Comparison of drug sensitivity and genotypes of clinically isolated strains of levofloxacin-resistant *Streptococcus pneumoniae* obtained from Okinawa Island, the Japanese main island and Hong Kong. J. Antibiot (Tokyo) 2011 (in press)
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**Abstract**
The prevalence of fluoroquinolone-resistant *Streptococcus pneumoniae* is increasing worldwide. In the present study, a comparison of drug sensitivity and genotypes of clinically isolated strains of levofloxacin (LVFX)-resistant *S. pneumoniae* obtained from Hong Kong, Okinawa Island and the Japanese main island (Honshu) was performed. MICs of quinolones (LVFX, tosufloxacin, ciprofloxacin, gatifloxacin and sitafloxacin (STFX)) and other antibiotics (penicillin G, cefcapene, cefditoren, clarithromycin and azithromycin) were determined by a microdilution broth method according to the Clinical and Laboratory Standards Institute Standards. The quinolone-resistance determining regions (QRDRs) of gyrA, gyrB, parC and parE of these strains were analyzed by PCR-based sequencing. All 40 strains tested had more than one amino-acid substitution in the QRDRs of gyrA, gyrB, parC or parE. Although there seemed to be some clonality in strains obtained from Hong Kong, there was no clonality in strains obtained from Okinawa and Japan. Strains obtained from Hong Kong, Okinawa Island and the Japanese main island were genetically different by pulsed-field gel electrophoresis analysis. The range of MIC values of STFX against isolates resistant to LVFX (MIC 4-32 mg l(-1)) was 0.12-0.5 mg l(-1), and MIC(80) values of STFX against LVFX-resistant isolates were 0.25 mg l(-1). This study suggests that LVFX-resistant *S. pneumoniae* is similar in all three locations and STFX is potent against LVFX-resistant *S. pneumoniae* with multiple mutations in QRDRs of gyrase A and topoisomerase IV.