



INTERNATIONAL COURSE

*February 5 – 10, 2007
Viçosa, Brasil*

TRAINING IN MOLECULAR DIAGNOSIS FOR THE EARLY DETECTION OF HIGHLY PATHOGENIC AVIAN INFLUENZA IN LATIN AMERICA AND THE CARIBBEAN

Food and Agriculture Organization of the United Nations (FAO)
Instituto de Biotecnologia Aplicada à Agropecuária – BIOAGRO. Federal University of Viçosa

TECHNICAL BACKGROUND NOTE

1. INTRODUCTION

The Highly Pathogenic Avian Influenza (HPAI) caused by subtype H5N1 of Asiatic lineage is an economic and public health threat for many countries in Asia, Africa, Middle East and Europe. Between December, 2003 and December 2006 the disease has spread over international borders causing a critical zoo-sanitary situation in many countries of these regions and causing concern due to its possible transmission to other regions in the world.

The disease has a strong impact on food security and trade causing bans for national, regional and international trade of poultry and poultry products. American countries are on alert as to avoid possible introduction of the virus which could have important economic consequences.

HPAI outbreaks have spread around the world having negative effects on production, trade of poultry products and consumption due to concern of public health threat. In the Western Hemisphere, poultry production has increased over the last years with USA and Brazil as the main poultry producers with 70% of the poultry meat marketed for exportation. Therefore it is important to maintain this situation as such and guarantee the production of high quality food.

FAO, OIE and WHO have made joint efforts to both infected and uninfected countries and regional international organizations have been involved with initiatives aimed to promote regional cooperation.

FAO through the Emergency Center for Transboundary Animal Diseases (ECTAD) is implementing four Technical Cooperation Programmes (TCP) in Latin-America and the Caribbean Region; namely Emergency Assistance for Early Detection and Prevention of Avian Influenza in the Caribbean Region (TCP/RLA/3103), Central America (TCP/RLA/3104), Andean Region (TCP/RLA/3105) and the South Cone (TCP/RLA/3106).

One of the activities agreed to during the inception workshops of the four TCP projects with the National Coordinators of 33 participating countries was to update and improve of the molecular diagnostic capacity in the region.

2. BACKGROUND AND JUSTIFICATION

Early detection and diagnostic confirmation of suspected cases of HPAI are the fundamental keys, to assure prompt control and limitation in the potential number of outbreaks. Virus isolation while being essential to characterize the virus, it is a time consuming technique. Serology for diagnostic purposes requires infection to progress to elicit detectable levels of antibodies in serum samples and in addition, it is not the most appropriate diagnostic approach for diseases with high case fatality rate. Molecular diagnosis has several advantages: (i) large number of samples can be easily tested; (ii), does not require active virus to perform the assay; (iii) preliminary results can be obtained within hours and (iv) the preliminary characterization of the virus can be obtained in a short period of time.

Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) is a method that can amplify specific sequences of viral nucleic acids to make accurate diagnosis. At present there are two different methods: the conventional procedure which requires several steps to be preformed and the new technology named real-time RT-PCR (rRT-PCR) which results can be obtained in a relatively short period of time.

Sequencing procedures of the amplified region is recommended to identify pathogenic characteristics of the virus and to trace epidemiologically the isolated virus. Confirmatory test (such as virus isolation) will follow this procedure in order to obtain a full characterization of the viruses identified.

Those assays require specialized personnel, procedures and equipment to be properly performed..

Presently, several countries in Latin America and Caribbean are interested in adopting such procedures and their governments are making efforts to build-up this capacity.

3. COURSE OBJECTIVES

The general objective of the International Course is to provide training in molecular diagnosis of AI and provide knowledge on different protocols and procedures to be used both for conventional and real time PCR.

Specific objectives

- To train a specialist in AI molecular diagnosis of the countries that already have the instruments to perform the test.
- To give an up-date of the molecular diagnosis for AI
- To up-date the procedures of RT-PCR
- To up-date the procedures of rRT-PCR
- To discuss different protocols for AI molecular diagnosis
- To improve the surveillance systems in the region by using these technologies.

4. PROGRAMME ACTIVITIES

The International workshop, will take place in the city of Viçosa, Brazil, in February 5 – 10, 2007, at the Biochemistry and Molecular Biology Department of Federal University of Viçosa, Brazil, under the following proposed program:

