MEDICINE

Enzyme Digests Clots

➤ LIFE-THREATENING CLOTS in the heart's arteries can be dissolved by the digestive enzyme, trypsin. New canals then are formed through the blood vessels, so that blood can get through to nourish the heart muscle.

That this is true in experimentally produced clots in dogs was reported by Drs. C. M. Agress, H. I. Jacobs, W. G. Clark, M. J. Binder and M. Lederer of the Veterans Administration Center and the University of California School of Medicine at Los Angeles at the meeting of the American Society for Pharmacology and Experimental Therapeutics in New Haven.

If the method works as well in humans as in the experimental animals, it may be possible to save many patients threatened by the kind of heart disease called acute myocardial infarction.

Dr. Agress and associates had previously developed a method of producing in dogs fibrin clots in the heart arteries. Tiny, colored radioactive beads injected into the arteries were used in one part of this study. The heart condition produced was almost identical with that seen in human heart failure.

Injections into the veins of crystalline trypsin (supplied by Armour and Co., Chicago) dissolved the clots. The part of the heart affected by the blood clot was not damaged, the area of damage from the clot was decreased, mortality was reduced and electrocardiographic studies showed improvement in the heart condition.

Science News Letter, September 19, 1953

RESOURCES

Newsprint Still Problem

➤ SUPPLY AND demand of America's newsprint have struck an uneasy balance.

High-speed presses in the United States are hungrily devouring 6,000,000 tons a year as U. S. and Canadian paper mills run at 98% capacity.

Merrill Lord, deputy director of the forest products division of the National Production Authority, told Science Service that the critical, world-wide shortage in early 1951 eased off some in mid-1952. But even so, publishers and newsprint producers are weighing the future against the present.

The ever-expanding demand for newsprint continually casts its shadow over the market, making it desirable to work out reclaiming processes that may come in handy some day.

Deinking newsprint often has been suggested as a possible "out" for a critical shortage. However, deinking processes are expensive and never have been completely satisfactory.

Newsprint is produced for immediate consumption and discard. Because of the swift pace at which newsprint feeds through the public's hands, papermakers do not take the manufacturing care with it that they take with better paper stocks.

Chemical wood pulp, which goes into "slick" magazines, is made of wood chips treated in an alkaline solution. This quality process extracts lignin, a cellulose-like compound, and carbohydrates from the wood. But newsprint, which does not have to be "quality" stock, goes untreated. Left in the newsprint, the lignin later yellows the paper with heat, light and age.

When used newsprint is funneled through vats in deinking mills, chemicals act upon the lignin, turning it dark brown. Because of this, deinked newsprint is not cheaply recovered.

To be made suitable again for the nation's daily presses, the reclaimed pulp must be treated with chemicals that bleach away the objectionable stain.

Some deinked magazine paper has been reclaimed for newspaper use. But on the whole, papermakers find it cheaper to turn out fresh paper than to process used stock.

However, Mr. Lord believes that enough scientific brainpower exists to produce a "winner" deinking process—one that is economical and easy to manage. Work now is in progress to develop processes that circumvent the drawbacks of present methods, he said.

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AERONAUTICS

Radar Device Apes "Little Sir Echo"

➤ IF NICKNAMES are appropriate to electronics equipment, "Little Sir Echo" should closely describe a new radar safety beacon now being discussed in aviation circles in Washington.

The device is designed to be carried by airplanes. When an airport-based radar scans the plane, the radar beam will trigger the beacon and it will send back a coded "echo."

In effect, this strong "echo" will take the place of the regular reflected radar signal which, at the ground station, often is extremely weak. The new equipment was conceived to get around these weak, sometimes completely missing, reflected signals.

Promoted by the Radio Technical Commission for Aeronautics, the radar safety beacon will improve reliability of the airport's radar traffic control system, give positive identification of the aircraft through the coded "echo" and permit faster movement of air traffic.

The new equipment has a working range up to 200 nautical miles, or about 230 miles, from the airport's radar transmitter. An airplane entering the search radar field at this point can be identified and tracked to within one mile of the airport.

When the airplane enters the radar range, the airport will assign it one of 10 codes to use until it lands. Its assigned code thus will permit instant identification of the plane should radar contact be interrupted.

The plane's "echo" actually consists of two pulsed radio signals sent back to the ground. The time lapse between pulses can be varied to yield the 10 codes.

The radar safety beacon currently is in the "talk" stage. The RTCA said that it is up to each airline and the Air Force to write their own specifications and to contract individually with manufacturers.

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TOXICOLOGY

Exercise Increases Drug Paralysis

➤ THE PARALYZING effect of certain drugs, including perhaps the nerve gases, is "potentiated," or increased by exercise.

Experiments showing this were reported by Drs. Bernard P. McNamara and J. Henry Wills of the Chemical Corps Medical Laboratories, Army Chemical Center, Md., at the meeting of the American Society for Pharmacology and Experimental Therapeutics in New Haven, Conn.

The drugs they reported on are: d-Tubocurarine from the old Indian arrow poison plant; DFP, short for diisopropyl fluorophosphate, made originally as a possible nerve poison and used in treatment of the eye disease, glaucoma; and sodium arsenite, known to many as an insecticide.

These chemicals act to block the transmission of nerve impulses to muscles. Amounts of them that could completely block the nerve to muscle impulse in a nerve muscle preparation that had already been stimulated, as by exercise, did not noticeably affect a preparation that had not been stimulated or had been resting.

In their studies of how nerve muscle impulses are blocked, the scientists also tested chemicals formed when the body digests sugars and starches, and chemicals related to these. Compounds which blocked nerve to muscle impulses or action of the nerve chemical, acetylcholine, included glutarate, alpha-keto-glutarate, glutamate, maleate, fumarate, alanine, acetone, acetoacetate, oxalacetate, isobutyraldehyde and sodium arsenite. Little effect was produced by glucose, citrate, succinate, acetate, lactate, levulose, malate, malonate pyruvate, formate and adipate. The nerve muscle blocking compounds acted first on the nerve and then on the muscle itself.

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