

RESEARCH NOTE

EMERGENCE AND PROPERTIES OF FLUOROQUINOLONE RESISTANT *SALMONELLA ENTERICA* SEROVAR TYPHI STRAINS ISOLATED FROM NEPAL IN 2002 AND 2003

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Abstract. A total of 171 *Salmonella enterica* serovar Typhi strains isolated from Nepal, mostly from patients with typhoid fever in 2002-2003, were tested for antimicrobial susceptibility by disk diffusion assay. Selected *S. enterica* serovar Typhi isolates were tested for MICs by E-test for ceftriaxone, ciprofloxacin and ofloxacin. Mutations of DNA gyrase *gyrA* and *gyrB* and topoisomerase IV *parC* and *parE* were identified by sequencing of PCR amplicons. By disk diffusion assay, 75/171 *S. enterica* serovar Typhi isolates were resistant to nalidixic acid, ampicillin, chloramphenicol, streptomycin, tetracycline, sulfisoxazole, and trimethoprim/sulfamethoxazoles. Multiple drug resistance to the 7 antimicrobials was most predominant among *S. enterica* serovar Typhi isolates in this study. Resistance to nalidixic acid was detected in 76/111 and 56/60 of total isolates collected in 2002 and 2003, respectively. Nalidixic acid-resistant isolates in 2002 and 2003 showed MIC range for ciprofloxacin of 0.125-0.250 mg/l. Nalidixic acid-resistant isolates contained point mutations in *gyrA* and *parC* but not *gyrB* and *parE*. The *gyrA* mutation of nalidixic acid-resistant isolates obtained in 2002 and 2003 had amino acid substitution at position 83 of Serine→Tyrosine and Serine→Phenylalanine, respectively. Two different mutations of *gyrA* were detected among nalidixic acid-resistant isolates. Thus it is necessary to monitor mutation in DNA topoisomerase associated with increases in quinolones resistance.

Key words: *Salmonella enterica* serovar Typhi, antimicrobial resistances, quinolone resistance, typhoid outbreak, Nepal

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