

**Sudan University of Science and Technology
Scientific Research Council**

Research Proposal Form

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Date of Submission Date: 17/1/2008	Research Area Pathology	Serial Number

Section One: General Information

Title of the Research Project:

**Study on the Prevalence and the Pathological Changes
of some Skin Diseases of Camels**

Title in Arabic:

دراسة عن مدى الانتشار و التغييرات المرضية لبعض الامراض الجلديه في الجمال

College:

College of Veterinary Medicine and Animal Production

Department:

Department of Pathology, Parasitology and Microbiology

Project Language	Project Duration	Project Budget
English	2 years	40,000 Sudanese Pound

Principal Researcher:

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Signature: 

Date: 17/1/2008

Participant Researchers:

Serial number	Name	Institution
(1)	Professor Dr. Seif El Dawla Mustafa Barakat	College of Veterinary Medicine and Animal Production
(2)	Professor Dr. Osman Saad Ali	College of Graduate studies
(3)	Professor Dr. Jalal Eldeen Alazhari	College of Veterinary Medicine and Animal Production
(4)	Professor Dr. Hamed Agab	College of Veterinary Medicine and Animal Production
(5)	Dr. Imad Mohamed Tahir	College of Veterinary Medicine and Animal Production
(6)	Dr. Mohamed A Abdallah	College of Veterinary Medicine and Animal Production
(7)	Dr. Hala Ali	College of Veterinary Medicine and Animal Production

Head of the Research Unit:

Name: Dr Shadia A/ Atti Omer

Signature:

Date:

Dean of the College:

Name: Professor Dr. Seif El Dawla Mustafa Barakat

Signature:

Date:.....

Section Two: Project Description

1. Summary:

The prompt detection and effective management of skin diseases in camels rely greatly on field diagnosis. Although clinical work is sometimes of value, the cornerstone of diagnosis is pathological examination (gross examination and necropsy with supporting laboratory investigations).

Camels that are brought from different localities of Sudan to Tamboul Market; El Gezira State and some other slaughterhouses e.g. El Obeid, Nyala, and Gedarif are to be examined. Skin lesions are to be detected on gross examination and samples are to be taken to undergo further analysis. Skin scraping, biopsy, body fluid, blood and tissue samples are to be collected. Eye affections are also be noticed and examined. Cultures from lesions are to be made to isolate the pathogenic agents.

2. Justification:

- Skin diseases are very common in camels; despite of the fact that camel skin is tougher and thicker than that of cattle and horses.
- The diseases of the skin in camels have not been very extensively researched in comparison with those of other domesticated species.

3. Goals:

- To provide data on the prevalence and incidence of skin diseases
- To determine the pathogenesis of skin diseases in camels at Tamboul area and camels that brought to Tamboul Market; El Gezira State and the Slaughterhouses in Khartoum, North Kordofan, Gedarif and South Darfur States

4. Specific Objectives:

- To diagnose camel skin diseases, isolate the causative agents, study the pathogenesis and the pathological, histopathological, haematological and biochemical changes that are associated with these diseases
- To investigate on the economic impact of the camels health particularly on the export.

5. Literature Review:

The skin is the largest organ of the body and, depending on the species and age, it may represent 12-24% of an animal's body weight. The skin has many functions, including serving as an enclosing barrier and providing environmental protection, regulating temperature, producing pigment and vitamin D, sensory perception, etc. Anatomically, the skin consists of the following structures: epidermis, basement membrane zone, dermis, appendageal system, and subcutaneous muscles and fat.

With almost three million camels, Sudan has the second largest herd in Africa. The numbers decrease from the north towards the south, where more sheep and cattle are raised. Sudanese camels are divided broadly into two categories: pack and riding camels. The role of the camel in the modern world is changing.

