Detection of Schmallenberg virus RNA in bull semen in Poland

J. Kęsik-Maliszewska, M. Larska

Department of Virology, National Veterinary Research Institute, Al. Partyzantów 75, 24-100 Puławy, Poland

Abstract

The detection of Schmallenberg virus (SBV) in the breeding bull semen raised the question of the possibility of venereal transmission of SBV which could result in cost-intensive restrictions in the trade of bovine semen. In order to evaluate the presence of SBV RNA in bovine semen, 131 bull semen samples from four locations in Poland collected between 2013 and 2015 were analysed by RT-PCR for viral RNA. SBV RNA was detected in 5.3% of the samples. The study has revealed that application of an appropriate RNA extraction method is crucial to detect virus excretion via semen.

Key words: Schmallenberg virus, bull, semen, extraction method

Introduction

Schmallenberg virus is a new Orthobunyavirus which has been recently identified in Europe causing fever, milk drop and congenital abnormalities in ruminants (Hoffman et al. 2012). Several studies have confirmed the shedding of SBV by RT-PCR in up to 11.6% of bovine semen samples tested (Hoffman et al. 2013). Despite the fact, that the possibility of venereal route of SBV transmission has not been shown, the infectivity of SBV in semen has been confirmed by subcutaneous inoculation of naïve heifers and interferon α/β receptor-deficient mice (Schulz et al. 2014). SBV epidemic has caused cost-intensive trade restrictions, especially in the bovine semen trade.

The first cases of SBV in Poland have been detected in the summer of 2012. The virus has spread rapidly throughout the country infecting over 34% ruminants, with up to 92% seroprevalence at the province level in 2013 (Larska et al. 2014). The aim of this study was to assess the presence of the virus in the semen of Polish bulls.

Materials and Methods

Commercially diluted semen samples aliquoted in straws were collected between 2013 and 2015. The samples originated from 131 breeding bulls in the age of 1.5 up to 6.5 years from four herds located in Opole, Warmińsko-Mazurskie, Wielkopolskie and Zachodniopomorskie provices. The serological status of individual animals could not be determined. The sensitivity and efficiency of the extraction method were assessed using DNA standard prediluted in semen. RNA from SBV positive brain homogenate was extracted, RT-PCR product was electrophoretically separated, the specific amplicon (SBV-S) of 87 bp was

Correspondence to: M. Larska, e-mail: m.larska@piwet.pulawy.pl, tel.: +48 818893068