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Molecular and immunological detection of bovine herpesvirus-1 in clinical specimens

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A nested polymerase chain reaction (nested-PCR), utilizing glycoprotein B (gB) gene of bovine herpesvirus-1 (BHV-1) as a target, virus isolation (VI), indirect immunofluorescence (IFA) and In situ immuno-peroxidase (IPr) staining in cell culture were conducted for detection of BHV-1 in suspected cattle, buffalo and sheep clinical specimens. The specimens were obtained in the form of nasal swabs, buffy coats and sera from different localities in Egypt (El-Sharquia, Dumyat and El-Fayoum). A total of 15/93 (16.1%) of cattle, 4/55 (7.3%) of buffalo and 0/31 (0%) of sheep clinical specimens were BHV-1 positive in this study. Nested-PCR was superior to immunodetection using IFA and IPr after VI procedure. Besides, it was the most discriminative assay that detected BHV-1 viral DNA extracted directly from cattle and buffalo clinical specimens (100%). While, none of the sheep viral isolates (0/3; 0%) could be identified as BHV-1 by nested-PCR, although 2/3 of these isolates (from nasal swabs) tested positive by IFA, IPr and the first round PCR. Also, a buffy coat buffalo viral isolate tested positive with the first round PCR while, it turned repeatedly negative to VI, IFA, IPr and nested-PCR testing. These nested-PCR negative viral isolates were regarded as antigenically related, yet genetically distinct, other ruminant herpes viruses that require further studies. Findings of this study emphasized the preponderant utility of the BHV-1 gB based nested PCR as a sensitive, discriminative and rapid tool for epidemiological studies and control programs of BHV-1 infections, without confusion with other ruminant herpesviruses. Accordingly, it is recommended for routine screening of not only local but also imported animals and biologics for BHV-1 contamination.