Organisation Mondiale de la Santé Animale
World Organisation for Animal Health
Organización Mundial de Sanidad Animal

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REPORT OF THE MEETING OF THE OIE STANDARDS COMMISSION

Paris, 1–3 November 2000

The OIE Standards Commission met at the OIE Headquarters from 1 to 3 November 2000.

Dr J. Blancou, Director General, congratulated the re-elected participants and welcomed the newly elected Secretary General, Dr B. Schmitt. He specifically focused on the value of the Commission's activities relating to harmonisation of the standards and to quality systems for veterinary laboratories. Dr Blancou mentioned that the Third Strategic Plan has been approved and a Work Plan will be submitted to the OIE Administrative Commission. Prof. M. Truszczynski, President of the Commission, thanked Dr Blancou for his support throughout his term as Director General, and in particular his positive attitude regarding the role of laboratories in helping to achieve the overall aims of the OIE.

The Agenda and List of Participants are given in Appendices I and II, respectively.

1. OIE Reference Laboratories

1.1. Updating the list of Reference Laboratories

The Commission approved a request by the Federal Institute of Berlin to be removed from the list of Reference Laboratories for Dourine. The Commission recommends removing from the list two reference laboratories that have failed to provide annual reports for the past two years (the Institute of Animal Science and Health [ID Lelystad], the Netherlands, for paratuberculosis and bovine tuberculosis, and Kenya Agriculture Research Institute, Kenya, for contagious caprine pleuropneumonia). The OIE has been notified of the following changes to named experts at OIE Reference Laboratories. The Commission recommends their acceptance:

Rabies

Dr F.Cliquet to replace Dr M. Aubert at the AFSSA[1] Nancy, Malzeville, France.

1 Agence Française de Sécurité Sanitaire des Aliments

Contagious Equine Metritis

Mr P.J. Heath to replace Mrs J.E. Shreeve at the Veterinary Laboratories Agency (VLA), United Kingdom (UK). Tel.: (44.1284) 72.44.99; Fax: (44.1284) 72.45.00; E-mail: p.heath@vla.maff.gsi.gov.uk

New address: VLA Bury St Edmunds, Rougham Hill, Bury St Edmunds, Suffolk IP33 2RX, UK.

Foot and mouth disease and vesicular stomatitis

Dr R.M. Allende to replace Dr M. Sondahl at Panaftosa[2], Brazil.

1.2. Reference Laboratories conducting validated tests in wildlife

The Commission reviewed the responses received from the OIE Reference Laboratories regarding information on the validity of diagnostic tests for diseases of wildlife. These responses are summarised in a Table at Appendix III. The Commission expressed its disappointment, but not surprise, at the paucity of validation data on wildlife tests. Reference Laboratories and others are therefore again encouraged to validate the more important tests in wildlife species.

1.3. Proposed change to Reference Laboratory Mandate

Following a suggestion from the Fish Diseases Commission, the Standards Commission agreed that positive test results for reportable diseases should be reported to the Chief Veterinary Officer of the country of origin of the diagnostic specimens. A proposed revision of the OIE Mandate for Reference Laboratories is shown at Appendix IV.

2. International standardisation of diagnostic tests and vaccines

2.1. OIE standardisation programmes for diagnostic tests

LIST A DISEASES

Foot and mouth disease – Coordinator Dr A.I. Donaldson

Dr Donaldson had reported the results of Phase XVI of the FAO[3] Collaborative Study on the standardisation of foot and mouth disease (FMD) serology. This had included an international interlaboratory comparison of twelve 'unknown' sera for testing against serotypes A, O, and C, together with an evaluation of the candidate reference sera prepared during Phase XV of the study. Results were presented from 24 participating laboratories.

There was generally good agreement among laboratories on the classification of the test sera. However, an indication arose of a need for some technical improvement to the liquid-phase blocking ELISA[4] to improve its specificity and sensitivity. The study also confirmed the acceptability of the reference sera and the Standards Commission considers that these will be suitable as OIE International Reference Standards for FMD serology, subject to review of the full validation data. As well as an FMD negative reference serum, there are strong and weak 'positive' reference sera to each of the serotypes O_1 Manisa, A_{22} Iraq, and C_1 Oberbayern.

