BIOCHEMISTRY

Krebiozen Identified

Krebiozen has been identified by the Food and Drug Administration as creatine, normally found in the human body, which has been proved ineffective against animal tumors.

➤ THE FOOD AND DRUG Administration has identified the Krebiozen powder given to its inspector by Dr. Stevan Durovic and Dr. Andrew C. Ivy on July 12, 1963, as creatine.

Creatine is an amino acid derivative plentifully available from meat in the ordinary diet and is a normal constituent of the human body. It is readily available as an inexpensive laboratory chemical.

The identification of Krebiozen resulted from the analysis of the powder by several scientific methods. This was undertaken under the supervision of Dr. Frank H. Wiley, director of FDA's division of pharmaceutical chemistry.

The first step was the reexamination of the infrared spectrogram supplied by Dr. Durovic to the National Cancer Institute in September 1961 and the infrared spectrograms made by the National Cancer Institute from the small samples (1.5 mg of powder and 5 mg of crystalline material) supplied to it at the same time. These curves were all quite similar.

On the basis of these tracings, the division's spectrophotometric unit, under the direction of Mrs. Alma Hayden, attempted to identify the material from which the tracings were made. They duplicated the curve submitted by Dr. Durovic by using a sample of creatine hydrate. The curve obtained by the National Cancer Institute on the powdered material was that of creatine which had absorbed a small amount of moisture.

The second step was to do a considerable amount of work on creatine obtained in pure form from chemical supply houses. This creatine was examined by infrared spectrophotometry, by X-ray diffraction to study its crystal structure, by microscopic study of the crystals, and by mass spectrographic methods, preliminary to opening the vial containing the material supplied by Dr. Durovic and Dr. Ivy on July 12, 1963, and described as Krebiozen.

The third step was the examination and identification of the contents of that vial. To supplement the evidence to be obtained by infrared methods, the FDA enlisted the aid of other of its scientists and experts from other federal agencies and from universities: microscopic crystallography, William Eisenberg and Arnold Schultze, division of microbiology, FDA; Dr. Raymond Castle, University of New Mexico; X-ray crystallography, Miss Mary Mrose of the Geological Survey, Department of Interior; Dr. William Bradley, University of Texas; mass spectrographic studies, Joseph Damico, division of food, FDA; Dr. Klaus Biemann, Massachusetts Institute of Technology.

In addition, the FDA asked Dr. Ellis R. Lippincott of the University of Maryland to work on the infrared studies. Representatives of the National Cancer Institute and the division of biologics standards of National Institutes of Health, the Geological Survey, and the National Bureau of Standards also assisted the FDA's bureau of physical and biological sciences.

The small sample (approximately 2 mg) was weighed and divided. An infrared spectral curve was made. This "fingerprinted" the material Dr. Durovic had supplied. It was creatine. This was then converted to creatinine, to which creatine changes when treated with hydrochloric acid. The converted product was identified by spectral curve as creatinine. Only creatine could have produced the creatinine by the treatment used.

X-ray diffraction studies next confirmed the creatine identity. Crystallographic studies established that the powder was creatine.

Mass spectrographic studies, conducted at Massachusetts Institute of Technology, established that the material was either creatine or creatinine. All of these tests leave no doubt as to the identity of the powder Dr. Durovic labeled Krebiozen.

Creatine is in muscle tissue, and in blood in lesser amounts. The human body will produce in 24 hours as much as 100,000 times the amount of creatine as the alleged content of Krebiozen in one ampul.

The chemical was tested some time ago against animal tumors in the routine cancer chemotherapy screening program of the National Cancer Institute. It was found to be ineffective even in very high doses.

Laboratory studies are continuing to determine how much, if any, of this substance can be dissolved in mineral oil and how much, if any, is in the ampuls of Krebiozen which FDA has obtained.

FDA is continuing its investigations of all of the facts regarding Krebiozen.

(This text of the FDA announcement is published as the most authoritative coverage of this development.)

• Science News Letter, 84:181 Sept. 21, 1963

BIOCHEMISTRY

New Family of Drugs Useful in Research

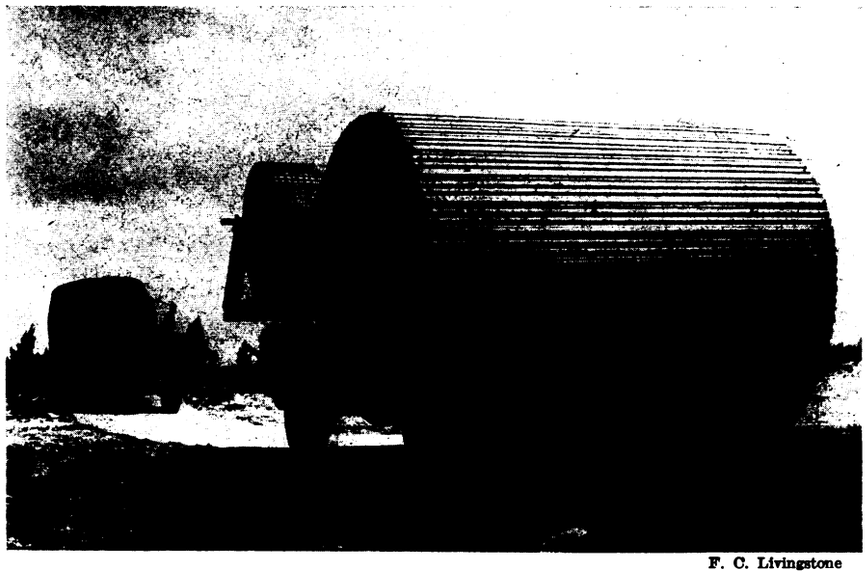
➤ A NEW FAMILY of experimental drugs called dopamine-beta-oxidase (DBO) inhibitors can simply be tested for their activity and effectiveness, two scientists of the National Heart Institute in Bethesda, Md., have found.

The DBO inhibitors show promise when used in research for the study of high blood pressure, and future members of these compounds' family might well provide a new approach to the treatment of this puzzling disease.

Drs. Albert Sjoerdsma and Wilfred von Studnitz studied five patients given varying doses of hydroxyamphetamine, which is similar enough in chemical structure to dopamine to fool the enzyme occasionally. After excretion, the resulting urinary levels of hydroxynorephedrine, the compound converted by DBO, are high enough to be easily and accurately measured.

This provides a useful technique for measuring DBO activity. The findings were reported in the British Journal of Pharmacology and Chemotherapy, 20:278, 1963.

• Science News Letter, 84:181 Sept. 21, 1963



F. C. Livingstone

RECOVERABLE TRACKWAY—A recoverable aluminum roadway that can be laid by a truck, equipped with special rollers, over soft ground at the rate of a quarter of a mile in 30 minutes has been developed by the British Army's Military Engineering Experimental Establishment and the British Aluminium Ltd.