



# ISWAVLD 2023

International Symposium of the World  
Association of Veterinary Laboratory  
Diagnosticians

29 JUNE-1 JULY  
2023  
Congress Centre  
Lyon

*Towards  
the veterinary  
diagnostics  
of the  
future*

Main topic : Animal Health

**LAMP : new DNA/RNA amplification technology as a point of care tool to help diagnostic of pathogens in animals**

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## **Introduction**

Currently, the direct detection of pathogens contaminating animals can be performed by 1) PCR, giving high sensitive results but this require to send the samples to a specialized laboratory which can give the results only few days later. 2) Antigenic tests which can give a result quickly but with a lower sensibility than PCR.

LAMP technology (Loop mediated isothermal AMPlification) is a NAAT technology (Nucleic Acid Amplification test) which can occur at constant temperature, unlike PCR which need thermal cycles. This allow the use of this technology as a POC (point of care) test and allow the obtention of the result in only 30 min without the necessity to use a thermal cycler. This technology can be really useful to detect highly contagious pathogens causing diseases in animals and the possibility to administrate medicine or isolate the animal immediately. In case of a pandemic, this technology can be useful to isolate quickly contaminated animals and avoid a propagation of the pathogen.

## **Methods**

Specific LAMP primers for EHV-1/EHV-4/*Equine Influenza/Streptococcus equi equi* were designed and LAMP reactions were performed on viral genome and on nasopharyngeal swab samples extracted by our own specific quick extraction. Performances of these tests were evaluated in our lab and compared to PCR performed in an external lab.

## **Results**

LAMP tests have a limit of detection for amplification between 1-40 copies/reaction dependant of the test. The limit of detection of all method (quick extraction and LAMP test) is similar or better of the limit of detection of all method (extraction on column and PCR test) obtained in a conventional analysis laboratory. LAMP test which was designed are really specific for the target (>95% specificity) and are really sensitive for the target (>90% sensibility). This technology is really fast (<30 min) and can be used as a point of care test.

## **Discussion & Conclusion :**

LAMP tests are a new generation of DNA/RNA amplification test, really specific, really sensitive which can be performed near a sick animal and can give a result in only 30 min. These parameters allow the consideration to use this technology to analyse quickly potential pathogens holder and treat or isolate the animal immediately.