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Macrolide Antibiotics

There are only very few chemical classes of antibiotics in medical use, and these have originated over a span of more than 60 years of research. Almost half a century ago, the first member of the macrolides, erythromycin, was introduced as a treatment option for bacterial infections. Erythromycin is a very complex fermentation product obtained from the soil bacterium *Saccharopolyspora erythraea* (originally named *Streptomyces erythreus*). The success of erythromycin, based on its efficacy and tolerability, stimulated researchers throughout the world to undertake intense efforts to understand the biology and chemistry of macrolides and to use this experience to improve the properties of this compound class. The second generation of macrolides, based on chemical modifications of erythromycin, is currently being in broad use, especially for treatment of respiratory tract infections. We presently foresee the introduction of a new generation of macrolides, i. e. the ketolides, which have the potential to overcome rising resistance problems. This monograph is intended to give the interested reader an overview on "macrolide experience", covering important areas from basic research to clinical use. Starting from a historic overview, the essential basic parameters - efficacy, pharmacokinetics, pharmacodynamics, and pharmacology - are highlighted in order to introduce the reader to the rationale for clinical use of macrolides. The following group of chapters cover the complex chemistry of the macrolactone structures, giving historic background, basic structure-activity relationships of various derivatization strategies, and perspectives for future discovery of new semisynthetic macrolide antibiotics.

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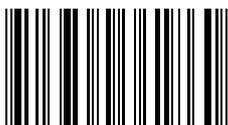
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