Antigenic and Genetic Diversity of Mycoplasma bovis

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Introduction

Mycoplasma bovis is a significant emerging pathogen in cattle that causes economic loss due to mastitis, otitis, pneumonia and arthritis. Somewhat of a chameleon, this small organism is capable of great genetic variability or switching and has the remarkable ability to successfully adapt to changing environments. These characteristics allow it to evade host immunity, limiting immunological control strategies.

Materials and Methods

In this study, field strains of *M.bovis* were analyzed for genetic variability using Amplified Fragment Length Polymorphism (AFLP), coupled with capillary gel electrophoresis. A cluster analysis software program was used to compare fingerprints based on percent similarity. Six *M. bovis* strains, each representing a unique fingerprint, were manufactured into monovalent vaccines. Polyclonal antibodies against these strains are being produced. Colony immunodot blot and Western blot will be used to determine the antigenic relationship between the isolates.

Results

These strains were determined to be diverse, with percent similarity ranging from 70 to 90 %. This method typically produces 35 - 60 fragments ranging in size from 50 to 600 bp.

Significance

In conclusion, AFLP fingerprinting was determined to be a reproducible and powerful genotyping tool. This method can be used to evaluate the most prominent strains in a herd, as an autogenous bacterin isolate selection tool and a subtyping method. In terms of antigenicity, more work needs to be done. Due to the high variability of the antigenic presentation of proteins of *M. bovis*, the greatest challenge will be to "turn on" or maintain expression of protective antigens. In the meantime, AFLP is a good screening tool and work remains to determine how this genetic diversity translates to antigenic differences and cross-immunity between strains.