BIOCHEMISTRY

Blood Pressure Lowered

➤ DISCOVERY OF a blood pressure lowering chemical in rhododendron leaves is announced by scientists at the National Heart Institute, Bethesda, Md.

It is called andromedotoxin. It temporarily lowers blood pressure in animals. Tests on patients have not yet been made. The new drug will not cure high blood pressure, but is believed to have possibilities as treatment in some cases.

Chemically, the compound is pure. Its structure, however, is a mystery. It resembles the veratrum alkaloids in physiological actions, but is not nitrogen-containing, as alkaloids must be. It has a strong but brief hypotensive effect in low doses.

This work has been carried on by two teams of research workers. Isolation procedures for obtaining the material from the rhododendron leaves were conducted by Drs. Evan C. Horning, H. B. Wood, V. L. Stromberg and J. C. Keresztesy, in Bethesda, Md. Pharmacological work with animals was done at Emory University School of Medicine by Drs. Neil C. Moran and A. P. Richardson.

To isolate this compound, fresh leaves of the rhododendron were chopped, then boiled for about an hour, and strained to make a brew which starts out looking like strong black coffee and ends up resembling new-fallen snow, of snowball consistency. Over 1,000 pounds of leaves were required to make about one ounce of the chalk-white, clumpy substance. The leaves came from West Virginia and North Carolina and were collected by the Department of Agriculture.

Actually, many chemical steps are necessary in purifying the compound. Special methods were developed for extracting the material from the leaves, for precipitation procedures to eliminate unwanted substances, and for purification.

Science News Letter, October 24, 1953

BIOPHYSICS

New Kidney Facts

➤ NEW KNOWLEDGE of kidney structure and function is coming from electron microscope studies reported by Prof. B. Vincent Hall of the University of Illinois at the International Congress on Pediatrics meeting in Havana, Cuba.

His studies were made on rat kidneys at the Argonne National Laboratory, Lemont, Ill., with the assistance of Evans Roth and Vera Johnson.

There is evidence, Prof. Hall reports, that the human kidney is able to function efficiently through the agency of capillaries, technically called glomeruli, unsupported by connective tissue and projecting into the area where waste products of the body are first filtered.

In the kidney, the glomeruli are the terminal ends of the fine arteries. They have been estimated as numbering from one to five million in the human kidney—each less than one-hundredth of an inch in diameter. Heretofore, these glomerular capillaries have been assumed to be surrounded by an extra-cellular tissue something like the cuticle of the skin. This tissue has been called the "basement" membrane by scientists observing it through the conventional "light" microscope.

Electron microscope photographs of the glomerulus of the rat show this so-called "basement" membrane where the filtering process actually starts to be a complex structure, not a simple membrane as supposed.

The inner part of the glomerular capillary wall is seen under the electron microscope as a lining network corresponding to the course screen in a city water filtering system. The red blood cells are filtered off through this network. The outer part that serves as the ultra-filter is a finely porous membrane which filters off protein molecules and allows only water, salts and waste products to go through. The cells covering the capillary wall in the glomeruli form an exceedingly intricate and extensive system of minute canals which facilitates, and perhaps regulates, the filtration process.

Prof. Hall's study shows that the beginning of urine formation is apparently accomplished by filtration through preformed pathways. Apparently true also of the human kidney, his observations of the rat glomerulus afford a new basis for re-studying the function and pathology of the human organ.

Science News Letter, October 24, 1953

OPHTHALMOLOGY

Lost Eye Sheds Light On Seeing in Dark

➤ RECENTLY A man lost his eyes—but science gained new information on seeing in the dark, Dr. Frederick Crescitelli of the University of California at Los Angeles and Dr. H. J. A. Dartnall of the Institute of Ophthalmology, London, England, report.

The process of vision in the dark is centered around a protein pigment in the retina known as visual purple. Since human eyes are seldom available for biochemical studies, most of the theories concerning the human visual pigment were based upon that of the frog, thought to be identical with that of the human being.

Recently the two scientists were able to obtain a human eye from a patient who had to have his eyes removed because of a cancerous growth. By special processing, the pigment was separated from other portions of the retina and carefully analyzed photochemically. They found indications that the pigment is the chemical primarily concerned with the ability to see in the dark, as had been thought, but that it is somewhat different from the visual purple of the frog.

It is thought that this study may bring about changes in the theories of excitation of the visual sense cells, or retinal rods, many of which were based upon data from the frog visual pigment.

Science News Letter, October 24, 1953

SCIENCE NEWS LETTER

VOL. 64 OCTOBER 24, 1953 NO. 17

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C., NOrth 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., $5.50; 2 yrs., $10.00; 3 yrs., $14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283), authorized February 28, 1950. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 1 E. 54th St., New York 22, ELdorado 5-5666, and 360 N. Michigan Ave., Chicago 11, STate 2-4822.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Fernandus Payne, National Science Foundation; Karl Lark-Horovitz, Purdue University; Kirtley F. Mather, Harvard University. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; R. A. Millikan, California Institute of Technology; Homer W. Smith, New York University. Nominated by the National Research Council: Leonard Carmichael, Smithsonian Institution; Ross G. Harrison, Yale University; Duane Roller, Hughes Aircraft Co. Nominated by the Journalistic Profession: A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Baltimore Sun Papers; O. W. Riegel, Lee Memorial Journalism Foundation. Nominated by the E. W. Scripps Estate: John T. O'Rourke, Washington Daily News; Charles E. Scripps, E. W. Scripps Trust; Edward J. Meeman, Memphis Press-Scimitar.

Officers—President: Harlow Shapley; Vice President and Chairman of Executive Committee: Leonard Carmichael; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Jane Stafford, Marjorie Van de Water, Ann Ewing, Allen Long. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Priscilla Howe. Interlingua Division in New York: Alexander Gode, Hugh E. Blair, 80 E. 11th St., GRamercy 3-5410.