TIME	ACTIVITY	RESPONSIBLE PERSON	CONTENTS
Monday, February 5, 2007			
08:00 – 08:30	Opening Ceremony and course remarks	Organizer team	Welcome to participants, General instructions for the course
08:30 – 09:15	AI UP-Date and FAO activities	Juan García (FAO/RLC)	Brief presentation of the AI present situation worldwide and FAO activities for its prevention and control
09:15 – 10:30	General description of the molecular diagnosis for AI	William Dundon (IZSVe)	
10:30 – 10:45	Pause		
10:45 – 11:00	Characteristics of real time PCR for Avian Influenza	David Suarez (USDA)	General Introduction of the test and critical points of the test
11:00 -13:00	Instruction session for Real time PCR	David Suarez (USDA)	Practical demonstration
13:00 – 14:15	Lunch		
14:15 – 16:15	Instruction session for Real time PCR	David Suarez (USDA)	Practical demonstration
16:15 – 16:30	Pause		
16:30 – 18:00	Discussion on the test		
Tuesday, february 6, 2007			
08:00 – 09:00	General description of the conventional PCR	William Dundon (IZSVe)	Practical demonstration
09:00 – 10:45	Instruction session for conventional PCR	William Dundon (IZSVe)	Practical demonstration
10:45 – 11:00	Pause		
11:00 – 13:00	Instruction session for conventional PCR	William Dundon (IZSVe)	Practical demonstration
13:00 – 14:15	Lunch		
14:15 – 17:00	Instruction session for conventional PCR	William Dundon (IZSVe)	Practical demonstration
17:00 – 17:15	Pause		
17:15 – 18:00	Discussion on the test		
Wuesday, february 7, 2007			
08:00 – 10:15	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
10:45 – 11:00	Pause		
11:00 – 13:00	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
13:00 – 14:30	Lunch		
14:30 – 16:00	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
16:00 – 16:15	Pause		
16:15 – 16:45	Primers design	William Dundon (IZSVe)	Explain consideration to validation process
16:45 – 17:15	Challenges to avian influenza	William Dundon (IZSVe)	
17:15 – 18:00	Discusión of the activities		

Thursday, February 8, 2007			
08:00 – 10:15	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
10:45 – 11:00	Pause		
11:00 – 13:00	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
13:00 – 14:30	Lunch		
14:30 – 16:00	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
16:00 – 16:15	Pause		
16:15 – 16:45	Sequencing Procedures	David Suarez (USDA)	A descriptive lesson for sequencing cleavage site
16:45 – 17:15	Communication to define		
17:15 – 18:00	Discussion of the activities	William Dundon David Suarez	
Friday, February 9, 2007			
08:00 – 10:15	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
10:45 – 11:00	Pause		
11:00 – 13:00	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
13:00 – 14:30	Lunch		
14:30 – 16:00	Practice of the Real time PCR and conventional PCR	William Dundon David Suarez	Activity divided in four groups (two groups for each one)
16:00 – 16:15	Pause		
16:15 – 16:45	How to validate the PCR procedures	David Suarez (USDA)	Explain the considerations that should be included in a validation process
16:45 – 17:15	Communication to define		
17:15 – 18:00	Discusión of the activities		
Saturday, February 10, 2007			
09:00 – 12:00	Final remarks	William Dundon David Suarez	
12:00 – 14:00	Lunch and final ceremony		

5. ORGANIZATION

The course will be organized and coordinated by the FAO Emergency Centre for Transboundary Animal Diseases (ECTAD), with the support of the Brazilian Ministry of Agriculture, Livestock and Supply, the Federal University of Viçosa, the Southeast Poultry Research Laboratory (SEPRL) USDA-ARS, the Pan American Health Organization (PAHO) and the Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe).

6. PARTICIPANTS

TCP/RLA/3103- Caribbean - Barbados, Cuba, Dominica, Jamaica and Trinidad & Tobago
TCP/RLA/3104- Central America - Guatemala, Mexico and Panama
TCP/RLA 3105- Andean Region - Colombia, Peru and Venezuela
TCP/RLA/3106- South Cone - Argentina, Brazil and Chile

Each Veterinary Service should provide at least two candidates to be considered for the training course. Only one candidate per country will be selected for participation. The candidates should be currently working in molecular diagnosis, preferably with prior experience in avian diseases. Proficiency in English is a must.

The Curriculum Vitae should be submitted by 12 January 2007.

7. OUTCOMES OF THE TRAINING

At the end of the training course the participants will be able to establish diagnostic methods, and provide training as well as continuous support to laboratory staff.

8. ADDITIONAL INFORMATION

Lodging

Accommodation for participants will be at

Hotel do CEE

Campus da UFV

Viçosa - Minas Gerais - Brazil

Tel.: (55-31) 3891 1448 / 3899 2159

E-mail: cee@ufv.br

Training facilities

Federal University of Viçosa

Department of Veterinary

Instituto de Biotecnologia Aplicada à Agropecuária – BIOAGRO

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Tel.: (55-31) 3899 2311

Fax: (55-31) 3899 2317

E-mail: dvt@mail.ufv.br

Internet: <http://www.ufv.br/>

Language

The training course as well as presentations and training documents will be in English. Some assistance for translation to Spanish and Portuguese will be available as needed.

Travel expenses and air plane tickets

The travel is to be provided by FAO - ECTAD. Economy airfares and a Daily Subsistence Allowance as per UN standard procedures, rates and liability will be made available through FAO Representative Offices (FAOR) in each participating country.

Visa entry

Each participant is responsible to obtain the required visa needed for Brazil.. Please note that the visa entry procedure may require time. For more information please consult the link www.mre.gov.br

9. COURSE COORDINATION

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