

Life Sciences Notes

ANTIMICROBIAL MEETING

Antibiotics under continuous study

In spite of the plethora of wonder drugs on the market, many serious bacterial infections are difficult to treat for a number of reasons:

- some strains of bacteria are resistant to antibiotics.
- present-day antibiotics are removed quickly from the blood and therefore have to be taken as many as four to six times a day to be effective.
- antibiotics generally take a few days to do their job of killing bacteria.

Last week at the Interscience Conference on Antimicrobial Agents and Chemotherapy, university and industry researchers met under sponsorship of the American Society for Microbiology to report results of latest work—much of which is in preliminary stages.

MICROBIOLOGY

Antibiotic beats resistance

A new antibiotic effective against strains of gram-negative bacteria resistant to most common antibiotics may be a promising addition to physician's arsenal of antimicrobial drugs. Preliminary studies indicate that the new antibiotic—tenemycin—is also active against gram-positive staphylococcal bacteria.

The classification of bacteria as gram-negative or positive refers to their reaction to a standard method of staining for observation under a microscope.

In a report to the ASM meeting, Drs. W. E. Wick and J. S. Wells of the Lilly Research Laboratories, Indianapolis, said tenemycin, which belongs to the streptomycin family of antibiotics, is probably a complex of at least seven closely related substances. Only four have been isolated so far. No human trials have been run, but in mice with a usually fatal infection caused by gram-negative *Pseudomonas* bacteria, tenemycin worked effectively.

MICROBIOLOGY

An alternative for treating staph

Enzymes may offer an alternative to antibiotic therapy in treating staph infections that cannot be blocked by known antibiotics. Preliminary research on dogs with acute staph infections of heart valves suggests an enzyme called lysostaphin is a potential cure for such infections in human beings.

Lysostaphin, produced by an unusual strain of staphylococcal organism, kills more common types of staph by disintegrating the bacterial cell wall. Lysostaphin appears to work only against staph bacteria. In a report to the ASM meeting, four Cincinnati scientists said that within a few hours of treatment, dogs on the brink of death were up and about, eating and wagging their tails. Although lysostaphin did not completely wipe out the infectious staph, the fast-acting drug saved the animals from immediate danger and subsequent use of antibiotics wiped out remaining bacteria within a few days.

No human trials have been made as yet, and the physicians, Drs. Leonard Goldberg, Morton Hamburger, Joseph DeFranco and Chatrchai Watanakunakorn, are hesitant about giving lysostaphin to normal volunteers

because it could cause serious immune reactions by triggering an antibody response. Although a majority of patients with staph infections of heart valves do respond to antibiotic therapy, fast-acting lysostaphin could be important for those who don't, they hypothesize.

MICROBIOLOGY

Higher blood levels from new drug

A new penicillin—the latest addition to an already large store of various types of penicillin—is under study by two Swedish scientists. Called azidopenicillin, this drug is effective against most common disease-causing bacteria and is more active against influenza bacteria than ordinary penicillins. Its most promising feature, however, according to Drs. Costa Tunevall and A. Rune Frisk of the Central Bacteriological Laboratory, Stockholm, is that a single tablet produces higher levels of the active drug in the blood than do other penicillins. Comparing azidopenicillin and other penicillins given at the same dosage, the azidopenicillin proves more effective.

Clinical tests of this new antibiotic are underway in patients with respiratory infections, including pneumonia, and in patients with scarlet fever.

MICROBIOLOGY

New antibiotic outdoes penicillin

If streptococcal infections of the throat are not eradicated quickly, they may lead to rheumatic fever or acute inflammation of the kidneys. Drs. Maxwell Stillerman and Stanley Bernstein of the Long Island Jewish Hospital, New Hyde Park, N.Y., compared the effectiveness of two penicillins with a new antibiotic—cephaloglycin. In studies of 176 patients between the ages of 3 and 17—the group most often infected by streptococci—they found cephaloglycin to be more active. Possible side effects are temporary diarrhea and various rashes, but, they say, the drug is sufficiently superior to penicillin to warrant further study.

MICROBIOLOGY

Antibiotic ointment heals burns

In early treatment of severely burned patients, shock, loss of tissue fluids and infection are prime concerns. Recent improvements in treatment of shock and fluid loss mean more patients survive only to die of serious infections which are more difficult to control.

At the ASM meeting, researchers from the Norwich Pharmacal Co. reported a new antibiotic ointment made from a class of chemicals called nitrofurans that were synthesized in 1961. In experiments with rats, scientists first burned the animals' backs and then smeared a culture of infectious bacteria into the wounds. According to Drs. H. E. Russell, D. P. Gutekunst and R. E. Chamberlain, about 86 percent of rats then treated with the antibiotic, called furazolidium chloride, survived, but about 94 percent of the untreated controls died.