Peste des petits ruminants – Coordinator Dr A. Diallo

The Commission reviewed the data received from the Kenya Agricultural Research Institute and the Institute of Animal Health, Pribright on the candidate weak positive standard serum for use in the ELISA for diagnosing peste des petits ruminants (PPR). It had some concerns about the performance of the weak positive serum and felt that further validation of this serum is necessary before it can be accepted as an OIE Standard weak positive serum for PPR serology.

2 Pan-American Foot-and-Mouth Disease Center
3 Food and Agriculture Organization of the United Nations
4 Enzyme-linked immunosorbent assay

LIST B DISEASES

Enzootic bovine leukosis – Coordinator Mrs L. Lysons

No further progress has been made with weak positive reference sera suitable for use in the AGID[5] test. The OIE Reference Laboratory in Sweden will be asked to develop a new serum for this purpose. It will also be asked to coordinate interlaboratory comparisons to evaluate the performance of different test methods and kits, as there is recent published evidence of discrepancies.

Dourine

The Commission discussed an ongoing international comparison of dourine antigens for complement fixation testing coordinated by the All-Russian Research Institute of Experimental Veterinary Medicine, Moscow. Dr L. Touratier, Secretary General of the OIE Ad hoc Group on Non-Tsetse-Transmitted Animal Trypanosomoses, will be asked to attend the next meeting of the Standards Commission to discuss this effort to standardise testing.

Equine viral arteritis – Coordinator Dr D. Paton

Dr Paton reported that since the completion of the initial programme of harmonisation of serological testing in 1998, two further international interlaboratory comparisons had been conducted. This will be an ongoing programme. In addition further progress had been made on the harmonisation of techniques for virus isolation and for virus detection by reverse-transcription polymerase chain reaction technique. The Commission complimented the group on its work and looked forward to further information in due course.

Rabies serology – Coordinator Dr F. Cliquet

The Commission took note of comments on harmonisation and reproducibility of the prescribed tests for rabies serology, which had been referred from the OIE Reference Laboratory at AFSSA Nancy. Taking into account the discussions held by the Commission with rabies experts and with a representative of the World Health Organization (Standards Commission report for February 1999), and also the revised chapter for the *Manual,* which had already been circulated for Member Country comments, the Commission does not consider there is any need for revision of its existing recommendations.

2.2. OIE standardisation programmes for vaccines

Equine influenza – Coordinator Dr J. Mumford

Correspondence is continuing between OIE and the European Pharmacopoeia regarding the status of reference sera for equine influenza vaccine production. These sera were developed by the OIE Reference Laboratory for equine influenza at Newmarket, UK.

3. List of prescribed and alternative tests

Following advice from the OIE Reference Laboratory for equine infectious anaemia (EIA) in the United States of America, the Commission recommends that the ELISA be added to the list as an alternative test for EIA serology.

Having sought advice from the OIE Reference Laboratories, the Commission supports removal of the complement fixation test from the list of alternative tests for paratuberculosis.

4. OIE *Manual of Standards of Diagnostic Tests and Vaccines*

The Commission discussed various issues with the editor of the *Manual*, Dr G.A. Cullen, regarding finalisation of the fourth edition. There are only three chapters that are still under final review by the authors. It is expected that the *Manual* will be printed in February 2001 and available from March 2001. The Commission will discuss plans for the fifth edition, with the possibility of the addition of new disease chapters, at its next meeting in February 2001.

5 Agar gel immunodiffusion

5. Preparation of booklet on guidelines

The Commission discussed issues concerning publication of a booklet containing the OIE quality assurance standards and other guidelines for veterinary laboratories. It was decided to include assay validation, proficiency testing and development of international reference standards for antibody assays in the booklet, along with the quality assurance standard. Dr P. Wright will work with the author of the assay validation chapter from the *OIE Scientific and Technical Review* (1998), **17** (2) 469–526, to make the format compatible with the other documents.

6. Liaison with the Code Commission

6.1. Paratuberculosis

The Code Commission had asked advice on various aspects of laboratory testing for this disease. The Standards Commission reiterated its previous comments that none of the available tests has a wholly satisfactory performance in terms of sensitivity or specificity. The use of complement fixation for serology is referred to in Section 3 above.

6.2. Chlamydia

The Commission noted the new name of the organism – the genus *Chlamydia* was recently divided into two genera, *Chlamydia* and *Chlamydophila*. The *Manual* chapter has already been revised to include this change. However no changes were needed in the *International Animal Health Code* as the name of the disease remains avian chlamydiosis. This is the term used in the *Code*.