Camels have been exported to Egypt centuries ago. Records from Sudan's Ministry of Animal Resources show that the first official export of camels to Egypt took place in 1904, when 10 animals were sent north. Today, Sudan officially exports 50,000 camels to Egypt annually,

but the border between the two countries is long and difficult to monitor, and thus the real numbers are generally agreed to be higher. In recent years, camels have comprised as much as half of Sudan's exports to Egypt, resulting in a post at the Sudanese Embassy in Cairo for an envoy specialized in camel commerce (**Ministry of Industry Report, 2008**).

The hide of the dromedary in Sudan was mainly used for making whips and saddles (**El-Amin, 1979**) and to make a gourd-like container for water and milk (**Bustinza, 1979**).

The commercial tanning of camel leather was pioneered in Egypt. It is very versatile leather which has two unique properties. These are its exceptional tensile strength and the attractive grain pattern on the tanned product. These features ensure its demand for the manufacture of a wide range of products such as; shoes and boot uppers, hats, fashion accessories, brief cases, garments, harness and sporting goods (**Abu Samra, 1979**).

Camels were formerly considered resistant to most of the diseases commonly affecting livestock, but as more research was conducted, camels were found to be susceptible to a large number of pathogenic agents. For some diseases such as pox, mange, and enterotoxaemia, camels were indeed more susceptible and manifested more severe signs than other ruminants in the same localities (**Abbas and Omer, 2005**).

Dermatitis is a non specific term usually used until the dermatologic history, clinical signs, and physical examination can more precisely define the problem. Dermatologic problems describe a major category of clinical findings that can be caused by a number of skin diseases; many skin diseases look alike and are differentiated by working through diagnostic flow charts and a process of elimination.

The most common dermatologic problems include pruritus, alopecia, crusting and scaling, otitis, non healing wounds, nodules and tumors, and ulcerative disorders and abscesses (**Higgins, 1984, Merck vet manual, 2006**)

Many skin diseases are manifestations of systemic diseases, e.g., hypothyroidism and systemic lupus erythematosus. A number of systemic diseases produce various lesions in the skin. Usually, the lesions are non inflammatory. In some instances, the cutaneous changes are characteristic of the particular disease. Dermatitis may be associated with nutritional deficiency, especially of proteins, fats, minerals, some vitamins, and trace elements.

Camel pox is an ailment mainly of young camels (6 months to 2 years) caused by a virus closely related to other variola poxes (**Fazil, 1977; Richard, 1976**). Camel pox is an infection of the skin which can also infect man. It is a typical pox disease showing the four usual stages of pox lesions: papules, vesicles, pustules and crusts. However, **Leese (1969)**

indicated that camel pox may become malignant, its lesions spreading to any part of the body, especially the areas with thin skin. Occasionally the disease is fatal.

Saddles which are not well fitted or loads which are improperly balanced are often associated with skin bruises and saddle burns. Such areas become infected, ulcerate and may lead to skin necrosis. Raw areas of flesh may be seen on the back or hump after the loss of the top skin, and **Richard (1976)** isolated a wide variety of pyogenic organisms from these necrotic areas. **Fazil (1977)** indicates that skin necrosis among camels may be associated with salt deficiency.

Contagious skin necrosis in camels is locally known as El-Naeita or El Naria (**Yagoub 1996**). Camels of all ages were found susceptible to the disease (**Yagoub and Mohamed, 1996**).

Infections of the skin caused by parasites are a big problem in camels. Camels can be infected by ticks and mites, and suffer from fly maggots feeding on wounds and in the nose.

Mange is very contagious and is second to Surra in causing problems and losses in camels and if it is not treated, mange (mite infection) can lead to the death of a camel (**Agab, 1993; Gebrehiwet, 1997**).

Camels do not suffer greatly from tick-borne diseases. Nonetheless, a few species of ticks have been isolated, including *Amblyomma gemma*, *A. variegatum*, *Hyalomma truncatum*, *H. excavatum*, *Rhipicephalus pulchellus*, *R. pravus* and *R. simus* (**Bremaud, 1969; Richard, 1979**). Ticks generally cause consistent irritation, leading to rubbing. When located around the eyelids they may force the animal to rub against trees or other objects, often resulting in conjunctivitis. Poisons from some ticks affect the nervous system and muscles and the animal cannot move (paralysis) which can lead to death. Tick infections can cause the death of young camels.

