

biology notes

Gathered at the meeting of the Federation of American Societies for Experimental Biology in Atlantic City, N. J.

DRUGS

Aspirin warning issued

A warning against indiscriminate use of aspirin for conditions it will not help has been issued by Drs. R. Neal Pinckard, David Hawkins and R. S. Farr of the Scripps Clinic and Research Foundation in La Jolla, Calif.

The researchers report they have found that the acetyl portion of acetylsalicylic acid (aspirin) binds tightly to albumin, a common protein in the blood and solid tissues. They have as yet found no ill effects resulting from the acetylation of albumin. However, the fact that the reaction takes place, plus the probability that other body proteins also can be acetylated, prompts their warning.

They point out that the action of aspirin, probably medicine's most useful and widely used drug, still has not been precisely defined. They note recent incrimination of the substance in a small number of serious side effects. It is not suggested that those using the drug in its recognized roles as analgesic and anti-inflammatory agent should stop doing so. But, they say, intensive study of the effect of aspirin should be done and people should use it carefully.

BLOOD

Hemoglobin substitute found

Harvard researchers have succeeded in taking the red blood cells out of a rat's blood and replacing them with an emulsion of fluorocarbons.

Dr. R. P. Geyer reports that rats so treated survive for up to 6 hours. Rats in which all the blood—white cells and blood proteins as well as red cells—had been replaced by the emulsion survived up to 8 hours.

The red pigment hemoglobin carries oxygen from the lungs to the tissues and carbon dioxide from the tissues to the lungs for disposal. Fluorocarbons usually are used as lubricants, as refrigerants, in plastics such as Teflon, and in various other industrial capacities. Fluid fluorocarbons have a reputation for being able to dissolve oxygen and carbon dioxide, and have been used in fluid breathing experiments.

Any application of fluorocarbons as substitutes for red blood cells is a long way off, Dr. Geyer says. Possible uses, however, might include treatment of blood diseases by total exchange of blood with emulsion followed by chemical therapy and replacement with healthy blood.

CANCER

Glassware test for malignancy

Findings which may lead to a test-tube aid in the diagnosis of cancer are reported by Drs. Israel Davidsohn and Stanislav Kovarik, and Louisa Y. Ni of the Chicago Medical School.

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Dr. Davidsohn reports a good correlation between the progression of lesions of the cervix from benign to malignant and the level in the tissue of certain proteins. These proteins, called isoantigens, can be detected by their reaction with foreign antibodies in the test tube. They are present in various normal tissues.

The less of them that can be detected in tissue taken from a lesion, the more likely the lesion is to be malignant. The more serious the cancer becomes, the less isoantigens can be detected, until metastatic cancer shows none at all. Presently some cancer is diagnosed by looking at suspect cells under a microscope. It is often difficult to judge the stage of cancer development from appearance.

DRUGS

Local anesthetic long-lasting

One shot of an experimental local anesthetic relieved leg pain in a horse for three weeks, reports Dr. Seymour Ehrenpreis of Georgetown University School of Medicine. Local anesthetics now used on people might relieve similar pain only about four hours.

The drug is a derivative of the widely used anesthetic lidocaine. It has been altered to enhance its binding power with nerve receptors. Once bound to the receptor it blocks the activity of the nerve.

The drug has also been tested on the nerves of squid, lobsters, and rats. Toxic effects now are being studied. Dr. Ehrenpreis believes the substance might prove useful in conditions of continual pain or irritation now dealt with by cutting a nerve, and possibly in calming irregular heart beats.

LSD

Psychotomimetics act through stress

Drugs such as mescaline and LSD may produce both wierd mental effects and deformed offspring in laboratory animals by putting stress on higher brain centers, it is theorized by William F. Geber of the Medical College of Georgia.

Dr. Geber has produced behavioral changes in hamsters and malformed hamster offspring using LSD, mescaline, and other psychotomimetic drugs. He has also produced the same effects by subjecting pregnant hamsters to continual stress in the form of loud noises and flashing lights. He postulates that both drugs and audiovisual effects act in the same way, by putting stress directly on higher brain centers.

Both forms of stress produce the same chain reaction. The higher brain stimulates the thalamus, hypothalamus, autonomic nervous system and adrenal glands. This stimulation produces abnormal behavior, decreased blood flow, changes in the rate of cell division, and other effects. Decreased blood flow results in additional abnormal behavior; combined with changes in cell division rates it can produce fetal abnormality.