6.3. Newcastle disease –vaccine intracerebral pathogenicity index

The Ad hoc Group on Newcastle Disease (April 2000) had referred to the Standards Commission for an opinion on the selection of virus vaccine strains. After consultation with experts in the field, the Standards Commission took note of procedures in use in different regions. In principle it is recommended that vaccines should have an intracerebral pathogenicity index (ICPI) of less than 0.7. However, in order to account for interassay and interlaboratory variability, a safety margin should be allowed so that the working limit for ICPI in vaccine master seed virus strains should be 0.4. It is believed that this will not conflict with current practice in most Member Countries.

6.4. Tests for viruses in bovine semen

The Code Commission had sought an opinion on a proposed revision of Appendix 3.2.1. for bovine semen, in particular with regard to tests for bovine viral diarrhoea (BVD) and infectious bovine rhinotracheitis (IBR). The Standards Commission will contact the OIE Reference Laboratories about tests proposed for BVD. The section in the *Code* on collection and processing of semen should refer to carrying out testing according to the *Manual*. For IBR the Standards Commission has still not received any satisfactory validation data for tests linked to gene-deleted marker vaccines, and so this section of the draft chapter on bovine semen should remain under study. Considering that such vaccines are increasingly used in the field the Commission is anxious to examine this data so that an appropriate recommendation can be made.

6.5. Foot and mouth disease – validation of 3ABC assay

The Commission notes that there is ongoing international validation of this assay by the OIE Collaborating Centre for ELISA and Molecular Techniques in Animal Disease Diagnosis, in Vienna, Austria.

6.6. Transmissible spongiform encephalopathies

The Commission discussed the need for standardisation of tissue preparation for TSE assays. As methodologies are in a state of constant development, it was decided to request that the OIE Reference Laboratories provide information on the current state of knowledge in this area.

7. Meeting with the Director General Elect

Dr B. Vallat, the Director General Elect of the OIE, addressed the Standards Commission about its future priorities and role in the OIE Working Plan for the years 2001–2005. Those priorities mentioned were in the areas of food safety, zoonotic diseases and support for research proposals addressing OIE priorities. He also discussed translation of the *Manual* into additional languages.

8. Any other business

8.1. The Commission approved the proposed speakers and agenda for the fifth OIE/WAVLD[6] Seminar on Veterinary Biotechnology to be held during the WAVLD meeting in Parma, Italy. The seminar will take place on 4 July 2001.

8.2. A Standards Commissions Web page will shortly be available on the OIE Web site. This Web page will include a list of Commission Members, a link to Reference Laboratories, the list of available reference sera, and Standard Commission meeting reports.

An order form will be available for the *Manual,* as well as a link to download the Animal Disease Cards. Protocols for newly approved prescribed tests will also be made available on this site.

8.3. The Commission responded to Resolution No.XVI of the International Committee, May 2000, regarding diagnosis, control and eradication of bovine tuberculosis. Dr G. Hewinson, VLA Weybridge, visited with the Commission about issues regarding vaccination of cattle for bovine tuberculosis. He reported the following:

Vaccination of animals against Mycobacterium bovis

The only vaccine available against *Mycobacterium bovis* infection is the BCG (bacille bilié Calmette-Guérin) (1). This is a live, attenuated strain of *M. bovis*. One of the disadvantages of vaccinating cattle with BCG is that the cattle become tuberculin reactive for up to 18 months. A number of factors appear to influence the efficacy of BCG vaccination, including the dose, the strain of BCG, the viability of the organism in the vaccine preparation, the route of inoculation, environmental stress and pre-exposure to environmental mycobacteria. Recent trials in which the dose of BCG has been optimised suggest that vaccination of cattle and deer with BCG may afford good protection against *M. bovis* (1). Alternative vaccines are under development and are likely to be available for testing within 5–10 years (1).

BCG vaccination of cattle might be valuable to developing countries where tuberculin test and slaughter strategies cannot be pursued. Given the variable reported efficacy of BCG, pilot trials should be performed in the relevant country before large-scale vaccination programmes are put in place.

