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*Short Communication*

## **Competitive Elisa Rinderpest Virus Antibody in Slaughtered Camels (*Camelus Dromedarius*): Implication for Rinderpest Virus Elimination from Nigeria**

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**ABSTRACT:** Nigeria was declared provisionally free from Rinderpest (RP) disease in 1998 and vaccination against the disease was discontinued in the country since then. The Office of International des Epizooties (OIE) Scientific Commission approved the dossier on freedom from disease from Nigeria and issued the certificate to that effect on 25<sup>th</sup> May, 2005. However, the presence and activities of RP virus in Nigeria are yet to be sufficiently ascertained. In this study, we have used slaughtered camels (*Camelus dromedarius*) that were never vaccinated against RP as sentinels to monitor the presence of the virus in Nigeria. Two hundred and twenty camel sera were tested for presence of RP and Pestes des petits ruminants (PPR) antibodies in a competitive enzyme-linked immunosorbent assay (c-ELISA). Of the sera tested, 20 (9.3%) were found to be positive for RP antibody. None of the sera tested positive for PPR antibody. Camels could serve as putative foci for the maintenance and spread of RP virus in this environment.

**Keywords:** Rinderpest, Camel, competitive-ELISA, Nigeria

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### **INTRODUCTION**

Rinderpest (RP) is an acute, usually fatal, highly contagious viral disease of cloven-hoofed domestic and wild animals (Khandelwal *et al.*, 2003; Renukaradhya *et al.*, 2002; Sinnathamby *et al.*, 2001). It is probably

the most lethal disease of cattle and buffaloes (Otim *et al.*, 2003). The disease is known to cause close to 90% mortality among susceptible animals. The disease is well investigated among ruminants, but only scanty information about the disease in camels exists. Camels are grazed by nomads following strict traditional methods of husbandry in the arid zone areas for meat and milk (Radwan *et al.*, 1992). These animals move freely and in some cases mingled with cattle and small ruminants at favoured grazing sites, water points and market places. The camel population in Nigeria is composed of the slaughter stock, which is either indigenous or imported from neighbouring countries like Chad and Niger (Baba *et al.*, 1990; Olaleye *et al.*, 1989). Although RP has been eradicated from many East and West African states, in the late 1960s and early 1970s, the disease re-emerged in West Africa in the mid-70s and it remained endemic with repeated outbreaks occurring throughout the 1980s (Olaleye *et*

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al., 1989). Recently in 2005, Nigeria was certified free from RP disease by the OIE Scientific Commission. Further to the certification, Nigeria has put in place a Rinderpest Emergency Plan, which includes strategies for prompt RP disease recognition and elimination as well as intensive virus surveillance (NADIS, 2005). Cases of RP are not frequent in camels and they may be relatively refractory to the virus infection when compared to other ungulates. Nevertheless, serological evidence of the RP virus infection has been reported (Ambali *et al.*, 1995) and camels may therefore serve as source of infection for more susceptible animals. The causative virus is unlikely to have survived within susceptible wild life population as was often thought, since the infection is normally devastating and extinguishes itself naturally.

and an immunological response (Sinnathamby *et al.*, 2001). In this study we were able to detect RP antibodies in 20 of the 220 camel sera tested with the male and female sera tested having 70% and 30% positives respectively (Table 1).

**Table 1:** Seroprevalence of rinderpest virus antibodies using c-ELISA among camels slaughtered at the central abattoir Maiduguri, Nigeria between 2006 and 2007

Total No. tested	No. (%) positive	Sex distribution of positive samples	
		Male	Female
220	20 (9.3)	14 (70)	6 (30)

## MATERIALS AND METHODS

### Serum samples

Blood samples were randomly obtained from slaughtered camel as previously described by Baba *et al.* (1990). Blood samples were collected from every fifth camel slaughtered weekly in Maiduguri Municipal abattoir, Borno State, Nigeria. Sera were separated by centrifugation and stored at -20°C in a mechanical freezer until tested.

### Competitive Enzyme-Linked Immunosorbent Assay (c-ELISA)

Sera were tested for presence of RP or PPR virus specific antibodies using the monoclonal antibody (MAb)-based competitive ELISA procedure that employs virus haemagglutinin (H) protein and MAb directed against the H-antigen (Anderson *et al.*, 1996). The tests were carried out essentially following the protocol of Anderson *et al.* (1996). The test is RP or PPR specific and gives no cross-reactions between the two virus antibodies.

### Statistical analysis

The percentage inhibition (PI) values for the test were calculated using the formula described by Jeggo and Anderson (1992) for rinderpest sero-monitoring. Positive samples were considered at 50% cut off points.

$$PI = 100 - (OD \text{ of test sample} / OD \text{ of monoclonal control} \times 100)$$

## RESULTS AND DISCUSSION

Camels are fairly resistant to outbreaks of RP and experimental infections with the RP virus is reported to cause a relatively small increase in body temperature

The RP antibody observed in the present study could have resulted from a natural infection of the camels, since there is no documented evidence of camels being vaccinated against RP in Nigeria or in neighbouring Chad and Niger Republics. In addition, RP vaccination had been discontinued in Nigeria since 1999. Some workers have earlier reported detecting RP antibody in camel sera in Nigeria using complement fixation test (Ambali *et al.*, 1995) and in Ethiopia using c-ELISA (Roger *et al.*, 2001). The 9.3% seroprevalence observed in this study is comparable with 11% prevalence earlier reported in the same environment by Ambali, *et al.* (1995), but lower than the 21.3% reported from Ethiopia by Rogers *et al.* (2001). Because of the nature of camel husbandry, which allowed them to mingle freely with other ruminants at grazing and water points as well as market places, the camel population could serve as a ready source of RP virus infection for the susceptible ruminants, especially cattle. Fatal infections of African buffaloes, eland and lesser kudu in Africa have been previously associated with mild strain of RP virus from cattle (Roger *et al.*, 2001). The declaration of Nigeria free from RP and discontinuation of vaccination in the country since then (IAEA, 1999) makes the present finding very important since such actions could result in the build-up of susceptible animal populations. It is therefore important that camels be included among the group of animals to be monitored for the activity of RP virus, and to clearly define their roles in the epidemiology of the disease in Nigeria and elsewhere.

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