

## CHEMISTRY

# Cancer Chemicals Related

Reaction that operates differently in body and test tube may initiate chemically caused cancers. Electrons may be transferred to body enzyme system.

► **BETTER UNDERSTANDING** of the way cancer-causing chemicals may disrupt the energy balance in living tissues is forecast by a study of chemical likeness among different carcinogenic agents.

A common mode of action among a number of different substances all causing irritations which lead to cancer was reported by Dr. True W. Robinson of the University of Alabama Medical Center, Birmingham, Ala.

An oxidation-reduction mechanism which operates differently in the living body than in test tube experiments is believed by Dr. Robinson to transfer electrons to the body's enzyme system, thus furnishing energy for starting cancer growth in certain cells. Dr. Robinson explained this new theory of the start of chemically caused cancers to the American Chemical Society's division of biological chemistry in Cincinnati.

Studies on how tumor cells compete with their hosts for the nucleic acids on which they feed were reported by Dr. L. L. Bennett Jr., of the Kettering-Myer Laboratory of the Southern Research Institute, also of Birmingham, Ala.

Two cases in which human tumors were transplanted into animals, one into a hamster, the other into a rat, showed that normal tissues made better use of the nucleic acids than did the tumors. This suggested to Dr. Bennett that some product of the tumor cells may interfere with the nourishment of the host cells, either by production and subsequent breakdown of complex chemicals or by causing a lack of the necessary enzymes to carry on normal feeding of the tissues.

Certain complex chemicals, capable of two forms in which the atomic arrangement is twisted either to the right or to the left, differ in the way they can be utilized for growth by the tissues of the body. By building cancer-causing chemicals with such differences in chemical structure, studies aimed at throwing further light on the development of cancerous growths were reported by Dr. Sanford M. Birnbaum of the National Institutes of Health, Bethesda, Md.

Left-handed arrangements proved chemically more active in these experiments than the right-hand types of compounds. Tissues

## • RADIO

Saturday, April 16, 1955, 5:00-5:15 p.m. EST  
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Dorland Davis, chief of the Laboratory of Infectious Diseases, Microbiological Institute, National Institutes of Health, Bethesda, Md., will discuss "Common Respiratory Illnesses."

of the liver and the kidneys were more active in breaking down these compounds than were cells from the intestine, pancreas, lung or spleen. Dr. Birnbaum and his associates hope to learn whether changes in chemical structure can be used to help combat cancer.

Radioactive yttrium is the latest atomic reactor fission product to be used in fighting cancer. It is incorporated into a plastic which is extruded through a heated die to make a flexible thread, getting radioactivity where it will do the most good.

The plastic into which the yttrium in the form of its oxide is incorporated slowly dissolves in the tissues where this thread-like filament is placed, leaving the source of the radioactivity in the tissues to be treated.

This method of utilizing the high beta-activity of yttrium for cancer treatment was reported by Dr. H. C. Dudley of the Radioisotope Laboratory of the U. S. Naval Hospital, St. Albans, N. Y. It is an improvement upon the use of fused filaments of germanium oxide tried out earlier at the same laboratory as a means of implanting radioactive materials in tissues.

Yttrium is particularly easy to place in certain tissues by experimental means, because it is not carried from place to place by body processes. Taking advantage of the fact that small doses of radioactive yttrium locate in the outer parts of bone but not in the marrow, Dr. Dudley also reported on possible use of this fission product for bone cancer treatment. Larger doses of yttrium locate similarly in definite organs, such as the stomach, spleen and liver.

Science News Letter, April 9, 1955

## MEDICINE

### Perfect Warmer for Rh Baby Blood Transfusions

► **A DEVICE** to keep the blood warm while it is being transfused to Rh babies has been perfected by Dr. Volney C. Wilson, physicist at General Electric Research Laboratory in Schenectady, N. Y.

Because Dr. Wilson's youngest son, now six, was an Rh-negative baby saved from death by an exchange transfusion of healthy blood, he was particularly interested in the problem presented by his pediatrician neighbor, Dr. Stewart C. Wagoner.

The problem was that of preventing shock and death from the cooler blood being transfused to save the baby. Dr. Wagoner thinks that this cool blood shock may be the cause of 10% of deaths of new babies in exchange blood transfusions.

Science News Letter, April 9, 1955



**WARM TRANSFUSION**—Scientists prepare to use blood-warming equipment in an operation in which new blood will be substituted for a baby's blood that is contaminated with Rh antibodies. Left to right are, Dr. Volney C. Wilson, inventor of the equipment, and Drs. Frank L. Marting and Stewart C. Wagoner, Schenectady pediatricians.