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Synthesis and antibacterial activity of novel quaternary ammonium pyridoxine derivatives

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Abstract

© 2015 Bentham Science Publishers. A series of 26 quaternary ammonium pyridoxine derivatives were synthesized and their cytotoxicity and antibacterial activities against clinically relevant bacterial strains were tested in vitro. The antibacterial activity of mono-ammonium salts increased with the rise of the lipophilicity and compound 3,3,5-trimethyl-8,8-dioc-yl-1,7,8,9-tetrahydro-[1,3]dioxino[5,4-d]pyrrolo[3,4-b]pyridin-8-ium chloride (2d) reaches a maximum among them. Bis-ammonium salt of pyridoxine 4 with two dimethyloctylamine groups also demonstrated high antibacterial activity despite lower lipophilicity. The results of MTT assay indicated that HEK 293 cells were more sensitive than HSF to quaternary ammonium pyridoxine derivatives. Compounds 2d and 4 did not induce the damage of the DNA and might be of interest in the development of new antimicrobials.

Keywords

Antibacterial activity, Cytotoxicity, Genotoxicity, Pyridoxine, Quaternary ammonium salts