BCG vaccination would not be suitable for general use in countries that use intradermal tuberculin testing as a means to control bovine tuberculosis as vaccination with BCG sensitises cattle to the intradermal tuberculin test. BCG vaccination may play a role in controlling *M. bovis* infection in wildlife although delivery systems will require development for vectors such as badgers and possums.

The strain of BCG, its production and vaccination dose should be standardised. BCG Pasteur strain has so far been used in vaccine studies and is considered to be the candidate strain of choice (2). The genome of this strain of BCG is currently being sequenced, and this should facilitate further standardisation of the strain. The optimum dose for vaccination of cattle and farmed deer is 10^4–10^6 colony-forming units of BCG Pasteur (1).

6 World Association of Veterinary Laboratory Diagnosticians

At present international trade is facilitated by certification based on the OIE *International Animal Health Code* and directives of regional groups of countries. These require the use of existing tuberculin tests. Therefore international trade in meat, dairy products and pelts from animals that have been vaccinated with BCG is acceptable, but trade in live animals, semen, ova and embryos from BCG vaccinated animals would not be possible.

References

1. SKINNER M.A., WEDLOCK D.N. & BUDDLE B.M. (2001). Vaccination of animals against *Mycobacterium bovis*. Mycobacterial Infections in Domestic and Wild Animals. *Rev. sci. tech. Off. int. Epiz.,* **20,** (in press).

2. WORLD HEALTH ORGANIZATION (WHO)/FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (FAO)/OFFICE INTERNATIONAL DES EPIZOOTIES (OIE) (1994). Report on Consultation on Animal Tuberculosis Vaccines. WHO, Veterinary Public Health Unit, Geneva. WHO/CDS/VPH/ 94.138.

A paragraph will be added to the chapter in the *Manual* on bovine tuberculosis regarding the availability of BCG vaccine for bovine vaccination and possible interference with diagnostic tests. The Commission also discussed the need for standardisation of tuberculin. The OIE Reference Laboratories will be asked to provide input on the state of tuberculin standardisation and need for further standardisation. The recommendations of the WHO/FAO/OIE consultation on field application of tuberculosis vaccines (reference 2 above) are available at Appendix V to this report.

8.4. The European Union is sponsoring a research project on a European surveillance network for influenza in pigs (ESNIP). The purpose of this project is to look at antigenic variation in swine influenza strains and determine if new strains used for diagnostic purposes or vaccine composition need to be added. An OIE representative will attend the next meeting of the research group and report back to the Commission. The Commission will then consider whether a chapter on swine influenza should be added to the next (fifth) edition of the *Manual*.

8.5. Date of next meeting: 31 Jan–2 Feb 2001. The Commission recommends that Dr Cullen should participate.

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.../Appendices

MEETING OF THE OIE STANDARDS COMMISSION

Paris, 1–3 November 2000

Agenda

1. OIE Reference Laboratories
2. International standardisation of diagnostic tests and vaccines
3. List of prescribed and alternative tests
4. OIE *Manual of Standards for Diagnostic Tests and Vaccines*
5. Preparation of booklet on guidelines
6. Liaison with the Code Commissions
7. Meeting with the Director General Elect
8. Any other business

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MEETING OF THE OIE STANDARDS COMMISSION

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Appendix III

OIE Reference Laboratories using veterinary diagnostic tests to diagnose diseases in wild animal species

Name of laboratory OIE Reference Laboratory for which disease(s)	Tests performed for diagnosing this disease/these diseases	Are these tests used in wildlife species?	Have they been validated for use in species other than the common domestic animals?	Is there information on differences you have observed between species in test sensitivity and specificity?
A010 Foot and mouth disease				
Brazil *(Dr M. Söndahl)*	Liquid-phase competitive enzyme-linked immunosorbent assay	✓ Water buffalo *(Bubalus bubalis)*, llama, deer	No	Not known
	3ABC indirect enzyme-linked immunosorbent assay			
	Enzyme-linked immunoelectrotransfer blot			
	Virus neutralisation	✓		
	Agar gel immunodiffusion	✓		
A020 Vesicular stomatitis				
Brazil *(Dr M. Söndahl*	Liquid-phase competitive enzyme-linked immunosorbent assay	✓ Llama; deer	No	Not known
	Virus neutralisation	✓		
A030 Swine vesicular disease				
Italy *(Dr E. Brocchi)*	Competitive enzyme-linked immunosorbent assay	✓ Wild boar	No	Not known
	Virus neutralisation	✓		
A060 Contagious bovine pleuropneumonia				
Italy *(Dr F.G. Santini)*	Complement fixation	✓ Water Buffalo	No	Not known
	Isolation			
	Immunohistochemistry			
	Polymerase chain reaction			
Portugal *(Dr J. Regalla)*	Complement fixation	✓ Water buffalo	No	Not known
	Immunoblot			
A090 Bluetongue				
UK *(Dr J. Anderson)*	Competitive enzyme-linked immunosorbent assay	✓ Ten species	No	Not known
	Virus neutralisation			
Brazil *(Dr M. Söndahl)*	Competitive enzyme-linked immunosorbent assay	✓ Deer	No	Not known
	Agar gel immunodiffusion	✓		
A110 African horse sickness				
Spain *(Dr J.M. Sánchez-Vizcaino & Dr C. Rubio)*	Sandwich enzyme-linked immunosorbent assay	✓ Horses, donkeys, zebras, camels	No	Not known
	Indirect enzyme-linked immunosorbent assay	✓		

