

CANCER

Anesthetics and cancer drugs

Each of the drugs now available for treating leukemia patients affects normal as well as tumor cells. Light anesthesia with either halothane or nitrous oxide used in conjunction with two anticancer agents, ara-C or vinblastine, appears to have a selective, protective effect on normal cells, a team of United States and Canadian scientists report in the June **CANCER RESEARCH**.

Drs. David L. Bruce of Northwestern Medical School in Chicago and Hsui-san Lin and W. R. Bruce of the Ontario Cancer Institute in Toronto have studied this selective action in experiments with 5,000 mice. The anesthetics, they found, in no way reduced the ability of ara-C or vinblastine to destroy malignant cells, but almost totally blocked their effects on healthy ones.

PACEMAKERS

Promethium as power source

Cardiac pacemakers currently in use throughout the world are powered by mercury batteries. Implanted surgically, they keep damaged hearts beating by supplying regular electrical impulses. A major drawback is that the power sources must be replaced every two and a half years.

Although research centers in a number of countries are attempting to develop units powered by long-lived radioisotopes, excessive heat and the need for shielding to protect tissues from radiation are basic disadvantages of such designs.

A pacemaker that employs promethium 147 as a power source and needs to be replaced only at intervals of 10 years has been developed by F. C. Gatt of the Australian Atomic Energy Commission's Engineering Research Division. Promethium 147 is relatively cheap and is an easily processed product of nuclear fission. It emits beta particles. The idea is to alternate promethium 147 and silicon crystals to build a multilayer miniature electric generator. While passing through silicon, each beta particle emitted by the promethium releases about 1,000 electrons, which provide the electrical power. Gatt says the present aim is a device that will produce 40 microamperes at 5 volts.

Although the new battery system does need some shielding, it produces minimal heat and occupies only about a third of the volume of batteries currently in use.

BURNS

Combination drug effective

Silver sulfadiazine, a chemical being tested for burns, shows special antibacterial and healing properties that have reduced the number of deaths and severity of scarring.

Dr. Charles L. Fox Jr. at Columbia University's College of Physicians and Surgeons in New York City started with the sulfa drugs and silver nitrate now used for burn treatment. He combined these two compounds to give silver sulfadiazine the antibacterial action of both. Unlike silver nitrate, however, the new chemical does not stain the wounds or dressings. Unlike the sulfa compounds, it does not produce serious side effects or cause

pain or hyperventilation. Dr. Fox applies silver sulfadiazine directly to burns as a one percent cream with or without bandaging.

In another study, Dr. Charles R. Baxter, an associate professor of surgery at the University of Texas Medical School, tested the effectiveness of silver sulfadiazine without bandages on 345 burn victims at Parkland Memorial Hospital in Dallas, Tex. He reports that the chemical effectively controlled infection and aided in healing in cases where half or less of the total body area was burned.

TOOTH DECAY

Bacterial adhesion

Saliva causes some of the microbes found in human dental plaque to stick together, reports Dr. Ronald J. Gibbons of Forsyth Dental Center in Boston. This adhesion forms the first layer of bacteria on the teeth, thus allowing formation of bacterial colonies to attack the teeth and gums, he says. He found that 28 of 62 types of bacteria freshly isolated from human dental plaque would stick to each other in whole saliva.

In a related study at the center, Dr. J. Van Houte reports that 46 of the 62 types of bacteria adhere directly to the tooth enamel. One type, he says, *coccolibacillus*—Strain 26—stuck so strongly within 30 minutes that it could not be washed free or separated by centrifugation. When the powdered tooth enamel was pre-soaked in saliva, some of the strains stuck even more firmly.

The fact that some bacteria did not adhere to the tooth enamel in the test tube may explain why some types abound in the mouth but not on the teeth.

CIRRHOISIS

Histamines and hangovers

Cirrhosis of the liver is rare in cats, but not so rare in dogs. Dr. E. R. Trethewie of the Department of Physiology of the University of Melbourne in Australia found that when ethyl alcohol was perfused through livers excised from both animals, histamine was released from the dogs' livers but not from the cats'.

Dr. Trethewie then gave alcohol in dosages equivalent to that of heavy drinkers—a bottle of whiskey per day or two bottles of wine—to anesthetized dogs and cats. After the animals died, their livers were closely examined for histological changes. Cellular damage, including fatty degeneration typical of cirrhosis, was found in the dogs' livers, but changes in the cats' livers were much less apparent.

Other experiments by the researcher show that horses whose livers also contain considerable amounts of histamine develop cirrhosis when pastured where the weed heliotrope is growing. If they are given antihistamine the condition does not develop.

It is known that histamine stimulates fibrosis in wound healing, and Dr. Trethewie believes that alcohol may increase fibrosis in the liver by causing histamine to be released. Accordingly, he suggests that an antihistamine would ward off cirrhosis if taken before drinking begins. He says it might also reduce the severity of hangovers.