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The Treatment of Cattles with Dermatofitozis Via Enilconazole

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Abstract: Study material consisted as 15 experiment and 8 control, totally 23 cattle that possessed by 2 breeders and together housed in Afyonkarahisar province, Suhut district, Kilickaya village; despite vaccine used two times for medicinal purpose displaying no recovery; aged at between 3 and 12 months, diagnosed as dermatofitosis by clinically and microbiological. Being clinical for dermatofitosis the animals in experiment and control groups were examined if there were lesions on the head and derm or not and was categorized as light, bland and acute according to its frequency. The clinical status were examined according to the localization, amplitude and number of lesions. During the study any change was done in condition of animal care, nutrition and shelter. The experiment group was made up 15 cattle; two of them were examined as light, five of them were examined as bland and eight of them were examined as acute and the control group was made up 8 cattle; one of them was examined as light, third of them were examined as bland, fourth of them were examined as acute. Ten percent Enilconazole solution was applied in 4 mg kg^{-1} dose three days apart as externally to the animals in experiment group. The first application to entire body of the animal and the subsequent 4 applications were done externally in the style of spray to the parts where the dermatofitosis lesions were appeared. The cattle in the control group weren't applied any therapy. Following the drug administration, in second and fourth weeks a decrease in the keratinized tissues and becoming pilosity were observed in the lesional parts in all experiment group animals. It was seen in the 6th week that keratinized tissues completely decreased, pilosity became dense and the healing was faster. It was determined in the 8th week that lesions recovered completely. It was seen that when any application was made to the control groups animal there were no change in dermatofitosis lesions. As a result, it was of the opinion that owing to easy using, being curative in a short time and being economic of the 10% enilconazole solution was a useful and an alternative medicine for the dermatofitosis therapy in the cattle.

Key words: Dermatofitosis, enilconazole, cattle, recovery, experiment group

INTRODUCTION

Dermatofitosis is an important infection in terms of human and animal health (Gokce *et al*., 1999; Kirmizigul *et al*., 2008). Even though, it creats a superficial skin disorders, it causes in the effected cattle live weight loss, growth deficiency, depending on disease emerged loss of meat and milk, impairment of quality integument and also causes economic loss depending on the difficulty in purchase and sale of diseased animal. Moreover, as a diseas zoonoz causes substentionaly danger in terms of health of especially people who do care for animals, children and vet (Gudding and Lund, 1995; Imren and Sahal, 1994; Parker and Yager, 1997; Gokce *et al*., 1999; Cenesiz *et al*., 2007).

Fungus named as dermatophytes connected to genus of trichophyton, microsporum and epidermophyton causes the diseas (Parker and Yager, 1997; Gokce *et al*., 1999; Moriello, 2001; Cenesiz *et al*., 2007). Trichophytie of cattle is constituted almost only by *Trichophyton verrucosum* and occurs as a table of enzootik chronic disease usually in under an age of young animals. The most common factor in cattle dermatofitosis is *T. verrucosum* (Takatori *et al*., 1993; Gudding *et al*., 1995;

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Parker and Yager, 1997; Gokce *et al*., 1999; Al-Ani *et al*., 2002; Cenesiz *et al*., 2007). Dermatofitosis events among the infectious diseases of cattle shows a wide spread all over the world. The severity of disease in cattle show an alteration according to the number of sports and virulence of factor. Also, the severity of disease can be change according to the age and constitution of animals. Mostly animal care and breeding, high relative air humidity, barn temperature, vitamin A table, number of animal, age, the number of sport in ambient, bad hygienic conditions and immunity of animals have role in the epizootiology of dermatofitosis (Imren and Sahal, 1994; Burt, 2001; Cenesiz *et al*., 2007).

To some extent the spread of fungus sports may also occur moving mechanical way with external parasites such as insecticide, louse and flea. First clinical symptoms in cattle dermatofitosis begin to emerge later 3-4 weeks after infection and clinic table is characterized with skin incrustation and scurfy. Lesions are seen mostly in animals head, neck and tail regions. Rarely, lesions can be found in the other parts of body. The likelihood of occurrence of lesions in extremitiesis low (Imren and Sahal, 1994; Gokce *et al*., 1999; Cenesiz *et al*., 2007).

So far, numerous preparations with various combinations have been tested in the fight against dermatofitosis disease (Imren and Sahal, 1996; Gokce *et al*., 1999; Kirmizigul *et al*., 2008). But still, continuous, effective and at the same time economical drugs doesn't emerge. It is put forward that recovery can be accelerate with the vaccine in the areas where, the disease is frequently seen. In the field, veterinary doctors mostly apply vaccine for the dermatofitosis theraphy and control. In case of failure in the immunization, different pharmaceutical applications are done for the purpose of theraphy and control of dermatofitosis in the cattle (Imren and Sahal, 1994; Cam *et al*., 2007; Kirmizigul *et al*., 2008). In this case, enilconazole can be used as an alternative medicine. Enilconazole, belongs to the imidazole group, is a broad-spectrum antimycotic. Imidazole can be used as local and systemic (Burt, 2001; Kirmizigul *et al*., 2008). Drugs in this group prevent 14 α-dimetilaz activity dependent microsomal P450 stokrom in fungal cells. With this effect, they prevent synthesis of ergesterolun that is an important component of cytoplasmic membrane of fungal cell. Thus, by disrupting the permeability of fungal cell shows antifungal effect (Thienpont *et al*., 1981; Burt, 2001; Kirmizigul *et al*., 2008).