Name of laboratory OIE Reference Laboratory for which disease(s)	Tests performed for diagnosing this disease/these diseases	Are these tests used in wildlife species?	Have they been validated for use in species other than the common domestic animals?	Is there information on differences you have observed between species in test sensitivity and specificity?
A120 African swine fever				
Spain *(Dr H.M. Sánchez-Vizcaino)*	Direct immunofluorsecence	✓ Wild boar	Yes	Same
	Polymerase chain reaction	✓		
	Indirect enzyme-linked immunosorbent assay	✓		
	Indirect immunofluorescence test	✓		
	Immunoblotting	✓		
A130 Classical swine fever/Hog cholera				
Poland *(Dr Z. Pejsak)*	Virus isolation	✓ Wild boar	Referred to Germany	
	Antigen enzyme-linked immunosorbent assay	✓		
	Reverse-transcription polymerase chain reaction	✓		
	Virus neutralisation			
	Antibody enzyme-linked immunosorbent assay	✓		
	Neutralising peroxidase-linked assay			
Germany *(Dr. G. Floegel)*	Virus isolation	✓ Wild boar	Experimentally	Same
	Virus neutralisation	✓		
	Antibody enzyme-linked immunosorbent assay	✓		
	Antigen enzyme-linked immunosorbent assay	✓		
	Immunofluorescence (organ)	✓		
A150 Avian influenza **A160 Newcastle disease**				
USA *(Dr B. Panigrahy)*	**Avian influenza**			
	Pathogenicity tests	✓ Wild birds	Not known	Good correlation of results
	Virus isolation	✓		
	Agar gel immunodiffusion	✓		
	Haemagglutination inhibition	✓		
	Neuraminidase inhibition	✓		
	Newcastle disease			
	Virus isolation	✓		
	Haemagglutination inhibition	✓		
	Pathotype determination	✓		
Germany *(Prof. E.F. Kaleta)*	Virus isolation	✓ Psittacines, ducks, geese	No	Haemagglutination inhibition not recommended in ducks and psittacines
	Electron microscopy			
	Haemagglutination inhibition	✓		
	Virus neutralisation	✓		
B056 Leptospirosis				

