

ZOONOTIC DISEASES OF CAMELIDS - AN OVERVIEW WITH SPECIAL REFERENCE TO Q-FEVER AND BRUCELLOSIS

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An overview is presented of the most important zoonotic viral, bacterial, fungal and parasitic diseases of camelids followed by a closer look at Q-Fever and Brucellosis. As the zoonotic pathogens do often not produce a disease in camelids, infection instead of disease is mentioned in this present context.

Viral diseases

Eight viral diseases are listed in Table 1, of which camelpox, parapox, influenza and MERS have been described in humans after contact with camels (Wernery *et al*, 2014; Wernery, 2017; Fowler, 2010; Curasson, 1947; Manefield and Tinson, 1996 and Higgins, 1986). Rabies, Borna, Rift Valley Fever and West Nile Fever infections were described in camelids but no transmission to humans have been reported.

Table 1. Viral diseases causing infections in camelids and human by contact.

Disease	Occurrence			
	Dromedary	Bactrian	NWC's	Human
Rabies	+	+	+	-
Borna	+ Antibodies	-	+	-
Camelpox	+	+	Experiment	+
Parapox (Orf)	+	+	+	+
Rift Valley Fever	+	-	+	-
West Nile Fever	+	+	+	-
Influenza	-	+	-	+
MERS	+	-	-	+

Bacterial Diseases

Sixteen bacterial diseases are listed in Table 2 of which anthrax, plague, salmonellosis, brucellosis and dermatophilosis have caused disease in humans. References are the same as listed under Viral diseases.

Fungal Diseases

Reports of camelid fungal infections causing disease in humans are scanty (Table 3). However, it is known that skin diseases are caused by dermatophytes *Microsporum* and *Trichophyton* and camel milk may contain aflatoxin (Wernery *et al*, 2014).

Table 2. Bacterial diseases causing infections in camelids and human.

Disease	Occurrence			
	Dromedary	Bactrian	NWC's	Human
Anthrax	+	+	+	+
Botulinum	+	-	-	-
Tetanus	+	+	+	-
Glanders	+	+	-	-
Melioidosis	+	-?	+	-
Plague	+	+	-	+
Leptospirosis	+	+	+	-
Q-Fever	+	?	-	-
Salmonellosis	+	+	+	+
Paratuberculosis	+	+	+	?milk
Tuberculosis	+	+	+	-
Brucellosis	+	+	+	+
Chlamydiosis	?	?	+	-
Caseous Lymphadenitis	+	+	+	-
Listeriosis	+	?	+	-
Dermatophilosis	+	?	+	+

Parasitic Diseases

Out of eight parasitic infections in camelids, mange is the only one which have caused clinical lesions in human with certainty (Table 4). People contract the disease through contact with infected animals and develop the clinical picture of pseudoscabies (Wernery *et al*, 2014). Giardiasis,

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