6 Tetracycline Derivatives as Anti-inflammatory Agents and Potential Agents in Stroke Treatment

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6.1 Introduction

Tetracyclines are well-known bacteriostatic drugs with a broad-spectrum antimicrobial activity. The first tetracycline was isolated more than 50 years ago, reaching the market in 1953. The widely used semisynthetic tetracycline derivatives, doxycycline and minocycline (Fig. 1), were synthesized in 1966 and 1972, respectively (Sande and Mandel 1985). Today, minocycline is the most widely prescribed systemic antibiotic for acne, and in the UK alone, over 6.5 million people receive long-term treatment (9 months in average) with it. The antibiotic resistance is low with minocycline compared with
Fig. 1. The molecular structure of tetracycline and its semisynthetic derivatives, minocycline and doxycycline. Note the differences in substitute groups of carbons 6 and 7 in minocycline and of carbons 5 and 6 in doxycycline.

other tetracyclines and antibiotics. In general, minocycline is considered a safe drug in humans. Severe drug reactions include drug-induced lupus, hypersensitivity syndrome reaction, and serum sickness-like reaction, but there are only 1.6 cases per million exposures, making these adverse reactions very rare.