

## A DERMATOPHILOSIS OUTBREAK IN SOUTHERN SUDAN TREATMENT TRIAL WITH TERRAMYCINE LONG ACTIVITY

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### Résumé

**DERMATOPHILOSE DANS LE SUD DU SOUDAN. TRAITEMENT PAR LA TERRAMYCINE RETARD.** — La dermatophilose est une maladie contagieuse enzootique en région tropicale mais sporadiquement décrite sous nos climats. Le degré de résistance du bétail nilotique (race Dinka) et ses croisements, a été étudié lors de l'apparition du foyer au Soudan. L'usage de la Terramycine Retard pour le traitement des sujets malades est également discuté. Une seule injection (20 mg/kg) est curative dans 35,9 % des cas. Moins les sujets sont atteints, meilleurs sont les résultats obtenus. La réponse au traitement ne semble pas modifiée par la race des animaux soumis au traitement.

Dermatophilosis is an acute, subacute or chronic exsudative dermatosis of animals and men described first among cattle in the Belgian Congo (Van Saceghem 1915).

This dermatosis occurs primarily in cattle and is of economic importance because of damage to hide, reduced production, increased culling and death rate when the disease is severe and generalized (Jubb and Kennedy 1970).

The disease is widespread in tropical and subtropical countries but has been sporadically reported more recently in Great Britain (Roberts and Vallely 1963), Ireland (Collins *et al* 1969), USA (Bridges and Romano 1961) and Canada (Searcy and Hulland 1968). It has been identified as well in France, in horses (Bussieras *et al* 1978), sheep (Lefevre *et al* 1978), lately cattle (Chermette *et al* 1983), and Germany (Weber *et al* 1975).

The causal organism of this contagious disease is a bacteria : *Dermatophilus congolensis*, family Dermatophilaceae, order Actinomycetales, despite the fungus-like appearance of its multimorphic life cycle.

The epidemiology and the pathogenesis of the disease are still poorly understood. In many parts of Africa, there is a well-marked seasonal variation in the disease incidence (Chodnick 1956). Dermatophilosis is a « Rainy season disease », moisture enhances transmission of infection. Ticks, flies, biting insects, mosquitoes and other various agents (like ox-pecker birds, spine of thorny bushes) are involved in the transmission of the

disease, since they break the skin barrier creating an opening to the infection (Hyslop 1979).

European breeds are highly subject to *D. congolensis* infection (Mornet and Thiery 1955, Kelley *et al* 1964, Njindam, 1980). On the contrary, natural resistance has been described in some African breeds (Coleman 1967, Blancou *et al* 1976).

As mentioned above, the disease has been reported as far North as Canada but, the epidemiology in temperate climate has still to be investigated.

### Materials and Methods

An outbreak of dermatophilosis has been observed on Mafao farm (FAO/UNDP/RMA) an experimental cross-breeding station close to Juba, capital of the Equatoria Province, Sudan.

In March 1984, two cows were affected by dermatophilosis (natural infection). In May, with beginning of the wet season (May to October, average (5 years) rainfall : 820.5 mm) the disease started spreading out and one month later, 88 heads or 35 % of the herd presented typical lesions.

The presence of the infection was determined bacteriologically by direct smears and culture.

In relation with the degree of infection, affected animals were classified in three categories : slightly affected, severely affected and generalised.

The cattle kept on the farm was imported from Kenya (Friesian/Boran or Friesian Boran crosses (n = 73), Dinka (n = 59), and Dinka cross breed with 25 and 50 % exotic

blood (n = 49). The Dinka cattle are of a nilotic type and descend from the cross between hamitic humpless longhorn cattle, humped zebu cattle. These cattle are considered as a dairy type.

Oddly enough, no cases have been reported amongst calves under one year. The efficacy of Terramycin Long Acting (LA/T) injectable solution (Pfizer Inc New York) which has been recently introduced for treating dermatophilosis (Ilemobade *et al* 1979) has been tested in a field experiment.

The 88 affected animals used were divided into four groups. Group 1 was treated with one dose (20 mg/kg) of LA/T intramuscularly. The animals from group 2 were treated with two doses at a five days interval, Group 3 with three doses at the same interval. Group 4 was used as control and kept untreated. All the cattle has been screened 7 days after the last LA/T injection in Group 3.

Animals were infested with ticks but not dipped, not to interfere with LA/T medication.

## Results

Incidence of dermatophilosis in the different cattle breeds raised on the farm is summarized in table 1. High sensitivity of imported cattle is clearly demonstrated.

Comparative effect in the treatment of streptotrichosis in cattle given one, two or three injections of Terramycin Long Acting is summarised in table 2.

According to treatment response, animals have been classified in three groups : cured, improved or not cured.

