Food and Agriculture (FA) Domain Committee

MONITORING PROGRESS REPORT 2006

COST 855 - Chair: Konrad Sachse

3rd DC meeting, Antalya (TR), 31 Jan – 2 Feb 2007

COST Action 855
Domain Food and Agriculture (FA)

Animal Chlamydioses and the Zoonotic Implications

CSO approval date 07/03/2002
Entry into force 13/09/2003
End date 04/11/2007

This is 2002's catch (before COST 855)
- Only sporadic epidemiological surveys in animal populations,
  - different diagnostic methods in each lab,
  - little exchange among the chlamydia research community in Europe,
  - zoonotic transmission generally underdiagnosed (and underestimated)
  - There is a feeling that chlamydioses are important, but the data and tools are insufficient.

What will we have tomorrow? (The vision)
- Widespread use of high-performance molecular diagnostic tests,
  - standardised methodologies,
  - Improved epidemiological coverage of animal chlamydioses and zoonotic human cases,
  - Increased awareness of zoonotic chlamydioses, better cooperation between veterinary and human medicine
OBJECTIVES

The main objective of the Action is to better understand the spread and importance of animal chlamydioses in Europe. This includes improvement of diagnostic standards, assessment of hazards to human health, recommendations on improved management, control and prophylaxis of chlamydial infections.
Management Committee

WG 1: New diagnostic tests
Prof. Andreas Pospischil (Inst. Vet. Pathology, Univ. Zürich, CH),
Dr. Simone Magnino (Istit. Zooprofil. Sperimentale, Pavia, IT)

WG 2: Field survey and validation
Prof. Erhard F. Kaleta (Inst. Poultry Dis., Univ. Giessen, DE),
Dr. Evangelia Vretou (Hellenic Pasteur Inst., Athens, GR)

WG 3: Zoonotic aspects of chlamydioses
Dr. Vittorio Sambri (Section Microbiol., Univ. Bologna, IT)
Dr. Yvonne Pannekoek (Academic Medical Centre, Univ. Amsterdam, NL)

WG 4: Research on pathogenesis
Dr. David Longbottom (Moredun Res. Inst., Midlothian, UK)

WG 5: Development of vaccines
Prof. Daisy Vanrompay (Dept. Mol. Biotechnol., Univ. Ghent, BE)
Dr. Annie Rodolakis (Dept. Pathology, INRA Tours-Nouzilly, FR)

Results (1)

New diagnostic methods
New real-time PCR assays developed for Chlamydiaceae, Chlamydiae psittaci, and 4 other species. Methodologies are being tested in other labs.

Efforts underway to get these methods accepted as national standards.

DNA microarray test for chlamydiae, validation study completed.

New PCR-enzyme immunoassay to monitor chlamydial infections in birds.

Two new serological tests based on recombinant antigens.

Research on pathogenesis, immune response and virulence factors
Molecular studies on the persistent state of chlamydiae and its significance.
Characterisation of the type III secretion system and its contribution to virulence.
Completion of C. abortus genome sequencing and analysis.

Mouse model of C. abortus infection (abortion model).

Development of new vaccines for improved control of chlamydial infections
Studies on DNA vaccination and recombinant MOMP vaccination to induce protection against C. psittaci infection in turkeys.
DNA vaccination study in sheep against C. abortus infection.
Assessment of zoonotic risks associated with animal chlamydioses

### Results

Diagnostic surveys in flocks of poultry and sheep, herds of cattle, pet animals and others to evaluate the prevalence of chlamydial agents. Cases of chlamydioses in persons connected with the respective farm or household have been included (still ongoing).

Study on the public health risk associated with urban pigeons. Guinea pigs, free-ranging amphibians and wild bear as reservoirs of chlamydiae.

### Comparison with state of the art:

These results represent novel findings worldwide.

### Objectives reached?

Diagnostic tests - reached (on time), Vaccine development - reached (on time), Zoonotic transmission - reached (slightly behind), Epidemiological data - not reached, but considerable amount of new data, Final assessments and recommendations, publications - on schedule

### Action-related publications

- **2004: 8**
- **2005: 5**
- **2006: 6**

Involvement of younger scientists: 11/19 missions were undertaken by PhD students

### Publications

- The major scientific achievements of COST 855 will be published in a special issue of Veterinary Microbiology

### Annual Workshops

- **1st workshop on** Research in the Field of Animal Chlamydiases
  - Dublin, September 13, 2003

- **2nd workshop on** Zoonotic Aspects of Animal Chlamydiases
  - Budapest, September 1, 2004

- **3rd workshop on** Diagnosis and Pathogenesis of Animal Chlamydiases
  - Siena, September 22-23, 2005

- **4th workshop on** Animal Chlamydiases and Zoonotic Implications
  - Edinburgh, Sept 3-5, 2006
Working Group Meetings

WG 1: New diagnostic tests
WG 2: Serological testing
WG 3: Field samples
WG 4: Vaccines
WG 5: Street pigeons

Website
The COST 855 homepage at http://www.vetpathology.unizh.ch/forschung/CostAction855/publications.html is hosted by the University of Zürich. It has basic information on objectives, working organisation, the management committee, selected publications and the next meeting. Separate website for each year’s workshop.

Scientific and technical cooperation
Members of COST 855 have attended meetings of COST 854 “Protozoal reproduction losses in farm ruminants”, COST 845 on Brucellosis, and vice versa. There were contacts to the EU Concerted Action on Wildlife Zoonoses.

COST 855 members were the major contributors to Taxagemonics, a worldwide genome sequencing project for chlamydiae coordinated by TIGR.

Main Successes
- The Network is in place and functioning.
- Continuous exchange and interaction between research groups has generated a measurable increase in quantity and quality of chlamydia research in Europe.
- Awareness of chlamydial infections, their economic and zoonotic dimensions has increased in many European countries.

Problems
- Multilateral international interlaboratory trials (ring tests) for harmonisation of diagnostic methods, as well as pan-European epidemiological studies proved to be unrealistic in the absence of funding.
- Imbalance between demand and supply in STSMs (too few receiving labs)
Future Plans

- Deliver on the objectives of COST 855, Dissemination of results among scientific community, veterinary and public health authorities
- Keep the community together
- FP7 proposal
- Participation in future COST action(s)