

*Short Communication***INVESTIGATION OF THE INCUBATION PERIOD OF  
CAMELPOX DURING AN OUTBREAK IN A SMALL  
DROMEDARY HERD****Sunitha Joseph, Vijay Baskar, Nissy Annie Patteril, Joerg Kinne and Ulrich Wernery**

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**ABSTRACT**

Our investigation showed that the incubation period of camelpox was 9 days and that vaccination with a live attenuated camelpox vaccine did not protect the dromedary camels against pox lesions, which were already in the incubation period.

**Key words:** Camel, camelpox, vaccination

Camelpox is a contagious viral skin disease of camelids that produce proliferative dermatitis, mainly in younger animals (Wernery *et al*, 2014). The disease occurs all over the camel-rearing areas of the world except the Australian camel population, affecting both the Old World and New World Camelids (Kinne *et al*, 1998). Both localised and generalised external pox lesions have been described. The disease is characterised by fever, local or generalised pock lesions on the skin and in the mucous membranes of the mouth, respiratory and digestive tracts (Wernery *et al*, 1997a). The causative agent of camelpox is the camelpox virus (CMLV), classified under the genus Orthopoxvirus of the family Poxviridae.

Camelpox is a zoonotic disease that was recently reported in India and Sudan (Bera *et al*, 2011; Khalafalla and Abdelazim, 2017), but according to the OIE (OIE, 2018), camelpox is of limited public health importance.

We describe here the diagnosis and incubation period of a camelpox outbreak near Dubai during the winter season.

**Materials and Methods**

One female camel was introduced into a small dromedary camel herd consisting of 5 adult females and 2 young males. Ten days later, this camel developed classical camelpox lesions around the head, and ten days after the introduced camel

developed camelpox, the rest of the herd also developed mild camelpox around the face, although they were vaccinated on the same day with Ducapox when the introduced camel showed camelpox lesions.

From all infected camels, scabs were removed, as well as blood was taken. Scabs were tested by PCR, and virus isolation was performed on Vero cells as well as histological investigations were carried out. The sera were tested for camelpox virus antibodies with the virus neutralisation test (VNT). All tests are described by the OIE (OIE, 2018).

**Results**

Real-time PCR results of scabs removed from all 8 dromedary camels showed positive results. Camelpox virus produced typical cytopathic effect (CPE) plaques on Vero cells after 3-4 days' incubation at 37°C with foci of rounded cells, cell detachment, giant cell formation, and syncytia.

Typical histological alterations demonstrated a proliferative dermatitis with ballooning. Pox-like inclusion bodies were also observed in the scabs. VNT results showed no antibodies in all the affected dromedaries which had developed camelpox, but 3 weeks later.

**Discussion**

Ten days after an adult female dromedary camel was introduced in a small dromedary camel herd consisting of 5 adult females and 2 young males, it developed classical camelpox lesions

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around the head. This camel did not show any lesions when it was brought to the herd and was considered to be in the incubation period as the pox lesions appeared 10 days later. Nine days after the first pox alterations appeared in the index animal, the rest of the herd developed mild camelpox lesions, although they were vaccinated with the live attenuated camelpox vaccine, named Ducapox. The vaccination did not prevent the infection of the remaining 7 camels as the time between the vaccination and antibody production was too short. This is also evident from the negative camelpox antibody VNT results. However, 3 weeks later, all of them had developed VNT antibodies. It is unclear if these antibodies resulted from the infection or from the vaccination, most probably, a combined effect. Although the vaccination did not prevent camelpox in the herd, the mild form could be explained by a possible cell-mediated immunity rather than a humoral.

From the literature, it is known that the incubation period of camelpox is between 9-13 days (OIE, 2018). In our case, the incubation period was exactly 9 days because on the 10<sup>th</sup> day all the camels developed camelpox. Camelpox virus can be transmitted by very close contact between the infected and non-infected animals as well as through insect

vectors especially mosquitos but also ticks (Wernery *et al*, 1997b).

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