BACTERIOLOGY

Cannibal Mold More Powerful Germ-Killer Than Sulfa Drugs

Penicillin, Substance Extracted from Mold, Also Does Its Germ Killing Without Harm to Body; Not Plentiful

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FOR most human beings the age of cannibalism is over. But not so with microbes. One eats another with the careless abandon of a vegetarian tucking into his beans. This cannibalism amongst microbes has led to a discovery by British scientists of profound importance to doctors and patients the world over. The story is found in the recent issues of two British medical journals. It opens some years ago in the bacteriology department of one of London's largest teaching hospitals, St. Mary's.

Prof. A. Fleming was engaged in his daily routine work in his bacteriology laboratory. He was growing colonies of different germs on specially prepared plates. One of his plates he noticed was contaminated by a mold, not unlike the molds that grow on stale bread or cheese or sausages. This too is a common occurrence in a laboratory, for one of the most difficult tasks is to grow germs pure and uncontaminated.

Most of us would have removed the mold and started again, but Professor Fleming went one better. He allowed the mold and germ to remain on the plate, only to find that while the mold was there the germ would not grow. In fact the mold killed the germ. This was the first, indeed the fundamental, discovery—if the microbe did not eat its fellow microbe it certainly killed it.

Exploited Un-Neighborliness

The professor pursued the matter further. He discovered that it was only some germs which found it impossible to live side by side with the mold. So whenever he wanted to get rid of one of the germs he knew the mold could not live with, he added some mold to his plates. He exploited their known unneighborliness.

So far the discovery was interesting, but not of great importance. Then came the suggestion that this mold, Penicillium, might be used to kill germs which were actually in the human body. Could not the germ-killing substance which Penicillium contains be used as an antiseptic to kill germs inside the human body?

Prof. Florey of Oxford University headed a team of workers to tackle this problem.

After many experiments they succeeded in extracting from the mold the substance in it which possesses the antiseptic quality. From the mold Penicillium they extracted the germ-killing substance penicillin. This done, further experiments soon showed that penicillin was the most powerful germ-killer both inside and outside the body, superior even to the latest drugs. That is saying a great deal, for in recent years medical science has made enormous strides in antiseptic drugs.

One in Million Dilution Potent

Prontosil, sulfanilamide, M & B 693, sulfathiazol—already these new drugs all in the same big family have saved thousands of lives. In pneumonia, meningitis and in severe infections of many kinds they have been found to be immensely useful. But penicillin goes one better—it is both the strongest and the safest germ-killer yet discovered. It does its work even when diluted to the astonishing extent of one in a million. It can be given by mouth or injected directly into a vein. Most important of all, it kills the germ inside the body without harming the body itself. Its work of germ-killing done, it passes through the body into the urine, from which it can be extracted by the chemist and used again.

There is one snag. Although there are plenty of molds in this world, there is not enough Penicillium mold of the right kind to give us large quantities of penicillin. That difficulty may not prove insuperable. Research is now being undertaken to discover other sources of penicillin. Its chemical composition is being investigated in the hope that chemists may be able to manufacture it artificially in the laboratory.

We do well to remember that the value of lemon juice in preventing scurvy was known before vitamins were ever heard of. But when it was found that lemon juice prevented scurvy because it contained vitamin C, the chemists got busy and made the vitamin artificially in their laboratories. Let us hope that the story of penicillin is the story of vitamin C. Hopes are very high. The *British Medical Journal,* known for its cautious attitude, has gone so far as to say that penicillin is to other antiseptics what radium is to other metals. In view of that praise it is not too much to say that St. Mary's Hospital, London, and the University of Oxford, have made a most important contribution to human knowledge.

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MEDICINE

Vitamin C May Improve Treatment of Syphilis

VITAMIN C, plentiful in your breakfast orange juice, may help prevent drug poisoning in patients under treatment for syphilis, Dr. Herman Bundesen, Chicago Health officer, Dr. Hans C. S. Aron, Dr. Regina S. Greenebaum, Dr. Arthur F. Abt, and Chester J. Farmer of Chicago, report. (*Journal, American Medical Association,* Nov. 15).

Experiments in which patients were tested with neoarsphenamine and mapharsen, the drugs most commonly used against syphilis, with and without the addition of Vitamin C, indicated that reactions to the drug may be prevented in the great majority of patients by use of the vitamin. Results in actual treatment of patients will be reported later, the physicians state.

A dramatic method of study was developed — the "patch test." Patches, soaked in drug solutions to which vitamin C was added, were applied to the skin of patients known to be sensitive to the drugs. No reaction followed. At the same time, patches soaked in drug solution alone were applied. The usual skin reaction followed. These were the first demonstrations of the protective action afforded human skin by vitamin C against arsenical drug poisoning.

The Chicago doctors believe that by keeping the blood level of vitamin C sufficiently high, physicians may use the anti-syphilis drugs much more safely, except in special cases which are in the minority. Some physicians believe the vitamin C treatment may be useful in the so-called "five-day treatment" for syphilis in which massive doses of the arsenical drugs are used.

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