Genotypic characterization of *Salmonella typhi* by amplified fragment length polymorphism fingerprinting provides increased discrimination as compared to pulsed-field gel electrophoresis and ribotyping

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Abstract

Amplified fragment length polymorphism (AFLP) is a recently developed, PCR-based high resolution fingerprinting method that is able to generate complex banding patterns which can be used to delineate intraspecific genetic relationships among bacteria. In the present study, AFLP was evaluated for its usefulness in the molecular typing of *Salmonella typhi* in comparison to ribotyping and pulsed-field gel electrophoresis (PFGE). Six *S. typhi* isolates from diverse geographic areas (Malaysia, Indonesia, India, Chile, Papua New Guinea and Switzerland) gave unique, heterogeneous profiles when typed by AFLP, a result which was consistent with ribotyping and PFGE analysis. In a further study of selected *S. typhi* isolates from Papua New Guinea which caused fatal and non-fatal disease previously shown to be clonally related by PFGE, AFLP discriminated between these isolates but did not indicate a linkage between genotype with virulence. We conclude that AFLP (discriminatory index = 0.88) has a higher discriminatory power for strain differentiation among *S. typhi* than ribotyping (DI = 0.63) and PFGE (DI = 0.74). © 2000 Elsevier Science B.V. All rights reserved.

Keywords: AFLP fingerprinting; *Salmonella typhi*; Typhoid fever

1. Introduction

Typhoid fever remains as an important global health problem, especially in the developing countries (Pang et al., 1998), and effective epidemiological surveillance is crucial in monitoring the presence and spread of the disease. It is estimated that more than 16 million cases of typhoid fever occur annually worldwide with more than 600,000 deaths, accompanied by a belief among public health experts that these estimates are possibly 5–10 times too low (Ivanoff, 1998; Pang et al., 1998). In recent years, many DNA-based, molecular approaches have been utilized in the molecular typing of *Salmonella typhi*,...