life sciences

PYRAN COPOLYMER

Stimulating white cells

A chemical that received attention in the past because of its ability to stimulate interferon production in the body appears to have a general stimulatory effect on white blood cells, man's first line of immune defense. As such, it may be useful in protecting against infection or in treating cancer or transplant patients. Dr. William Regelson of the Medical College of Virginia told an American Chemical Society meeting in Richmond that evidence also suggests that Pyran Copolymer may alter the body's response to drugs and affects blood clotting.

"The stimulation of the white cells is a rediscovery of a concept which was very popular at the turn of the century," Dr. Regelson says. Pyran Copolymer is a synthetic polyanion or plastic that, as a drug, stimulates the reticuloendothelial (RES) system—a defense system located in the liver, spleen and lymph nodes. Depending on the time at which it is administered, it can either block white cell activity or trigger it.

By an unknown method, Pyran Copolymer also changes rates of drug metabolism, in some cases heightening the activity of drugs that are otherwise broken down too quickly to be of clinical use. In animal studies, for example, it prolongs the response to barbiturates, increasing sleeping time.

The possibility that this plastic drug may be a potential anticoagulant stems from evidence that it interferes with the formation of fibrin, the final structure in the formation of a clot, without having such strong action that it induces hemorrhage.

PATHOLOGY

Mouse model of heart disease

A bug that causes Chagas' disease (a muscle disorder) in man and which is thought to have attacked Charles Darwin during the voyage of the Beagle has become a useful tool to scientists investigating heart disease. Mice exposed to the parasite, *Trypanosoma cruzi,* suffer enlarged hearts and heart failure.

According to three Boston researchers, it is the first time that an experimental model of congestive heart failure of known natural causes has been produced consistently in a laboratory animal. Infections by the parasite inflamed heart muscles and were associated with the presence of blood clots, Drs. Raj Kumar, Irwin Kline and Walter Abelmann of Harvard Medical School report in the October AMERICAN JOURNAL OF PATHOLOGY.

VIROLOGY

Flu virus hit by drug

An experimental compound called UK 2054 appears to be effective in combating infections from B type flu viruses, Drs. P.N. Meehan and Irene Hillary of University College in Dublin report.

UK 2054 was given by mouth to 24 volunteers and as nasal drops to five others. Thirty-eight volunteers received a placebo. All of these individuals were then exposed to B type viruses, administered nasally. Twenty-four of the volunteers who received UK 2054 were protected from the flu. Of the 38 given a placebo, only 19 remained well. Other tests show that the experimental compound may also have some activity against strains of viruses causing Asian flu.

SMALLPOX

Routine vaccination challenged

Smallpox vaccinations, long routine preventive medicine forced on most American school children, should be abandoned as standard procedure, a scientist from the National Communicable Disease Center in Atlanta urges. Instead, the vaccinations should be given only to high risk groups, including military recruits.

Dr. J. Donald Miller told the meeting of the American Public Health Association in Philadelphia this week that 7 children of the 14 million vaccinated last year died as a result, and that the vaccinations lead to unknown numbers of mild or violent reactions.

Because the threat of smallpox in the United States is virtually non-existent, he argues that the risks of vaccination now outweigh the benefits. In addition, more than 50 nations have eliminated the disease since World War II, reducing the threat of its being imported.

Previously, Dr. Ernest Herrmann of the Mayo Clinic also urged an end to routine smallpox vaccinations. His grounds were that it is dangerous to certain children (SN: 8/23, p. 148).

The NCDC's advisory committee on immunization practice in the U.S. recommends continuing vacccination for all school children at this time.

Most countries, including the U.S., require smallpox vaccination certificates for international travel.

PHARMACOLOGY

Drug reduces cholesterol

Experimental studies with a new drug, colestipol, show that it reduces levels of cholesterol in blood without inducing untoward side effects, investigators from the Upjohn Company in Kalamazoo, Mich., report.

Cholesterol, explains Upjohn's Dr. Thomas M. Parkance from the Food and Drug Administration, has been tested in human beings for about 13 months. It may become useful in treatment of Frederickson's Type II disease, characterized by excessive levels of fats in blood.

Cholesterol, explains Upjohn's Dr. Thomas M. Parkinson, is taken from the blood by the liver, where it is converted into bile acids essential for digestion in the intestine. Colestipol, an insoluble drug that is not absorbed into the blood stream, acts in the intestine, where it forms a complex with bile acids.

The complex cannot be reabsorbed and is therefore excreted. As a result, larger than normal quantities of bile acids are eliminated daily, forcing the liver to take additional cholesterol from the blood in order to make enough bile acids for digestion. Thus, blood cholesterol levels drop.

In present tests, about 100 patients are given five grams each of colestipol—about a tablespoon—three times a day before meals.