

# Demodectic mange in Iraqi camels

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## Abstract

The survey began in December 2008 & finished in June 2009 in three governorates; Al-Qadissiya, Al-Najaf & Al-Muthanna in different locations inspecting 2412 dromedaries, we found 55 affected camels with demodectic mange, samples were carried out to detect the mange, they present 2.3% of the total inspected camels. Demodectic mange was diagnosed in 58.2% of camels ranged in 5-10 years old & 16.4% of camels more than 10 years old & 25.4% in camels less than 5 years old which indicate the high incidence in camels aged in 5-10 years.

## Introduction

Camelids, like other livestock, are exposed to and affected by a range of ectoparasites, which may directly or indirectly cause a great diversity of health problems. Some ectoparasites play a significant role in many disorders. For example, some biting insects are vectors of disease agents such as *Trypanosoma evansi*, and the mite *Sarcoptes scabiei* that is the cause of sarcoptic mange. Both are regarded as the most two economically important diseases in camelids, the latter especially in Peru, which has the largest New World Camel (NWC) population (1). The ectoparasites of camelids can be classified into two zoological classes, the Arachnea and the Insectea, both are within the phylum Arthropoda (2).

Sarcoptic mange is regarded as one of the most prevalent and serious camel diseases (3; 4). It is often ranked second in importance to all the disorders in dromedary camels (5), and second only to trypanosomosis. It can be generally regarded as a chronic debilitating condition with high morbidity and low mortality. The infection is also common among NWC (6). The disease "sarna sarcoptica" was

previously widespread in North American captive camelids where it appears to be decreasing, probably through routine deworming with ivermectin (7).

Any camelid regardless of sex and age may be affected by *S. scabiei* (8). However, some reports state that the infection is more prevalent in younger animals (9). It is often cited that animals in poor condition are more prone to infection (3; 10). However, this is controversial as others report that animals in a very good condition can also become infected (8).

There are conflicting opinions regarding the seasonality of the disease. Some authors describe a quiescent phase usually coinciding with winter (5), others finding a higher incidence in the winter (3; 9; 8), (10) had found a higher prevalence in Saudi Arabia during the hot summer months.

(11) had found sarcoptic mange which was endemic in Al-Najaf governorate in Iraq with 25.9% percentage. The main sites of lesions in examined camels were neck, head, and dorsum respectively with no lesion on the hump. No relation was detected between the infection and the sex, but young dromedaries were more susceptible to infection.

Psoroptic mange mites spend their entire life on the skin, feeding superficially. They reportedly infest camelids, but are less commonly found on camelids than *S.scabiei*. It was recently shown that *Psoroptes sp.* isolates of different phenotypes, hosts and geographic origins are nonspecific (12;13) recorded the only documented case of psoroptic mange in dromedaries and (14) in Bactrians in Mongolia. In many countries sarcoptic and psoroptic mange are reportable diseases.

Infestation with *Chorioptes* is most probably rare in camels. It has been reported on a Bactrian camel (10) and in the Netherlands on one llama, three alpacas and two camels, one of which had "foot mange" (15). An infestation of *Chorioptes sp.* was also responsible for mange in a herd of alpacas from Chile recently imported into France (16).

The preferred site of the burrowing mite of the genus *Demodex* is at the hair follicles and sebaceous glands of the skin. It is a cigar- shaped, elongated 0.2

mm long mite. The mite is most probably transmitted from the dam to the offspring during nursing. Demodex sp. is found in all domestic mammals and humans worldwide. Most of the species are named after their hosts, i.e. *D. canis*, *D. bovis* etc. These follicular mites mainly live as commensals in the skin. In some animals, these mites may cause mange, of particular severity in dogs. In bovines, the most significant sequela to infestation is the damage to the hides, causing economic loss (2).

Demodex sp. has been reported on dromedaries in Iran where the eyelids of 15% of the camels were infested (17). There was no evidence of any secondary bacterial infection in the investigated camels, nor were there any significant histological changes other than distention of the hair follicles. Demodex sp. was isolated from camels exhibiting mange on a ranch in Kenya (18). Demodex sp. commonly occurs in llamas and alpacas in Bolivia (19). The mite most probably also infests other NWC in other countries. It is a very specialized group of parasitic mites which live in the hair follicles and sebaceous glands of various mammals causing demodectic or follicular mange. The parasites which occur on different species, although it is difficult to distinguish between them morphologically, since the main differences are that of size. Most of the species are called after their host, for instance; *D. canis*, *D. camali*, *D. bovis* etc (20).

## **Materials & Methods**

### **I- Materials**

Blades	Potassium hydroxide sol. 10%
Centrifuge	Screw cap containers
Digital Camera	Sodium hydroxide sol. 10%
Ethanol 96%	Water bath
Light microscope	

### **II- Animals of the study**

Three governorates were involved in this research; Al-Qadissiya, Al-Najaf and Al-Muthanna, samples collected from the slaughter houses, sale yards and the herds found in several locations randomly. The research began on

December 2008 and finished on June 2009. 2412 Iraqi dromedaries were examined regardless to location, age, sex and breed, from which 55 camels were suffering demodectic mange.

