



Tropentag, October 6-8, 2009, Hamburg

“Biophysical and Socio-economic Frame Conditions
for the Sustainable Management
of Natural Resources”

Development of Urgently Needed Improved Diagnostic Test for CBPP, a Devastating Cattle Disease in Africa

JOERG JORES, JAN NAESENS

*International Livestock Research Institute (ILRI), Biotechnology-Improving Livestock Disease Control,
Kenya*

Abstract

Contagious Bovine Pleuropneumonia (CBPP) is a lung disease of cattle caused by the bacterial pathogen *Mycoplasma mycoides* ssp. *mycoides* small colony type (MmmSC). CBPP severely affects cattle stocks in Africa and consequently, a large proportion of the livestock-dependent population. While the disease has been eradicated in most parts of the developed world, it is still present in many countries of sub-Saharan Africa due to ethical reasons, a lack of money, fragmentation of veterinary services, uncontrolled cattle movement, poor vaccine efficacy, and poor sensitivity of current diagnostic tests. A diagnostic test able to detect all infected animals would be a key tool in controlling CBPP. By having such a test, farmers, cattle traders and veterinarians would be able to test their cattle stock for CBPP, separate infected animals, and ensure that only CBPP-free animals are traded, which would not only help to secure a constant income from trade but also lead to an increased livestock productivity. A systematic search to find the best possible immunogenic antigens has never been carried out. We used two approaches namely (1) two dimensional gel electrophoresis, immunoblot combined with mass spectrometry and (2) a phage library and panning with sera to identify novel candidate antigens. By doing so we identified a number of candidate antigens, some of which have been individually characterised in enzyme-linked immunosorbent assay and immunoblot experiments, employing sera from experimentally infected cattle. Further work is needed to design an optimal combination of diagnostic antigens. We will present an outline of the steps needed to translate our current research results into a product and improved policies for control of CBPP.

Keywords: CBPP, diagnostics, immunogens