Identification of Actinobacillus pleuropneumoniae serotypes 1, 7, and 12 by multiplex PCR based on genes involved in encapsulation

Based on differences in the capsular polysaccharides, 15 serotypes have until now been described for Actinobacillus pleuropneumoniae, the etiological agent of swine pleuropneumonia. Identification of the causative serotype is important both as a virulence marker and for epidemiological purposes. However, a number of isolates show cross-reaction between serotypes and this has urged the development of quick, serotype specific DNA-based methods necessary. Serotype specific tests have until now been described for the serotypes 2, 5, and 6 (Jessing et al, 2003) and serotypes 1, 2 and 8 (Schuchert et al., 2004). In the present work, serotype specific DNA regions involved in the biosynthesis of the capsular polysaccharides (cps region) were used to develop a multiplex PCR test for simultaneous species identification and serotyping of A. pleuropneumoniae serotypes 1, 7, and 12. Primers specific for serotypes 1, 7, and 12 were combined with an already existing species-specific PCR test based on the omIA gene. The PCR test was evaluated with the serotype reference strains of A. pleuropneumoniae as well as 165 Danish field isolates. For all strains investigated, a complete correspondence was found between results obtained with the multiplex PCR test and results from the traditional serotyping methods. The species specificity of the assay was evaluated using a collection of 93 strains representing 29 different species within the family Pasteurellaceae, as well as species normally found in the respiratory tract of swine. Also 45 field isolates of the phylogenetically closely related species A. lignieresii were tested. All these isolates tested negative for the cps-genes, except 5 isolates of A. lignieresii, which gave an amplicon of the same size as serotype 7 but without the species-specific omIAmplicon. Combined with an earlier published multiplex PCR test for serotypes 2, 5, and 6, we are now able to allocate approx. 99 % of Danish isolates of A. pleuropneumoniae to a serotype by PCR. Genetical determination of the serotype based on the cps-genes represents a convenient and specific method for serotyping A. pleuropneumoniae in diagnostic laboratories.

General information
State: Published
Organisations: Bacteriology & Pathology, Division of Veterinary Diagnostics and Research, National Veterinary Institute, Department of Systems Biology
Contributors: Angen, Ø., Jessing, S. G., Ahrens, P., Inzana, T.
Number of pages: 99
Pages: 34-34
Publication date: 2005

Host publication information
Title of host publication: Pasteurellaceae 2005
Volume: B8
Place of publication: United States of America
Publisher: ASM International
ISBN (Print): 1-55581-370-4
URLs:
Source: orbit
Source-ID: 242085
Research output: Research - peer-review › Conference abstract in proceedings – Annual report year: 2005