Name of laboratory OIE Reference Laboratory for which disease(s)	Tests performed for diagnosing this disease/these diseases	Are these tests used in wildlife species?	Have they been validated for use in species other than the common domestic animals?	Is there information on differences you have observed between species in test sensitivity and specificity?
USA *(Drs D. Miller & C. Bolin)*	Microscopic agglutination	✓	No	Supposed to work in wild ruminants, swine and solipeds
Netherlands *(Dr W.J. Terpstra)*	Enzyme-linked immunosorbent assay		No	Species dependant speculated
	Microscopic agglutination	✓ Feral		
	Culture	✓		
UK *(Dr W.A. Ellis)*	Microscopic agglutination	✓ Badgers, mice, shrew, rats	No	Serology poor, culture best
	Enzyme-linked immunosorbent assay			
	Immunofluorescence			
	Culture	✓		
	Polymerase chain reaction			
B058 Rabies				
South Africa *(Mr J. Bingham)*	Fluorescence antibody test	✓ Wildlife	Yes	No difference
	Virus isolation	✓		
	Fluorescence antibody neutralisation test	✓ Wild dogs	No	Not known
Germany *(Dr J.H. Cox)*	Rapid fluorescent focus inhibition test	✓ Fox (1000s), wild pigs, martens, racoon dogs, badgers, wolves, etc.	Yes	Equal
France *(Mr M. Aubert & Dr J. Barrat)*	Enzyme-linked immunosorbent assay	✓ Foxes	Yes	Correlates with fluorescence antibody neutralisation test
B059 Paratuberculosis				
France *(Mme Marie-Françoise Thorel)*	Isolation	✓ Wildlife	No	Not known
	Enzyme-linked immunosorbent assay for paratuberculosis	✓		
Argentina *(Dr A. Bernardelli)*	Isolation	✓ Wild seals	No	Not known
	Spoligotyping-IS 6110-restriction fragment length polymorphism	✓ Wild seals	No	Not known
Australia *(Dr R. Condron)*	Enzyme-linked immunosorbent assay for tuberculosis	✓ Seals	Yes	Comparable to skin test
B013/151/152/253 Brucellosis				
UK *(Mr A.P. MacMillan)*	Enzyme-linked immunosorbent assays	✓ Cetacean, pinniped sp.	No	Not known
	Enzyme-linked immunosorbent assays	✓ Alpaca, buffalo, camel, deer, llama		
	Rose bengal test	✓ Antelope		
	Complement fixation test	✓		
	Serum agglutination test	✓		
Canada *(Dr K. Nielsen)*	Rose bengal test	✓ Bison, cervids	Yes	Published in *Journal of Wildlife Diseases*
	Complement fixation test	✓		
	Indirect enzyme-linked immunosorbent assay	✓		
	Competitive enzyme-linked	✓		

Name of laboratory OIE Reference Laboratory for which disease(s)	Tests performed for diagnosing this disease/these diseases	Are these tests used in wildlife species?	Have they been validated for use in species other than the common domestic animals?	Is there information on differences you have observed between species in test sensitivity and specificity?
	immunosorbent assay			
	Fluorescence polarisation assay	✓ Camels, marine mammals	No	Not known
Israel *(Dr M. Banai)*	Serum agglutination test	No	No	Not known
	Complement fixation test			
	Rose bengal test			
	Microplate serum agglutination test			
	Milk ring test			
	Coomb test			
	Enzyme-linked immunosorbent assay			
France *(Dr B. Garin-Bastuji)*	Rose bengal test	✓ Feral pigs	No	Similar to domestic swine
	Complement fixation test	✓ Wild boar		
	Serum agglutination test			
B108 Enzootic bovine leukosis				
Sweden *(Dr L.M.H. Renström)*	Indirect enzyme-linked immunosorbent assay		No	Not known, little relevance with wildlife
	Blocking enzyme-linked immunosorbent assay	✓		
	Agar gel immunodiffusion	✓		
B110 Infectious bovine rhinotracheitis				
Brazil *(Dr M. Söndahl)*	Competitive enzyme-linked immunosorbent assay	✓ Water buffalo	No	Not known
	Virus neutralisation	✓		
Netherlands *(Dr J.T. van Oirschot)*	Neutralisation tests	✓	No	No difference
	Blocking enzyme-linked immunosorbent assay	✓		
	(gE, gB, IgM, IgG1, 2IgA)	Only gE and gB		
Canada *(Dr L.A. Babiuk & Dr D. Deregt)*		Virus isolation BHV1 in elk semen		
B115 Bovine spongiform encephalopathy, B160 Scrapie				
UK *(Dr M. Jeffrey)*	Histology	✓	No	Not known
	Immunohistochemistry	✓		
	Electron microscopy	✓		
	Western blot	✓		
USA *(Dr D.P. Knowles Jr [Scrapie])*	Third eyelid test	✓ Mule deer, elk, sheep	Yes	Little difference
B153 Caprine arthritis/encephalitis **B161 Maedi-visna**				
France *(Dr C. Vitu)*	Agar gel immunodiffusion	No	No (only Mouflon hybrid)	Not known
	Enzyme-linked immunosorbent assay			
	Western blot			
	Polymerase chain reaction			
USA *(Dr D.P. Knowles Jr)*	Competitive enzyme-linked immunosorbent assay	No information	No information	No information