About 35.9 % of the animals treated with LA/T were cured of the infection ; a noticeable improvement has been observed in 38.5 % of the cases.

No significant differences were registered in the recovery rate of cattle from Group 1, 2 or 3. A single dose of LA/T seems to be the best treatment. No spontaneous recoveries were observed in Group 4.

All the animals which did not respond to LA/T treatment and are thus recorded as not cured were all classified as « +++ » in table 1.

The effect of treatment may depend on the degree of infection, very severely infected animals did not show any benefit.

In the response therapy, no significant differences were observed according to the breed or crosses of treated animals.

Table 1. - Dermatophilosis in cattle aged more than one year in Dinka, 50 % Dinka, 25 % Dinka and imported cattle.

Breed (Number of animals)	Degree of infection				infected animals (%)
	-	+	++	+++ (a)	
Dinka (59)	59	0	0	0	0
50 % Dinka (38)	25	8	2	3	34
25 % Dinka (11)	4	2	1	4	64
Imported (73)	5	13	12	43	93

(a) : -, non infected ; +, slightly infected ; ++, severely infected ; +++, generalized infection

Table 2. - Effect of Terramycin/LA in the treatment of dermatophilosis : 1, 2, 3 injections days apart.

Group (dose of Terramycine)	Number of animals	State of animals		
		Cured no. (%)	Improved no. (%)	Not Cured no. (%)
Group 1 (20 mg/kg)	11	4 (36.4)	6 (54.5)	1 (9.1)
Group 2 (2 x 20mg/Kg)	13	5 (38.0)	4 (31.0)	4 (31.0)
Group 3 (3 x 20mg/Kg)	15	5 (33.3)	5 (33.3)	5 (33.3)
Group 4 (0)	9	0	0	9 (100)

## Discussion

It is obvious that some degree of natural immunity to dermatophilosis does exist (Lloyd 1984). This degree varies from breed to breed ranging from extreme susceptibility for European breeds (Mornet and Thiery 1955, Njindam 1980) to complete immunity as the N'Dama cattle, under normal conditions (Coleman 1967). Resistance individual is genetically determined (Dumas *et al* 1971). As described for the N'Dama in West Africa, natural immunity exists within the Dinka cattle from East Africa. This fact should be given careful attention by those who improve the local cattle by importation of European sires for crossbreeding.

Different investigators into the sensitivity of *D. congolensis* to antibiotics *in vivo* as *in vitro* have obtained variable results because of the limited usefulness of tropical preparations under field conditions, parenteral treatment has been advocated for the dermatophilosis (Blancou 1976).

The table 2 confirms observation of previous workers (Ogwu *et al* 1981, Gbodi and Ndife 1982). Terramycin Long Acting is the last promising broad spectrum preparation antibiotic which has been tested *in vivo*, and results are briefly discussed.

A single intramuscular dose of LA/T was found efficient in treating different grades of bovine dermatophilosis in Nigeria. There was a complete healing in about 26 out of 28 adult zebu cattle (93%). This investigation was carried out by Illemobade *et al* (1979) during the wet season because it is a common observation that during dry weather up to 20% of infected cattle (espe-

cially lightly infected) recover spontaneously (Blancou 1976).

Ogwu *et al* (1981) carried out a similar experiment during the dry season. Recovery rate 18.2% was recorded; that was not regarded as significant since this is within the range of spontaneous recovery rate during this season (25%). No significant differences were noted in the recovery rate of cattle treated once or twice at a 7-days intense.

Gbodi and Ndife (1982) have obtained a 33% cure rate in treatment of Friesian cattle during the wet season. The author suggested that a difference in breed response must explain that this curative effect is far below Illemobade *et al* (1979) result in zebu cattle.

The results we have obtained may be not so high (35.9%) but Terramycin provides the highest cure rate in bovine infested with streptotrichosis compared with other antibiotics or association which have been used until today.

No significant differences have been registered whether LA/T treatments are repeated once, twice or not.

Response to therapy was not significantly different according to the breed or crosses of treated cattle.

Due to the high treatment cost, LA/T should be limited to the treatment of valuable animals. Research on the disease epidemiology and immunology must be carried on for a better control of the disease in developing countries and in temperate countries where it sporadically appears.

Study of preventive effect of LA/T injections should be carried out at the beginning of the wet season.

## Summary

Dermatophilosis is a contagious enzootic disease in tropical areas but which sporadically appears in temperate countries. During an outbreak in Sudan, the resistance level of the Nilotic cattle (Dinka breed) and various crosses has been recorded. The use of Long Acting Terramycin for treating infected cattle is discussed as well. A single injection of Long Acting Terramycin (20 mg/kg) is curative in 35.9% of the cases. The less severe the infections are, the best results are obtained. Treatment response does not seem modified by the breed of the treated cattle

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