton Nurserymen's Research Associates in Princeton.

• Science News Letter, 85:57 Jan. 25, 1964

MEDICINE

Study Offers Hope to Angina Pectoris Victims

➤ A NEW RAY of hope has been held out to victims of angina pectoris through a six-year pioneering study of heart surgery at the University of California, Los Angeles, Medical School.

A sizable team of specialists, including cardiologists, radiologists, and surgeons, has been engaged in the study.

Angina pectoris, with its excruciating crushing pain, is the result of the plugging of major blood vessels, the coronary arteries, which feed the heart muscle. Object of the UCLA operation is to remove the obstruction from the major coronary arteries.

During surgery the obstructed vessels are actually split open in the area of the obstruction while the heart is still beating. With special tools designed at UCLA the obstruction is literally reamed out.

The first successful direct-vision, surgical opening of diseased, obstructed heart arteries was performed by UCLA surgeons in December 1957. Since that time 21 patients have had surgery designed to restore circulation to starving heart muscles.

Eleven of the 21 died, either during or after survery. Of the 10 survivors, four have survived more than four years.

"Results were initially discouraging, largely because the patients were very ill and very poor risks," a spokesman for the UCLA team said. Recent advances have markedly decreased the risks of the operation, he added.

"We are almost to the point where such surgery may become available to younger angina pectoris victims, whose heart muscles and valves are still relatively unscarred from their disease. Results in such a group of patients should be considerably better."

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CHEMISTRY

Synthesized Compound May Help Lasers

➤ A NEW COMPOUND has been synthesized that may help scientists find the way to make semiconductors that can operate at very high temperatures, lasers that can emit radiation over a wide range of wavelengths and improved electroluminescent devices.

Specifically it is hoped that the new compound, boron phosphide hexaiodide (BPI-6), will lead to the custom growth of single-crystal boron phosphide, a compound having semiconducting properties.

The new compound was reported by Dr. A. F. Armington, Solid State Sciences Laboratory, Air Force Cambridge Research Laboratories, Bedford, Mass.

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MEDICINE

First-Time Drug Cure For Human Trichinosis

➤ A DRUG CURE for human trichinosis is believed to have been achieved for the first time by a team of Texas physicians.

A 34-year-old woman with 103-degree fever and muscle pain so severe that she could not walk without help, showed dramatic improvement after two doses of thiabendazole, an anti-worm drug used extensively in animals. The drug's trade name is Thibenzole, produced by Merck, Sharp & Dohme Research Laboratories, West Point, Pa.

Drs. Orville J. Stone, Charles T. Stone Jr. and J. Fred Mullins of the University of Texas, Galveston, reported the case in Medical World News, 5:40, 1964.

• Science News Letter, 85:57 Jan. 25, 1964

TECHNOLOGY

Two Computers Solve Problems Together

➤ TWO ELECTRONIC computers can now solve highly complicated scientific problems by "talking together" as business associates might talk.

Each computer may consider a different aspect of the same problem, with the two machines comparing their results before arriving at a conclusion. Or one of the computers may be called on to act as "supervisor," telling his "employee" (another computer) what to do, and rejecting unsatisfactory solutions until at last the proper decision is achieved.

In still another situation, the computers may work independently, considering different problems or entirely different aspects of the same problem.

The system in operation at Argonne National Laboratory, Ill., is called GUS, which stands for GEORGE Unified System. It consists primarily of a modified version of GEORGE, a large electronic digital computer, and FLIP, an even larger Argonne-built computer.

The new computer system has just become operational, and a third computer, an analog machine, soon will be added to the GUS system.

GEORGE and FLIP share the same high-speed memory, and at any given time there may be as many as seven computers or other devices in the system. The memory units which are the heart of the GUS system make it possible to obtain information instantly from three banks of tiny magnetic cores.

Dr. W. F. Miller, director of the division, and Richard A. Aschenbrenner, associate computer engineer, were responsible for the over-all system design.

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BIOCHEMISTRY

Why Alcohol-Sedative Mixture Can Kill

➤ MANY PERSONS have heard that they could die from mixing sleeping pills with alcohol, and now a good scientific explanation has been offered.

The barbiturate drugs used in sleeping pills hinder the body's ability to dispose of the alcohol, Dr. Jack E. Wallace, biochemist at the Lackland Air Force Base, San Antonio, Texas, told the American Chemical Society's Southwest Regional meeting in Houston, Texas.

Because of this interference, the depressant effects of the barbiturate and the alcohol are combined to become lethal.

The drugs interfere with an enzyme called alcohol dehydrogenase, which controls the first step in the disposal of alcohol. Enzymes control the speed of the body's processes.

Dr. Wallace and his collaborator, Dr. Elmer V. Dahl, found in test-tube studies and preliminary work with rats that although different barbiturates vary in their effect on the enzyme, all barbiturates hinder the process.

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