

PRELIMINARY SURVEY OF DERMATOPHILUS CONGLENIS INFECTION IN CAMELS SLAUGHTERED IN SOKOTO ABATTOIR.

H. A Bodinga*¹, Zaid Shehu².

¹Department of Veterinary Surgery and Radiology. Veterinary Teaching Hospital,

Usmanu Danfodiyo University, Sokoto.

Corrospounding author email: Ahbodinga9@gmail.com

ABSTRACT

This study was carried out to determine the occurrence of *Dermatophilus congolensis* and other associated bacteria on skin lesions of camel suspected to be dermatophilosis. Skin samples obtained from fifty camels were processed for bacteriological culture and identification. In this study, sixteen samples 16 (16%) were positive for *Dermatophilus congolensis*, while 34 (84%) were negative. Both *D. congolensis* positive and negative samples were processed for isolation of other bacteria. *E. coli*, *Shigella spp*, *Streptococcus spp*, *Staphylococcus spp*, *Salmonella spp*, *Pasteurella spp*, *Corynebacterium spp*, *Yersinia spp*, *Proteus spp*, *Enterobacter spp*, *Serratia spp*, *Klebsiella spp*, *Citrobacter spp*, *Providencia spp*, *Micrococcus spp*, *Lactococcus spp*, *Morganella spp*, and *Edwasiella spp* were isolated from both positive and negative *dermatophilus congolensis* samples based on the colony appearance, gram's straining and biochemical characteristics.

Conclusion: finding from this research suggest the occurrence presence of dermatophilosis in the study area.

INTRODUCTION

Dermatophilosis is a bacterial skin disease caused by the bacterium actinomycete *Dermatophilus congolensis* (Zaria, 1993; Loria *et al.*, 2005). The disease affects many species of domestic and wild animals and occasionally humans (Abdullahi, 2001). It is the most important disease skin disease of ruminants in many West and East African countries (Woldemeskel and Taye, 2002). It is considered as one of the main constraints to increased cattle productivity in these African countries (Morrow *et al.*, 1993). The disease was first described in Congo by VanSaceghem in 1915. Where it occurs, Dermatophilosis causes severe skin matting resulting in hide depreciation, Overall decrease in animal productivity and, in severe cases, mortality in susceptible weak animals may be as 50% in the absence of treatment (Zaria, 1993). Therefore, the disease has great economic importance especially in the tropics (Yeruham *et al.*, 2000; Chatikobo *et al.*, 2004). Severe outbreak of the disease has been

associated with the presence of tropical ticks known as *Amblyomma variegatum* (Metheron *et al.*, 1989). In humans, the disease causes nail infection and pustular eruption of the skin (Towesey *et al.*, 1993).

Although the aetiological agent of Dermatophilosis (*Dermatophilus congolensis*) is supposed to be specific to ruminants, its occurrence and isolation from camels has been reported (Gitao *et al.*, 1990). The disease was first described in dromedary camels in the Ol-Maisor farm in Laikipia, Kenya (Gitao *et al.*, 1990). Epidemiologically, the disease is prevalent in wet season compared to dry season and calves appeared more susceptible compared to the adults (Agab and Bakhiet, 2001). In affected camel(s) there is hair matting especially on the rump, neck, flanks and lower abdomen with no lesion on the legs.

The prevalence and pattern of Dermatophilosis infection in Nigeria have been well documented (Kelley and Bida, 1970). Similarly, various reports (Abdullahi and Abdulkadir, 1991), have documented about the prevalence of this disease in domestic species in Nigeria. However, only a few reports were on camels particularly in the Northwestern part of Nigeria.

The present study was designed to preliminary study the occurrence of Dermatophilosis in the state via cultural isolation and identification of *D.congolensis* and associated bacteria from the skin scrapings of suspected camels

MATERIALS AND METHOD

1.0 AREA OF STUDY

The study was conducted in Sokoto state which is located to extreme north-west of Nigeria within Sudan savannah. Geographically, the state is located between latitude 12° N and 13° 58' and longitude 4° 8' E and 6° 54' E. By its location it shares boundaries with the republic of Niger to the North, Kebbi state to the west and southwest and Zamfara state to the East. Sokoto state covers a total land area of 32,200 square kilometers. It has a distinct dry and wet season with annual rainfall of about 707mm and temperature of 37°C (Sokoto Diary, 2004). Sokoto ranked the second largest in terms of livestock population according to the 1992 annual population estimate. The vegetation is characterized by tree plantation with predominant semi-arid shrubs and short grasses (Adamu, 1992).

2.0 Study Animals

Camels presented for slaughter at Sokoto central abattoir were the targeted population. Fifty (50) camels with apparent cutaneous/skin lesions were only sampled. The group of animals investigated was working camels of mixed age and sex. Camels sampled in this study were those with gross skin lesion.

