Analysis of occurrence of virulence genes among *Yersinia enterocolitica* isolates belonging to different biotypes and serotypes

B. Kot, M. Piechota, A. Jakubczak

Department of Microbiology, Institute of Biology, University of Podlasie, Bolesława Prusa 12, 08-110 Siedlce, Poland

Abstract

The 150 *Y. enterocolitica* strains isolated from humans and from pigs belonged to biotypes 4 (68.7%), 1A (18.7%) and 2 (4%), or were biochemically untypeable (8.6%). Biotype 4 was comprised of *Y. enterocolitica* strains representing serotype O:3, within biotype 1A the strains either belonged to serotypes O:5 and O:6 or were untypeable, and biotype 2 was represented by the strains of serotype O:9. The strains which were biochemically untypeable belonged to serotypes O:5, O:6 and O:3. Among the strains tested there also were those of an unidentified biotype and serotype. Nearly all the strains of biotype 1A represented genotype *ystB*+/*myfA*+, and few belonged to genotype *ystB*+.

The presence of the *ystB* gene in the strains of biotype 1A and only occasional occurrence of the gene in the other biotypes makes *ystB* a distinguishing marker of biotype 1A. The strains of genotype *ystA*+/*ail*+/*myfA*+/*yadA*+ predominated in biotype 4 (serotype O:3). The strains of biotype 2 (serotype O:9) represented genotype *ystA*+/*ail*+/*myfA*+, and the plasmid *yadA* gene was detected in some of them. Within the group of biochemically untypeable strains *ystB*+ and *myfA*-specific PCR products were mainly obtained.

The genotypes determined for the tested biotypes and serotypes of *Y. enterocolitica*, based upon the selected genes of virulence, can be applied as distinguishing markers and indicators of the potential virulence of *Y. enterocolitica* strains, excluding bioserotyping.

Key words: *Yersinia enterocolitica*, PCR, virulence genes

Introduction

*Yersinia enterocolitica* is an important enteropathogen capable of causing a variety of clinical disorders such as enteritis, enteroocolitis, gastroenteritis, mesenteric lymphadenitis and other disorders (Bottone 1999, Bleves and Cornelis 2000). This pathogen can cause disorders in people and many species of animals. In pigs the most frequent disorder is associated with the alimentary tract (gastroenteritis) (Fredrikkson-Ahomaa et al. 2001). Moreover, cases of bovine and ovine abortion caused by *Y. enterocolitica* are reported (Das et al. 1986, Corbel et al. 1990, 1992). The effect of *Y. enterocolitica* upon abortion in swine was confirmed by the fact of *Y. enterocolitica* being isolated from tissues of aborted fetuses and...