

BIOMEDICINE

Keeping the ulcer away

In 85 to 90 percent of patients who have suffered from a duodenal ulcer, the ulcer recurs in the years following. Now there is a treatment that may cut that recurrence rate substantially. The Food and Drug Administration has approved the first drug to be administered to prevent ulcer recurrence. The drug is "Tagamet" (cimetidine), which is already in use for promoting ulcer healing.

In a double blind study conducted in the United States and several other countries, 1,200 ulcer patients took the drug for a year. Only 13 percent of U.S. "Tagamet" patients had ulcer recurrence, compared with 53 percent of the placebo group. The medicine was taken at bedtime, because the stomach surface seems to be most vulnerable to gastric acid at night when less food is present. "Tagamet" suppresses acid secretion by blocking histamine receptors of the cells that secrete gastric acid in the stomach. SmithKline Corp., which produces "Tagamet", is now studying the drug's potential for preventing stress ulcers in seriously ill, hospitalized persons. Other research with the drug is exploring its use in managing inflammation, regulating immune response and influencing the cardiovascular system.

Identical twins sniff differently

Heredity is not a significant factor in normal perception of pungent, sweaty and camphoraceous odors, a study on 97 pairs of twins concludes. Helen B. Hubert and colleagues at the National Heart, Lung and Blood Institute and Kenneth S. Brown at the National Institute of Dental Research presented increasing concentrations of each of three chemicals to 51 pairs of identical twins and 46 pairs of fraternal twins. All the twins were men aged 42 to 56 chosen from the National Academy of Sciences-National Research Council Twin Registry. The chemicals used to represent three "primary" odors were acetic acid, isobutyric acid and cyclohexanone.

The two groups of twins did not differ significantly in similarity of smell sensitivity between twins of a pair, according to the May 9 SCIENCE. If odor perception has a measurable genetic component, olfactory sensitivity should be more similar between identical than between fraternal twins. The scientists next tried to determine environmental factors that could explain differences in sensitivity. Among the factors considered, which included age, smoking, drinking and eating habits, the clearest association was with cigar or pipe smoking and with body fatness. Smokers and lean subjects were less sensitive to the odors than were the nonsmoking, plumper twins. The investigators suggest that a heightened olfactory sensitivity of fat persons may be part of a complex of sensory and psychological responses that includes appreciation of food and drink.

Diet pills must trim down drug dose

Nine nonprescription diet products are being taken off the market because they contain twice the current allowable dose of an appetite suppressant drug called phenylpropanolamine hydrochloride. The Food and Drug Administration has requested removal of four other diet products, but has not received a response from the companies manufacturing them. Drugs containing smaller amounts of the drug, which is called PPA, are not subject to the regulatory action. The FDA has approved PPA at levels of 37.5 milligrams in a regular, immediate dose and 75 milligrams in a 24-hour sustained-release (time capsule) product. An advisory panel suggested the FDA raise the approved level, but the full agency did not act on that suggestion, and is not likely to approve it soon. In clinical studies PPA has produced significant, although temporary, increases in blood pressure.

EARTH SCIENCES

Icy measurements of ancient CO₂

Among the many treasures that Antarctica has to offer — meteorites, fossils, krill — are air bubbles trapped in its long-lived polar ice. These bubbles are remnants of the earth's ancient atmosphere, dating back as far as 100,000 years. For scientists they are a fortuitously direct means of examining former atmospheric composition. But one important constituent — carbon dioxide — has been difficult to reconstruct. Scientists know less CO₂ occurred in the past than in the present atmosphere, yet all CO₂ measurements from ice cores are unrealistically high.

Now, in the March 13 NATURE, three French researchers report a modified technique that gives more realistic CO₂ measurements. Their method shows that about half the current level of CO₂ was present in the atmosphere during the coldest part of the last ice age, about 15,000 to 20,000 years ago. In the classical method, ice cores are melted in a vacuum and the gas content measured chromatographically. Robert J. Delmas, Jean-Marc Ascencio and Michel Legrand of the Laboratoire de Glaciologie et de Géophysique de l'Environnement suggest that contaminants in the meltwater, such as sea salt, may increase the amount of CO₂. They developed a "dry extraction" method in which the ice is pulverized in closed containers at temperatures below freezing and the released gas then measured chromatographically. Their analysis of two Antarctic cores shows that the atmospheric CO₂ 15,000 to 20,000 years ago was 0.016 percent compared with 0.033 percent today.

When it rains, it flows

With an eye toward the implications for radioactive waste storage in salt, two Scottish researchers report seasonal movements of salt "glaciers" in Iran.

Like bizarre extraterrestrial mountains, ragged salt domes jut from the desert of southern Iran. Several of the domes are accompanied by extruding sheets of salt known as salt glaciers. The glaciers were originally thought to have been pushed abruptly and rapidly to the surface like hot, flowing lava and to have stayed put through the eons. But Christopher J. Talbot and Eric A. Rogers of the University of Dundee charted patterns of "continuing seasonal flow" in the glaciers, they report in the April 25 SCIENCE. The researchers painted markers on the eastern edge of one salt glacier in January 1977 and followed its behavior from the end of one annual rainy season to the beginning of another in November 1977. Though the flow is by no means constant, they found that the glacier advances some permanent distance each rainy season and flows and retreats with no net change during the dry season.

Sampling the ocean crust on land

By a fortunate twist of plate tectonics, the process of sea floor spreading comes ashore at several places, such as Iceland and Cyprus. Because those places are far more accessible and much less expensive to get to than the bottom of the ocean, the five-nation International Crustal Research Drilling Group has decided to drill there. In Iceland, the researchers propose to drill a 4.5-kilometer-deep hole in the southwest part of the country where the Mid Atlantic Ridge surfaces. This project offers the opportunity to drill an active spreading center and to sample the lowest region of oceanic crust. In Cyprus, the scientists hope to drill as many as three holes, each 1 km to 20 km deep. While active spreading is no longer occurring in Cyprus, such holes may allow researchers to sample deep oceanic crust and to examine the process of ore formation by the circulation of hot water through the ocean crust. Drilling at one of the two sites will begin in 1981 or 1982.