Orbivirus screening on dried blood spots from captive oryx in United Arab Emirates stresses the importance of pre-import measures

Martinelle L.1, Haegeman A.2, Lignereux L.3, Chaber A.-L.4, Dal Pozzo F.1, De Leeuw I.2, De Clercq K.2 and Saegeman C.1

Introduction

Following reintroduction and conservation programs of the Arabian oryx (AO, Oryx leucoryx) and the scimitar horned oryx (SHO, Oryx dammah) in the United Arab Emirates (UAE), import of animals from wild game ranches in the United States of America (USA) is not uncommon. Bluetongue virus (BTV) and epizootic hemorrhagic disease virus (EHDV) are orbiviruses that are the causative agents of bluetongue disease (BT) and epizootic hemorrhagic disease (EHD), respectively. BTV and EHDV are endemic in the UAE and the USA. Sheep and some wild ruminant species are usually severely affected by BT whereas EHD mostly affects wild animals and sometimes cattle.

The objective of this study was to estimate the prevalence of these orbiviruses in Arabian Oryx and SHO from captive herds in the UAE using serology and molecular virology. Dry blood spot (DBS) sampling for Orbivirus screening is also discussed.

Materials and methods

DBS sampling

A total of 228 SHO and 16 AO were sampled, with all samples aged between 6 months and 3 years (Oryx from USA were all adults). Samples were sent from UAE where animals are kept for conservation purposes.

Results

Three out of 215 SHO from Emirates, eight out of 16 Arabian Oryx and eight out of 13 SHO from Texas were found seropositive by ELISA. None of the animals could be found seropositive against EHDV.

BTV seropositivity and RNA detection in SHO from UAE was very limited. By contrast BTV RNA could be demonstrated in 5/16 imported Arabian Oryx by RTqPCR and 8/16 AO were BTV seropositive. BTV2 RNA was identified in two out of the five AO samples found positive by pan-BTV RTqPCR. Moreover, 8/13 SHO imported from Texas were seropositive. Thus overall 55 % of the animals imported from Texas were BTV seropositive.

Discussion

The low prevalence in local animals was quite surprising because previous studies showed a higher BTV seroprevalence in domestic and wild ruminants of the Arabian Peninsula (Frölich et al., 2005). In addition, dried blood spot testing has been demonstrated being a convenient and reliable method of sampling when storage and/or shipment conditions are hazardous. At least 15 different BTV serotypes were reported in the USA and at least 10 in the Middle East. BTV2 was identified in Florida in 1999 and more recently a closely related BTV2 strain was identified in California (MacLachlan et al., 2013). Additional testing will be performed to further characterize the virus and therefore provide new insights to clarify the origin of the infection of the Oryx. Exporting ungulates from USA requires brucellosis testing based on rose Bengal and bovine tuberculosis based on intradermal tuberculin test, the animals being in the pre-export quarantine.

Sensitivity

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