3.0 sample collection, Handling & processing

Skin scrapings were taken from the skin edges using Razor blade and collected using envelope. The envelopes were labelled and transported to the Veterinary Microbiology laboratory.

The scabs and crust lesions (scraping) were cut into pieces and transferred into test tubes containing 5mls of distilled water. The test tubes were loosely closed and incubated at 37°C in a candle jar for 30 minutes. A loop full of the suspension was streaked on 7% defibrinated blood agar (modified Haalstar's technique described by Vanbreuseghem *et al.*, 1976).

A loop full of distilled water culture was streaked on MacConkey agar and blood agar. A plate of blood agar was incubated anaerobically for 48 hours at 37°C and that of MacConkey agar was inoculated aerobically for 24 hours at 37°C. The plates were then examined for growth, colony morphology and hemolysis. The colonies were then gram's stained and observed under light microscope for gram's reaction and cellular morphology (Cowan and Steel, 2004).

4.0 Biochemical characterisation

Biochemical tests comprising of coagulase, catalase motility and klinger ion sugar tests were carried out on each of the isolate based on the procedure described by crown and Steel (2004).

RESULTS

A total of one hundred bacterial isolates comprising sixteen (16) *Dermatophilus congolensis* and other genera were isolated from a total of fifty

samples. From the positive *D.congolensis* a total of 50 bacterial isolates were recovered while 34 isolates were isolated for the negative scab lesions.

The table below shows the result of bacterial species isolated from skin lesions of one hump camels at Sokoto.

Types of bacteria	Number of isolates	% of Isolates
<i>Dermatophilus congolensis</i>	16	16
<i>Escherichia coli</i>	16	16
Proteus spp	15	15
Streptococcus spp	9	9
Klebsiella spp	7	7
Yersinia spp	7	7
Shigella spp	6	6
Corynebacterium spp	5	5
Staphylococcus spp	4	4
Edwasiella spp	4	4
Micrococcus spp	2	2
Citrococcus spp	2	2
Lactococcus spp	1	1
Providencia spp	1	1
Salmonella spp	1	1
Morganella spp	1	1
Serratia spp	1	1
Enterobacter spp	1	1
Pasteurella spp	1	1
Total	100	100%

DISCUSSION

Findings from this work suggest the occurrence of Dermatophilosis in camel in the study area. Prior to this present investigation, no microbial examination has been carried out on the presence of *D. Congolensis* in camels in Sokoto state. Therefore, it is likely that some of the previously diagnosed cutaneous lesions or skin diseases may have been associated with *Dermatophilus congolensis* either singly or in combination with other infectious agents incriminated with the disease.

In the study of normal flora of bovine skin in Nigeria, Nwufoh and Amakiri 1981 isolated *Staphylococcus epidermidis*, hemolytic *Streptococcus*, *Escherichia coli*, and *Bacillus subtilis*. Synergistic interaction between these bacteria and *D.congolensis* was postulated more so when there is immune compromise, this can cause localized destruction or systemic symptoms (Hackett and Stevens, 1993). In Nigeria, communal herding of ruminants and camel together is a common management practice (Obi, 1997). Cross-infection is possible particularly in Sokoto state where large and small ruminants are herded together with camel and hence the species may act as the reservoir for dermatophilosis.

The skin as an intricate habitat for many bacteria contains different type of bacteria (Delis *et al.*, 2010). The occurrence of *Escherchia coli*, *proteus spp*, *Streptococcus spp*, *Staphylococcus spp*, and *Micrococcus spp*. in both *D.congolensis* positive and

negative scabs agree with the reports of Okpa *et al.*(1991) and Abdullahi (2001). Similarly, the rate of recovery of *E.coli* from the positive scabs was not significantly high than the rate of its recovery from the negative samples were consistent with the report of Okpa *et al.*, 1991. This could be attributed to the presence of various toxins and enzymes in *E.coli* which enables it to invade tissues of humans and animals where it causes variety of diseases.

CONCLUSION

Findings from this research indicates the occurrence of *Dermatophilus congolensis* infection either singly or with other concurrent bacteria in these camels and may have some synergistic roles in precipitating dermatophilosis which is a constant threat to cattle industry in Nigeria. Importantly, the result obtained from this study may indicate the importance of *D. congolensis* in camel especially as a skin disease. It as well suggests neglect of simple management practice such as deworming, dipping/ spraying and proper housing of these animals.

RECOMMENDATION

It is recommended that aggressive extension of Veterinary services to educate livestock owners on the importance of reporting diseases of their stocks to the nearest Veterinary Authority. Regularly tick should be control from the animals. And also call for enlightenment of public especially butchers on the danger

associated with this disease on human health, ways of contracting the disease and possible ways of protection against the disease. There is the need, therefore for further researches on camel diseases in Sokoto state

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