Name of laboratory OIE Reference Laboratory for which disease(s)	Tests performed for diagnosing this disease/these diseases	Are these tests used in wildlife species?	Have they been validated for use in species other than the common domestic animals?	Is there information on differences you have observed between species in test sensitivity and specificity?
B155 Contagious caprine pleuropneumonia				
Sweden *(Dr G. Bölske)*	Microbiological culture	✓ Wild goats	No information	Not known
	Immunofluorescence	✓		
	Polymerase chain reaction			
	Restriction enzyme analysis			
B201 Contagious equine metritis				
USA *(Dr D. Miller)*	Isolation	Not used in wild species	No	Not known but probably little difference
	Complement fixation			
Parapoxvirus				
Japan *(Dr H. Sentsui)*	AG enzyme-linked immunosorbent assay Agar gel immunodiffusion Indirect immunofluorescence	✓ Japanese badger, black bear, deer, monkey, racoon dog, serow, wild boar, masked palm civet, nutria	Yes excluding the polymerase chain reaction	Not known
	Polymerase chain reaction (only in cattle, sheep and free-ranging serows	✓		
B206 Equine influenza				
UK *(Dr Jennifer A. Mumford)*	Haemagglutination inhibition	✓ Donkey, zebra	No	Should work
	Single radial heamolysis			
	Nucleoprotein antigen detection enzyme-linked immunosorbent assay			
B208 Equine rhinopneumonitis				
UK *(Dr Jennifer A. Mumford)*	Virus isolation		No	Supposed to work
	Histology			
	Complement fixation	✓ Donkey, zebra		
	Immunofluorescence			
	Polymerase chain reaction			
USA *(Dr G. Allen)*	Indirect enzyme-linked immunosorbent assay	No, only domestic horses	No	No
	Antibody immunofluorescence			
	Virus isolation			
B211 Equine viral arteritis				
Japan *(Dr Y. Fukunaga)*		No	No	No
USA *(Dr P.J. Timoney*	Reverse transcription polymerase chain reaction, serum microneutralisation test	No	No	No
B255 Trichinellosis				
Italy *(Dr E. Pozio)*	Enzyme-linked immunosorbent assay	✓ Red fox, wolf, wild boar	No	Mustelides and bears are a problem due to species-specific antiserum
	Western Blot	✓		

Name of laboratory OIE Reference Laboratory for which disease(s)	Tests performed for diagnosing this disease/these diseases	Are these tests used in wildlife species?	Have they been validated for use in species other than the common domestic animals?	Is there information on differences you have observed between species in test sensitivity and specificity?
USA *(Dr H.R. Gamble)*	Direct methods	✓ Feral swine, wild horse, bear (polar, grizzly, black) fox	Yes	Problems due to species-specific enzyme-labelled antibody reagents
	Indirect enzyme-linked immunosorbent assay	✓		
B309 Infectious bursal disease				
France *(Dr N. Eterradossi)*	Virus isolation		No	No cross-reactivity established between wild and domestic species for Enzyme-linked immunosorbent assay
	Indirect immunofluorescence			
	Reverse-transcription polymerase chain reaction			
	Agar gel immunodiffusion			
	Enzyme-linked immunosorbent assay			
	Virus neutralisation	✓ Shearwater, ducks, geese, gulls, pigeons, crows, woodcocks, snipes, egrets, owes		
USA *(Dr Y.M. Saif)*	Virus neutralisation	✓	No	Not known
	Agar gel immunodiffusion	✓		
	Enzyme-linked immunosorbent assay			
	Virus isolation			
	Indirect immunofluorescence			
	Reverse-transcription polymerase chain reaction			
B310 Marek's disease				
Canada *(Dr J.L. Spencer)*	Agar gel immunodiffusion	No	No	Not known
B311 Avian mycoplasmosis				
USA *(Dr S.H. Kleven)*	Blocking enzyme-linked immunosorbent assay	✓	No	No
	Polymerase chain reaction	✓		
	Serum plate agglutination	✓		
	Culture	✓		
France *(Dr Isabelle Kempf)*	Blocking enzyme-linked immunosorbent assay	✓	No	No
	Polymerase chain reaction	✓		
	Culture	✓		
B353 Rabbit haemorrhagic disease				
Italy *(Dr L. Capucci)*	Direct and indirect enzyme-linked immunosorbent assay			
	Competitive enzyme-linked immunosorbent assay	✓ Wild rabbits, hares, red foxes	Not fully (only stage 1 & 2 of Jacobson's paper on validation)	Different cut-offs