Fly maggots can prevent healing of wounds and other germs may infect the wound.

Ringworm, or dermatophytosis, is a highly contagious infection of the keratinised tissue of domestic animals and man. It is one of the three common diseases caused by genera of fungi collectively called Dermatophytes.

In a survey of camel ringworm in Eastern Sudan, it was found that 217 out of 498 young camel calves under two years old examined during one year (43.5%) were diagnosed with ringworm (**Fadlelmula et al, 1994**).

A second 1993 study reported that, among 75 camels showing skin lesions, 48% were positive for fungal infection, with younger individuals more susceptible (**Mahmoud, 1993**). An earlier 1986 study showed that in a survey of ringworm in camels, over 25% of young

animals suffered from *T.verrucosum* infection, and fewer than 0.5% had *T. mentagrophytes* (Kuttin *et al*, 1986).

Dermatophilus congolensis and *Microsporium gypseum* infections have both been recorded in camels.

Camel dermatophilosis was found to be one of the most serious problems faced by camel herders in the region (Gitao *et al*, 1998) Although only recently described, camel dermatophilosis is recognised as widespread, and incidence may be related to the presence of ticks which cause initial skin damage.

Eye problems: Injury or infection of the eye or vitamin deficiencies can cause blindness in animals; a problem in one eye is the result of injury or a foreign body such as sand, dust or a seed in the eye.

6. Key Words: Camels, diseases, Pathology, Skin, eyes

7. Methodology:

Study area: Tamboul area; El Gezira State and the Slaughterhouses in Khartoum, North Kordofan, Gedarif and South Darfur States.

Sampling: samples are to be taken from camels that are brought to Tamboul Camel Market and the above mentioned States slaughterhouses (Skin scrapings and superficial and deep).

Samples will be accompanied by the related epidemiologic and clinical information such as farm locality, age, history etc...

Clinical signs

Examination of skin, coat and hair

Cytology: Cutaneous and auricular cytology is helpful in identifying bacterial, fungal, and possibly neoplastic skin diseases.

Fungal Cultures: Dermatophyte infections are best identified with a fungal culture on either dermatophyte test medium or on plain Sabouraud's agar.

Bacterial Cultures: Intact pustules can be cultured by rupturing the pustule with a sterile needle and swabbing the lesion with a sterile culture swab.

Skin biopsies: Deep pyodermas are best cultured from a skin biopsy (6-8 mm).

Blood and urine tests

Gross examination

Histopathology

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Section Three: Researchers and their Responsibilities:

Researchers	Qualification	Academic status	Main Specialty	Responsibilities
1- Professor Dr. Amel Omer Bakhiet	Ph.D	Associate Professor	Pathology	Principal investigator Leading the team
2- Professor Dr. Seif El Dawla Mustafa Barakat	Ph.D	Associate Professor	Pathology	Assistant of the Principal investigator
3- Professor Dr. Osman Saad Ali	Ph.D	Professor	Pathology	Pathological and histopathological changes associated with diseases
4- Professor Dr. Jalal Eldeen Alazhari	Ph.D	Professor	Veterinary Medicine Bacteriology	Bacteriological investigations associated with diseases
5- Professor Dr. Hamed Agab	Ph.D	Associate Professor	Veterinary Medicine Bacteriology Field work	Bacteriological field investigations and sampling
6- Dr. Imad Mohamed Tahir	Ph.D	Associate Professor	Biochemistry	Biochemical investigations associated with diseases changes
7- Dr. Mohamed A Abdallah	Ph.D	Associate Professor	Epidemiology	Epidemiological investigations associated with diseases prevalence
7- Hala Ali Mohamed	M.V.Sc	Lecturer	Pathology	Sampling and clinical work

Section Four: Budget Phases

Research Council Decision:

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Council secretary:

Name:
Signature:
Date:

Council vice President

Name:
Signature:
Date: