life sciences

ARTHRITIS

Drug helps stiffness

Arthritic patients who suffer from early morning stiffness are being helped in Great Britain by a new drug called ibuprofen. The drug is now being tested in the United States.

The Upjohn Company is concluding tests in 10 American clinics. An application for approval of the new drug could be made to the Food and Drug Administration within a month, if the results confirm the British success.

Ibuprofen is a synthetic compound derived from phenylalkonoic acid.

Before its approval in Britain, the drug was tested on rabbits, rats and dogs. Trials with humans showed few side effects. In one series of 55 patients tested by Dr. Malcolm Thompson of the University of Newcastle-upon-Tyne, doses ranging from 300 to 1,000 milligrams daily were well tolerated.

ENZYMOLOGY

Large enzyme sequence determined

In the test tube, the enzyme catalase is one of the most active known, working with 1,000 times the turnover of other enzymes. In the laboratory, it converts hydrogen peroxide to water and oxygen. In the body, catalase occurs in all organs, with greatest concentrations in liver and red blood cells. What it does, however, is unknown.

Scientists are a step closer to explaining its function, however, now that its linear structure—the sequence in which its component animo acid building blocks occur—is known. The achievement is reported in the current ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS by Dr. Walter Schroeder and co-workers at the California Institute of Technology in Pasadena, where they have been working since 1961 to decipher catalase's structure. Built of four chains of 505 amino acids each, the 2,020-amino-acid molecule is the largest to be deciphered to date. Recently, Dr. Gerald Edelman of Rockefeller University announced the structure of immunoglobulin, a 1,320-amino-acid protein (SN: 4/26, p. 401). (Virtually all enzymes, which catalyze biochemical reactions, are proteins, but not all proteins are enzymes.)

IMMUNOLOGY

Test spots infections in infants

Symptoms of infection, such as fever, that occur in children and adults and serve as a warning signal, seldom show up in infants. A new test that measures antibody levels in blood appears promising as a clue to early diagnosis of potentially damaging infections in infants up to three months of age. It may also give scientists insight into the source of central nervous system disorders including deafness, blindness and mental retardation.

Antibodies come in three classes: gamma globulin, A globulin and M globulin. The last, referred to as IgM, are large molecules that cannot cross from the mother to the embryo. Therefore, if high levels of IgM are detected in an infant at birth or shortly thereafter, it means the baby is making its own antibodies in response to some invading organism—a bacterium or virus. Though IgM antibodies are not specific for a particular disease, they serve as a red flag, telling doctors to conduct necessary tests to pinpoint disorders that may stem from such diseases as rubella, herpes simplex virus or syphilis. Organisms causing these diseases can cross the placental barrier, and can be passed from mother to child.

Techniques for detecting IgM levels in infants were developed partly by Dr. John Fahey of the National Institutes of Health in Bethesda, Md. At an NIH conference on Immunological Response to Perinatal Infection, Dr. Charles Alford Jr. of the University of Alabama Medical Center in Birmingham, and others, reported the screening test revealed a high incidence of otherwise undetectable infection in infants. Low socioeconomic groups represent a particularly high-risk population, he explained, because of the generally high level of infection in that group.

CIGARETTES

FTC wants ad change

Anticipating the possibility that Congress will untie its hands at the end of June (SN: 2/22, p. 185), the Federal Trade Commission has initiated plans to require all cigarette advertisements to carry a warning against smoking. The FTC will demand that all advertising include the statement that "cigarette smoking is dangerous to health and may cause death from cancer, coronary heart disease, chronic bronchitis, pulmonary emphysema and other diseases."

Since 1965, when Congress passed a law that all cigarette packages carry a cautionary warning that smoking "may be hazardous to your health," the FTC and the Federal Communications Commission have been barred from taking further steps. That law expires June 30 and anti-smoking forces on Capitol Hill are building strength to keep tobacco-state Congressmen from passing an extension of current legislation. If the law dies, the two agencies will be free to pass new regulations. The FCC may move ahead with plans to bar all cigarette advertising from radio and television. Regardless of its action, Senate observers speculate that proposed regulation would render advertising ineffectual even if it does continue.

BIOCHEMISTRY

Anticoagulant therapy challenged

Heparin, a drug that keeps blood from clotting, is used in prevention and treatment of heart attacks due to coronary thrombosis. On the basis of experiments with cells in tissue culture, Dr. David Rutstein and colleagues at Harvard Medical School question such therapy.

When human blood serum, collected after a healthy individual is injected with heparin, is placed in a culture medium, there is a marked increase in the deposition of lipids or fats in tissue culture cells, Dr. Rutstein reports in the May 17 issue of THE LANCET. In his opinion, the effectiveness of heparin treatment is "somewhat doubtful" in the first place. It may even be harmful, he suggests, to inject it in patients suffering from a disease "characterized by an abnormally increased deposition of lipids in vascular tissue immediately adjacent to circulating blood."