

MEDICINE

Drug for Urinary Infection

A new drug cleared for urinary tract treatment opens the way for a whole new family of chemical compounds for gram-negative infections—By Faye Marley

➤ A COMPLETELY NEW type of chemical compound for treating stubborn infections of the urinary tract has been cleared for public use by the U.S. Food and Drug Administration.

Winthrop Laboratories in Rensselaer, N. Y., is manufacturing the drug, trade named NegGram. It has had five years of testing in this country and in Europe and is able to save lives in serious kidney infections, disease of the bladder, prostate and ureter. The ureter is one of a pair of long tube-like organs carrying urine from the kidneys to the bladder.

Urinary tract infections are believed to be second only to respiratory diseases in frequency, occurring most often during childhood, pregnancy and old age.

NegGram opens the way to the development of a whole new family of chemical compounds to treat gram-negative infections, just as the first sulfa drug and the first antibiotic paved the way for effective derivatives.

The term gram-negative refers not to weight but to the Gram stain. In general, germs can be placed into two large classes, based on how they are colored by this stain, which indicates a basic difference in the chemical composition of their cells.

In the past, the more serious causes of disease were usually gram-positive germs,

which are generally susceptible to the sulfas and antibiotics.

Infection with gram-negative germs has become an increasingly difficult problem, however, and NegGram has been shown to be especially effective against urinary tract infections caused by such gram-negative organisms as *Proteus*, *Escherichia coli*, *Aerobacter aerogenes*, *Klebsiella* and against many strains in *Pseudomonas*.

NegGram, known chemically as nalidixic acid, is not related to the antibiotics, sulfas and nitrofurans, the three major classes of antibacterial drugs known to be effective against infections of the urinary tract.

NegGram is a synthetic derivative of 1,8-naphthyridine, which, chemically speaking, has a fused-ring system resulting from the joining of two pyridine rings through two adjacent carbon atoms. Each ring, consequently, has one nitrogen atom.

The new drug has been given by mouth to a number of pregnant women for serious kidney infections as long as six months without harm to them or to their infants, investigators report. It was readily absorbed and rapidly excreted even when the kidney was not functioning normally.

Drs. George Y. Leshner and Monte D. Gruett developed NegGram at the Sterling-Winthrop Research Institute.

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Lutheran General Hospital

THROUGH THE PORTHOLE—Portholes permit medical researchers to observe conditions within high-pressure oxygen chambers at Lutheran General Hospital, Park Ridge, Ill. Here, the interior of a recompression and research chamber which is also used for treatment of "blue babies" is seen through the porthole.

PUBLIC HEALTH

Old Virus Infection May Trigger Lung Cancer

➤ LUNG INFECTION in heavy smokers, rather than smoke alone, could trigger lung cancer, some scientists believe.

This is only one of the "scientific gaps" left by the Surgeon General's report on smoking and health, it was pointed out in an editorial in *Growth*, 28:1, 1964.

Other complex factors that need clarifying before the recent report can be considered final, the editorial said, including these:

1. The well-known fact that heavy-smoking women have a much smaller incidence of lung cancer than men. The mortality rate from this disease in 1961 included only 5,700 women and 33,200 men. The report touches only slightly on this fact, without giving a plausible interpretation.

2. The possible role of genetic factors, or the possible relationship of cancer of the lung with deviations in the endocrine activity, particularly of the pituitary and adrenal glands. Overactivity of the cortico-adrenal gland has been reported by a number of investigators of lung cancer cases.

3. The fact that some strains of mice are resistant to the drug causing cancer of the lung while about 100% of other strains develop the disease.

The editorial referred to 88 scientific and medical articles published recently by various researchers who did not take part in the survey of the Surgeon General's Advisory Committee.

The American Medical Association is beginning a research program on the effect of tobacco on health, with the assistance of a \$10 million grant from the six major tobacco companies. A committee of five scientists, three of whom were members of the Advisory Committee, will direct the distribution of this money to scientists throughout the United States.

The AMA states that since people will continue to smoke, the answer to the problem lies not in restrictive rules and regulations but in research that could conceivably eliminate the hazards of smoking.

Surgeon General Luther L. Terry told SCIENCE SERVICE he welcomes the AMA research and other clarifying investigations. He does not consider the Advisory Committee report on smoking and health the last word.

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SPACE

Water From Fuel Cell For Men on the Moon

➤ WHEN U.S. ASTRONAUTS depart for the moon, chances are they will carry no drinking water aboard their Apollo spacecraft. Fuel cells that may replace the conventional batteries to operate electrical equipment aboard Apollo may produce as a by-product enough water for the three spacemen. Fuel cells, six times lighter than batteries of equivalent power, eliminate the need for generators and for storing large quantities of water aboard the spacecraft.

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