Name of laboratory OIE Reference Laboratory for which disease(s)	Tests performed for diagnosing this disease/these diseases	Are these tests used in wildlife species?	Have they been validated for use in species other than the common domestic animals?	Is there information on differences you have observed between species in test sensitivity and specificity?
Salmonellosis (unclassified)				
UK *(Dr R. Davies)*		No serology	No	No difference (only cold blooded)
Canada *(Dr C. Poppe)*	Serotyping, phagetyping	✓ Bison, cats, chicken, crustaceans, dogs, ducks, guinea-pigs, gulls, horses, iguanas, lizards, parrots, pigeons, pigs, quails, rabbits, ratites, seals, sheep, snakes, sparrows, turkeys, but also from environmental sources e.g. feed, water, fertilisers, vegetables, etc.		
Porcine reproductive and respiratory syndrome (unclassified)				
Canada *(Dr R. Magar)*	Virus isolation	No	No	No
	Immunohistochemistry	No	No	No
	In situ hybridisation	No	No	No
	Reverse-transcription polymerase chain reaction	No	No	No
	Genomic alalysis	No	No	No
	Indirect enzyme-linked immunosorbent assay	No	No	No
	Indirect immunofluorescence	No	No	No

REFERENCE LABORATORIES

MANDATE

Reference Laboratories of the Office International des Epizooties shall have as their principal mandate:

- to function as a centre of expertise and standardisation of techniques relevant to their field of specialisation;
- to store and distribute biological reference products and any other reagents used in the diagnosis and control of animal diseases of Lists A and B;
- to develop new procedures for diagnosis and control of these diseases;
- to gather, process, analyse and disseminate epizootiological data relevant to their speciality;
- to place expert consultants at the disposal of the Office International des Epizooties.

They may also contribute to:

- provision of scientific and technical training for personnel from Member Countries of the Office;
- provision of diagnostic testing facilities to Member Countries:

  In the case of positive results for diseases that are reportable to OIE, the Reference Laboratory should immediately inform the Chief Veterinary Officer of the Member Country from which the samples originated;
- organisation of scientific meetings on behalf of the Office;
- coordination of scientific and technical studies in collaboration with other laboratories or organisations;
- publication and dissemination of any information in their sphere of competence which may be useful to Member Countries of the Office.

WHO/FAO/OIE, Report, 1994

CONSULTATION ON ANIMAL TUBERCULOSIS VACCINES
World Health Organisation, Veterinary Public Health Unit, Geneva, Switzerland.
WHO/CDS/VPH/94.138

General Considerations for field application of vaccines against *Mycobacterium bovis* (5.3.1)

The approach to be adopted for the field application of vaccines against tuberculosis and specifically against *M. bovis* infection must recognise the human/animal health benefits that can accrue from a successful animal vaccination programme.

It is considered technically feasible to vaccinate the possum, badger and deer populations in selected areas of countries where these species are involved in the persistence of *M. bovis* infection in farmed animal populations. A reduction, through the application of this technique, in the dissemination of *M. bovis* from these wildlife species may lead to a reduction in tuberculosis prevalence in the farmed animal population.

The use of such vaccines must take account of the efficacy and safety of the vaccinal preparation, of its mode of delivery in respect of the exposed human and animal populations, and of the protection of the environment. Accordingly the mode of delivery of the vaccine and the vaccinal components must conform with national and international guidelines regarding the use and release into the environment of biological materials, including genetically modified organisms. Specifically, consideration of the risk and safety aspects of the mycobacterial vaccine should ensure that:

- The vaccinal strain does not acquire virulence, or revert to virulence in the course of use;
- The product is not oncogenic in the vaccinated individual;
- The product is safe and efficacious in target species, and safe in important non-target species;
- The possible excretion of the vaccinal agent is demonstrated not to be hazardous; and
- The use of BCG-based vaccinal products takes account of WHO recommendations for the use of BCG in humans.

At present the absence of a means of discriminating between infected vaccinates and infected non-vaccinates is an impediment to the development and use of vaccination, particularly in animals kept for farming purposes in developed countries. Vaccine use in these species will necessitate the prior development of discriminating diagnostic tests and/or the modification of vaccine components.

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