BIOCHEMISTRY

Anti-Cancer Chemicals

Synthesis of riboside allows testing this chemical against bacteria and leukemias resistant to 6-mercaptopurine, which stops cancer temporarily.

➤ A BREAKTHROUGH in the chemical fight on cancer and leukemia may come very soon.

Experiments designed to answer an important question about anti-cancer chemicals are expected to be finished in the immediate future. The answer may, however, be a negative one, leaving cancer fighters no farther ahead than they are now.

The experiments are being made with a chemical called 6-mercaptopurine riboside. This chemical was created by Dr. James A. Johnson Jr. and Miss H. Jeanette Thomas in the Kettering-Meyer Laboratory of the Southern Research Institute at Birmingham, Ala.

Anti-cancer, anti-bacterial and anti-leukemia activity for 6-mercaptopurine has been known for several years. Unfortunately, resistance to the chemical develops, so that after a time cancer and leukemia patients are no longer helped by it.

How it acts to stop cancer even temporarily has not been well understood. It might be that the drug must be converted in the body to a riboside or a ribotide before it becomes effective.

Now that a way to make the riboside in fairly good quantities has been found, it is being tested against bacteria and leukemias resistant to 6-mercaptopurine.

Tests have already shown that the riboside is as effective as 6-mercaptopurine against animal cancers. The scientists were disappointed that it was not more effective.

If it proves effective against resistant leukemias, however, it might give doctors another chemical weapon to use in treating patients. And it would suggest that 6-mercaptopurine has to be converted to the riboside to be effective and that resistance develops to the 6-mercaptopurine because the body cannot continue converting this to the riboside.

The testing of the riboside is now being done by F. M. Schabel Jr. and H. E. Skipper of the Kettering-Meyer Laboratory in Birmingham. Synthesis of the riboside is reported by Dr. Johnson and Miss Thomas in the *Journal of the American Chemical Society* (Aug. 5).

Science News Letter, September 1, 1956

PUBLIC HEALTH

Grants Total $750,000 For Medical Reactor

➤ GRANTS totalling $750,000 have been awarded to the Massachusetts Institute of Technology, Cambridge, Mass., for a unique atomic reactor primarily designed for medical treatment and research.

The reactor, now under construction, will be the first and only atomic tool of its kind in the country with a downward-directed beam of nuclear rays. This means that the medical and biological facilities will be centered in a therapy room, located underground directly beneath the reactor itself.

Designed to serve all medical organizations in Greater Boston, the therapy room itself will be a large and completely equipped operating room. Thus, irradiation of patients immediately after surgery will be possible.

The medical treatment and research that will be available to New England scientists when the reactor is completed include:

1. Neutrons or gamma rays from the reactor may be used directly to irradiate tumors in patients brought to the medical therapy room.

2. Basic studies of the effects of neutrons or gamma rays on living tissues will be possible.

3. Neutron-produced short-lived isotopes, never before available in New England, can be produced.

The grants to M.I.T. were made by the National Science Foundation, $500,000, and the Rockefeller Foundation, $250,000. The cost of the reactor will be at least $2,000,000.

An immediate use of the medical facilities will be a new treatment for cancer of the brain, developed by Dr. William H. Sweet of the Massachusetts General Hospital, Dr. Gordon Brownell, also of Massachusetts General and assistant professor of nuclear engineering at M.I.T., and Dr. Lee Farr of the Brookhaven National Laboratory, Upton, N. Y.

Science News Letter, September 1, 1956

Do You Know?

In 1955, 38,000,000 passengers were carried on U. S. *airlines*.

Alcoholism is said to be second only to war as a destroyer of human life.

The 200,000,000 bushels of *grain* rats destroy each year would make 12,500,000,000 loaves of bread, or 317 loaves for each household in the U. S.

About nine out of ten forest *fires* are caused by man.

On Aug. 2, 1946, the first shipment of reactor-made *radioisotopes* was sent out from Oak Ridge.

Today, over half the *physicists* in the United States are employed by private industry.

Children have more *colds* than adults.

INVENTION

Colored Radar Helps Pick Out Ships in Heavy Seas

➤ A COLORED RADAR system that makes it easier for the radar operator to pick out a ship on his screen during heavy seas has been invented.

The invention may help prevent future ship collisions, such as the recent maritime disaster involving the Italian ship Andrea Doria and the Swedish motorboat Stockholm. Its improvement over conventional radar sets is that the new system employs a color identification process for picking out targets from the surrounding environment.

The system's inventor, David E. Sunstein of Cynwyd, Pa., points out that all too often it is hard for a radar operator to get a clear and sharp picture. This is particularly true, he says, in choppy seas where a ship appears on the screen to blend in with the water. In these cases, Mr. Sunstein says, the operator often readjusts his set without remedying the situation.

The colored radar system employs the principle that signals reflected from a target such as a ship or building are ordinarily of greater amplitude than those reflected from land masses or the sea. Mr. Sunstein has the signals passed through a cathode ray tube having a fluorescent screen that, under electron bombardment, emits light of a preselected color. The signals are then passed through a second screen.

What the operator then sees on his radar screen is the target in one color and the surrounding environment in another color. Mr. Sunstein says that color filters can also be used. The colored radar received patent No. 2,758,298. Mr. Sunstein assigned the patent rights to the Philco Corporation of Philadelphia.

Science News Letter, September 1, 1956