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THE USE AND ABUSE OF THE BROAD SPECTRUM ANTIBIOTIC

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The term "broad spectrum antibiotics" was originally used to designate antibiotics that were effective against both gram-positive and gram-negative bacteria, in contrast to penicillin, which is effective chiefly against gram-positive organisms, and streptomycin, which is active primarily against gram-negative bacteria. The broad spectrum antibiotics have an antimicrobial spectrum which includes some gram-positive and some gram-negative organisms, as well as certain rickettsiae, larger viruses, protozoa, and pleuropneumonia-like organisms. Although the antimicrobial spectra of other antibiotics vary in their breadth of coverage, this article will be limited to a discussion of the tetracyclines and chloramphenicol.

The Tetracyclines

There are four basic tetracyline homologues. The first two were prepared entirely by fermentation methods. Chlortetracycline hydrochloride was isolated from *Streptomyces aureofaciens* by Duggar [1] in 1948 and oxytetracycline, produced by *S rimosus*, was introduced in 1950. Tetracycline was prepared by catalytic hydrogenation of the chlorine radical and introduced for clinical use in 1953. Demethylchlortetracycline, produced by a mutant of Duggar's original strain, was described in 1957 [2] and was introduced for clinical use in 1959.[3-6] Many other homologues of the tetracyclines have been produced and some are under investigation.[7] However, none of these is available yet for clincial use.

Various additives and combinations have been developed and marketed. It is claimed that they increase absorption, reduce gastrointestinal irritation, prevent overgrowth of *Candida* (*Monilia*) and other fungi, and are synergistically active against bacteria. In general, such effects are either minor or negligible and have been exaggerated in the promotion of the various preparations.[8] Fixed combinations of tetracyclines with other antibiotics rarely offer a therapeutic advantage, for the second antibiotic in such combinations is usually present in smaller

NOTE.—Numbered footnotes at end of article, p. 2714.