SCIENCE/TECHNOLOGY CONCENTRATES

Science

Vitamin D metabolite used in bone repair

The 24,25-dihydroxy derivative of vitamin D might play an important role in repair and building of bones, according to Dr. Shmuel Edelstein, a biochemist affiliated with the Weizmann Institute in Rehovot, Israel. Elderly people, particularly those whose broken bones are slow to heal, "show significantly lower levels" of that derivative than do younger people, he notes. The derivative is being tested to determine whether, for example, it speeds healing of human hip fractures. In earlier research the derivative promoted healing of bone fractures in animals, such as chicks.

Prenatal chemical exposure to be tested

Four chemicals will be studied for prenatal effects on animal offspring in a five-year, $3 million contract from the National Institute of Environmental Health Sciences to Battelle Columbus Laboratories. The two compounds chosen to date are Arochlor 1254, a polychlorinated biphenyl, and phenytoin, a drug used to control epilepsy. A group of rats and mice exposed to test compounds prenatally and two years after birth will be compared with a group exposed only after weaning. The first three years will be spent determining suitable doses and the last two in observing animals for any toxicity problems, signs of cancer formation, and effects on immune systems, reproduction, and behavior.

Scientists invited to evaluate new NMR

A new high-resolution, 600-MHz nuclear magnetic resonance (NMR) facility at Carnegie-Mellon University in Pittsburgh needs evaluating. Scientists are invited to submit one-page proposals for short-term (one week or less) projects that will put the instrument through its paces. A variety of projects then will be scheduled for this spring, and participating scientists also will take part in a symposium once projects are completed. Proposals may be submitted to Dr. Kenneth D. Kopple, Chairman, NMR Facility Advisory Committee, Dept. of Chemistry, Illinois Institute of Technology, Chicago, Ill. 60616.

New way to measure circular dichroism

A more sensitive and faster means of measuring vibrational circular dichroism (VCD) is being developed by scientists at Syracuse University and at Nicolet Instrument Corp., Madison, Wis. [*J. Am. Chem. Soc.*, **101**, 490 (1979)]. They substitute a Fourier transform infrared spectrometer for an instrument with a dispersive grating that depends on a monochromator to generate spectra. The new method gives resolution of about 8 cm^{-1} compared to about 14 cm^{-1} for the presently used dispersive VCD. Though the signal quality obtained in the new method is somewhat poorer than in the older method, both the location and overall magnitude of spectral peaks, for example, of camphor, correspond closely in the two methods.

Cancer drug goes to clinical trials

Chlorozotocin will undergo clinical trials by Dome division of Miles Laboratories to treat a wide range of cancers. The trials are being carried out under a National Cancer Institute contract. Dome expects to spend more than $2 million studying the nitrosourea compound and hopes to market it before 1984. The agent was synthesized in 1974 at Southern Research Institute, and NCI studies indicate it has less bone marrow toxicity than other nitrosoureas. Miles spokespersons note that assignment of clinical testing to a drug firm is a departure from usual NCI policies of conducting all tests up to marketing, and they say it marks the beginning of increased government collaboration with industry.

Education

Chemistry courses move away from theory

A general shift away from theoretical chemistry and toward practical education programs appears to be widespread throughout the world, according to reports in the most recent *International Newsletter on Chemical Education*, published by the International Union of Pure & Applied Chemistry. For example, molecular orbital theory has been entirely eliminated from the senior high school curriculum in Japan and experimental work is now being stressed. In Britain, an increasing number of organizations are trying to coordinate school curricula with industrial needs. The newsletter is available from IUPAC, 2-3 Pound Way, Cowley Centre, Oxford OX4 3YF, U.K.

Technology

Solar electricity to power communications

Silicon solar cell modules with 30 kw total capacity will furnish electricity for an Australian National Railways communications system under a $500,000 contract to Solar Power Corp., Woburn, Mass. Modules will be installed at each of 24 repeater stations about 22 miles apart to recharge batteries for a $5 million, 72-channel, integrated microwave-VHF communications system along a new line to be opened in 1980.

Ammonium nitrate process available

An ammonium nitrate process developed jointly by ICI Australia and KemaNord A.B. of Sweden is being offered by the developers for licensing. In the process, the basic crystals are modified to improve tolerance to temperature cycling without phase change by extending the threshold temperatures from 2° to 16°C around the 32° C transition point. Similar results occur around the − 16° C transition. This, ICI Australia says, minimizes formation of lumps and dust by minimizing or avoiding expansion and contraction of ammonium nitrate crossing and recrossing the now widened phase boundaries.

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