GENOTYPIC AND PHENOTYPIC DIFFERENTIATION OF
SALMONELLA ENTERICA SEROVAR PARATYPHI B IN
MALAYSIA

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Abstract. *Salmonella enterica* serovar Paratyphi B is known to cause either paratyphoid fever or gastroenteritis. Differentiation of *Salmonella* ser. Paratyphi B into biotype Java (d-tartrate fermenting, dT+) and biotype Paratyphi B (d-tartrate non-fermenting, dT-) is important for *Salmonella* epidemiology. This study applied a PCR approach to differentiate the two biotypes to augment the conventional biochemical method and to determine the antibiograms and genomic diversity of Malaysian *S. Paratyphi* B. Among 100 strains tested (clinical, 86; non-humans, 14), only two clinical strains were confirmed as biotype Paratyphi B as indicated by both lead acetate test and PCR. Antibiotic resistance rates were as follows: streptomycin 18%, sulphonamides 13%, ampicillin 10%, chloramphenicol 4%, tetracycline 3%, cefotaxime 2%, cefpodoxime 2%, cefazolin 2%, gentamicin 1% and trimethoprim 1%. None showed resistance towards amoxicillin-clavulanic acid, ceftiofur, ciprofloxacin, nalidixic acid and trimethoprim-sulphamethoxazole. Seven strains showed multidrug resistance towards 3 or more classes of antimicrobial agents. REP-PCR and PFGE generated 32 and 76 different profiles, respectively. PFGE (D = 0.99) was more discriminative than REP-PCR (D = 0.93) and antimicrobial susceptibility test (D = 0.48) in subtyping the strains. Strains isolated 18 years apart (1982 - 2008) from different localities in Malaysia were clonally related as demonstrated by REP-PCR and PFGE, indicating that these strains were stable and widely distributed. In some clusters, strains isolated from different sources (clinical, food and animal) were grouped together. Thus, biotype Java was the most common biotype of *Salmonella* ser. Paratyphi B in Malaysia. The PCR approach is highly recommended due to its simplicity, specificity and ease of operation. The level of antimicrobial resistance among *Salmonella* ser. Paratyphi B remained relatively low in Malaysia but the emergence of resistance to cephalosporins is a cause for concern.

Keywords: *Salmonella* Paratyphi B, lead acetate test, antimicrobial resistance, REP-PCR, PFGE

INTRODUCTION

Non-typhoidal *Salmonella* are among the primary causes of food-borne disease in humans. Symptoms due to *Salmonella enterica* serovar Paratyphi B (O:H formula

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