### **III-Diagnosis of Demodectic mange**

Skin was thickened, white to gray heavy crusts with moist dermis beneath, complete hair loss and itching. Direct microscopic examination of skin scrapings is the best way to diagnose mange, clipping the area with a no. 40 blade before scraping enables better visualization of the lesion and removes excess hair that impedes proper scraping and interferes with collection of epidermal debris, deep skin scrapings (until capillary blood oozing) were collected from 55 suspected camels using sterile scalpel blades no. 10, the scalpel blade should be held between the thumb and the second finger, the first finger to press and prevent cutting the skin. Average area scraped should be 6-8 cm<sup>2</sup>. Collect the scrapings in screw cap containers and preserve in adequate amount of 10% potassium hydroxide or Sodium hydroxide. In the laboratory, the samples heated until the solution became homogenized and left to be cool, centrifuged at 1500 rpm for 5 minutes, a drop of the feculence is examined on the slide microscopically (21).

### **Results & discussion**

55 dromedaries from different ages and sexes have been sampled by skin scrapings to find out the demodectic mange, most of the cases in which skin is thickened, white to gray heavy crusts with moist dermis beneath, complete hair loss and itching. Skin scrapings preserved in 10% potassium hydroxide or 10% sodium hydroxide, dispatched to the laboratory in which microscopic examination showed the demodex mites, It is a cigar-shaped elongated as tall as having eggs, the thorax has four obscure pairs of short stumpy legs showed in fig (1), lesions are common on brisket, legs and thigh, rarely on hump and head as in fig (2).



Fig (1): Demodex mite from skin of camel infected with demodectic mange. X100



Fig (2): Demodectic mange on the shoulder in six years camel

General camel attitude ranged in  $(36.3 \pm 0.03)$  C° in temperature,  $(15 \pm 0.5)$  respiratory rate, and  $(45 \pm 1.5)$  pulse rate. Complete hair loss, itching, and no lameness when infection sink on the legs, upset, slight decrease in appetite and rumination, pink mucous membrane and some of affected camels have respiratory disorders and /or diarrhea.

Table (1) shows that all ages are involved in infestation with demodectic mange but more commonly in camels in 5-10 years and that may be due to the high percentage of these camels in the herds which may reach to 70 % according to this survey. Both sexes have the similar percentage of infestation in regard to the absence of the disease in females more than 10 years old which may be occasional.

The first report developed on mange in camels in Iraq was by (22) detecting *Sarcoptes scabiei*, (11) has reported Sarcoptic mange in Al-Najaf governorate. Other types of mange had reported in camels in other countries. (23) considers Sarcoptic mange, due to *Sarcoptes scabiei* var *cameli*, to be the most important ectoparasitism in Arabian camels which had already reported in Iraq.

*Table (1): Numbers of infected camels with Demodectic mange according to the location, age and sex*

Location		Infected camels	~5 years		5-10 years		10~ years	
			male	female	male	female	male	Female
Al-Qadissyia	Slaughter house	6	1	0	2	2	1	0
	Al-Hamza Al-Shargy	4	0	0	4	0	0	0
	Al-Daghara	0	0	0	0	0	0	0
	Aal-Bdeer	4	0	0	0	2	2	0
	Al-Shaf`ya	0	0	0	0	0	0	0
	Al-Shenafeya	5	1	1	1	2	0	0
Al-Najaf	Slaughter house	9	0	0	3	3	3	0
	Sale yard	3	2	0	1	0	0	0
Al-Muthanna	Slaughter house	4	0	0	3	1	0	0
	Sale yard	8	0	3	0	5	0	0
	Herds	12	3	3	3	0	3	0
Total		55	7	7	17	15	9	0
Percentage			12.7	12.7	30.9	27.3	16.4	0
Total			14		32		9	
Percentage			25.4		58.2		16.4	

It seems that Iraqi camels are susceptible to be infected by Sarcoptic and Demodectic mites. Several authors; (2); (3); (4); (5) and (6); consider the mange as the second important disease in camels after trypanosomosis due to its rapid spread and the severe effect on camels' behavior which seemed upset and itching especially when infested by Sarcoptic mites. Consequently, owners are very interested in treating even when using non- medical therapies. This type of mange may be transmitted between dogs and camels that already domesticated together. The fallen percentage of infestation with mange may belong to the emergence of the recent broad spectrum acaricides which are effective against many external (e.g. mites and ticks) and internal (e.g. nematodes and cestodes) parasites in the same time.

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## الجرب الدويدي في الابل العراقية

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### الخلاصة

بدأت هذه الدراسة في كانون الأول ٢٠٠٨ وانتهت في حزيران ٢٠٠٩ في مواقع مختلفة من ثلاث محافظات؛ القادسية، النجف والمثنى حيث تم فحص ٢٤١٢ من الإبل ذات السنم الواحد، تم تشخيص الجرب الدويدي في هذه الحيوانات بعد اخذ العينات لإجراء الفحوصات المختبرية عليها واتضح أن الإصابة كانت متسببة عن حلم الدويدية في ٥٥ بعير والتي تمثل نسبة ٢,٣% من مجموع الحيوانات المفحوصة. ٥٨,٢% من الحيوانات المصابة كانت بعمر ٥-١٠ سنة، في حين بلغت نسبة الإصابة في الإبل دون سن الخامسة ٢٥,٤% فضلا عن ١٦,٤% من الإبل المصابة تجاوزت أعمارها العشرة سنوات وهذا ما يشير إلى ارتفاع نسبة الإصابة بالجرب الدويدي في الإبل بعمر ٥-١٠ سنة دون غيرها.