

Institute of Diagnostic Virology, Friedrich-Loeffler-Institut (FLI), Suedufer 10,
17493 Greifswald-Insel Riems, Germany

RAPID DETECTION OF SCHMALLEMBERG VIRUS AND BOVINE VIRAL DIARRHOEA VIRUS

A. Aebischer, K. Wernike, B. Hoffmann, M. Beer

Purpose

We aim to establish rapid diagnostic tools for detection of Schmallenberg virus (SBV) and bovine viral diarrhoea virus (BVDV) in the field.

Methods

In order to minimize time for sample preparation, a magnetic beads based nucleic acid extraction protocol was shortened to the maximum. The protocol was established on different portable extraction instruments using whole blood and serum samples from infected animals. For detection of viral RNA, high-speed quantitative real-time PCR (qPCR) protocols have been developed and validated using standard qPCR machines. The assays are currently compared with two newly established isothermal amplification techniques, namely Recombinase Polymerase Amplification (RPA) and Loop-mediated isothermal amplification (LAMP). All pathogen-specific assays are evaluated using different samples from animals infected with the respective virus.

Results

The rapid protocol allowed RNA extraction in less than 10 minutes, without significant loss of sensitivity. Using the high-speed qPCR, SBV and BVDV genomes could be detected within 30 minutes. The analytical sensitivity was similar to standard qPCR protocols. Compared to the high-speed qPCR, the isothermal amplification techniques revealed differences with regard to reaction time, sensitivity and specificity. Therefore, advantages and disadvantages of the individual assays have to be evaluated separately for specific diagnostic questions.

Conclusions

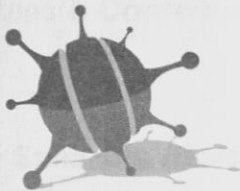
The shortened extraction protocol and the different amplification techniques proved to be simple and rapid methods for detection of SBV and BVDV. The assays are valuable options for an accelerated sample processing in the routine laboratory diagnosis. Furthermore, they represent promising alternatives for an application in the field and point-of-care diagnostics.

Corresponding author

Dr. Andrea Aebischer
Friedrich-Loeffler-Institut
Department of Diagnostic Virology
Südufer 10
17493 Greifswald-Insel Riems, Germany
E-Mail: andrea.aebischer@fli.bund.de

Deutsche Veterinärmedizinische Gesellschaft e.V.
German Veterinary Medical Society

**16th International Symposium
of the World Association
of Veterinary Laboratory
Diagnosticians
(WAVLD)**



10th OIE Seminar

32nd Symposium of AVID



**June 5 – 8, 2013
Berlin, Germany**

DVG Service GmbH
Friedrichstr. 17 · 35392 Giessen
Tel.: +49 (0)641 24466 · Fax: +49 (0)641 25375
E-Mail: info@dvg.de · Homepage: www.dvg.de