In this study, on unhealed animals that were made vaccine application, the efficiency of 10% enilconazole in the treatment of cattle dermatofitozis is intended to search.

MATERIALS AND METHODS

Animal material: Study material consisted of 15 experiment and 8 control, totally 23 cattle that possessed by 2 breeders and together housed in Afyonkarahisar province, Suhut district, Kilickaya village.

Clinical examinations: By making clinical examinations in terms of dermatofitosis, experiment and control group animals were examined if lesions on the head and skin are found or not and were assessed according to its severity as light, bland and acute. As a result of clinical examinations of animals, dermatofitosis lesions were detected in different degrees on head, neck and back regions of the 23 Clinical status of the animals; the localization of lesions, size and numbers were assessed. According to this, in the experiment group, two phenomenon were assessed as light that had 2-5 lesions approximately, 1-2 cm in diameter in the head, neck and other parts of the body; 5 phenomenon were assessed as bland that had 5-10 lesions 2-4 cm in diameter in other regions of the head neck and body; 8 phenomenon were assessed as acute that had more than 10 lesions 4-6 cm in diameter in the other parts of head, neck and body. Control group was created from 8 cattle; one of them was assessed as light, 3 of them were assessed as bland and four of them were assessed as acute (Fig. 1).

Mycological culture: From the regions with lesions on the skin of all animals in experiment group in the study, after cleaned by wiping with a cotton that was sunk in 70% ethylalcohol, skin scrapings and hair were taken with the help of sterile bisturi in the edges of regions with lesions. Taken samples were transected of the direct microscopic examination, izolation and identification. Taken skin scrapings and hair were treated with 10% potassium hydroxide (KOH) and were examined in the 10 and 40× lenses, after the preparation of preparate between lame

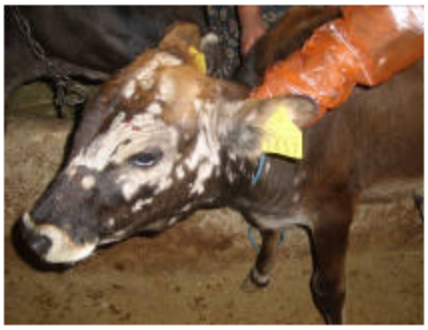

Fig. 1: Before the treatment

und lamella. In the examination, the seen typical spor, arthrospore and hyphas were assessed as positive in terms of dermatofitosis.

The taken from the areas with lesions and sanitary derm areas of the cattle skin scrapings were planted with Sabouraud Dekstroz Agara (SDA) the sloping stab method and were incubated at 32°C in aerob humid ambient for 2-6 weeks period. During the incubation, microscopic characteristics of colonies were examined every day. In the microscopic examination, preparates that was prepared from the culture, were examined in terms of hypha, mycelium, spor and chlamydispore, macro and micro coridiums (Moriello, 2001; Kirmizigul *et al*., 2008).

Treatment method: A 10% Enilconazole solution was applied in 4 mg kg^{-1} dose 3 days apart as externally to the animals in experiment group. The first application to entire body of the animal and the subsequent 4 applications were done externally in the style of spray to the parts where, the dermatofitosis lesions were appeared (Kirmizigul *et al*., 2008). The cattle in the control group weren't applied any therapy. Being assessed the convalescences in 15 days apart following the the drug administration, records were kept for a period of 2 months. In assessment; the symbol (-) was assessed as 'no recovery', the symbol (+) was assessed as 'spillage of keratinized tissue', the symbol (++) was assessed as beginning of usage and the symbol (+++) was assessed as full recovery.

RESULTS

Clinical symptoms: In the clinical examination, dermatofitosis lesions were localized in the control and experiment groups animals; thenth of them had lesion on their head, eight of them had lesions on their head and neck, two of them had lesions on their neck and third of them had lesions on different parts of their bodies.

Following the drug administration, in second and 4th weeks a decrease becoming in the keratinized tissues and becoming pilosity were observed in the lesional parts in all experiment group animals (Fig. 2 and 3). It was seen in the 6th week that keratinized tissues completely decreased, pilosity became dense and the healing was shown in Fig. 4. It was determined in the 8th week that lesions recovered completely (Fig. 5 and 6). It was seen that when any application was made to the control groups animal there were no change in dermatofitosis lesions. In the within-group statistical analysis (variance) that was made 15 days apart in experiment group animals, improvement rates were assessed as significant at a level of $p<0.001$ (Table 1).

Mycological symptoms: The experiment group animals were included to the study and a microbiological culture was made from skin scrapping with lesion and hair sample of them. It was observed that while,

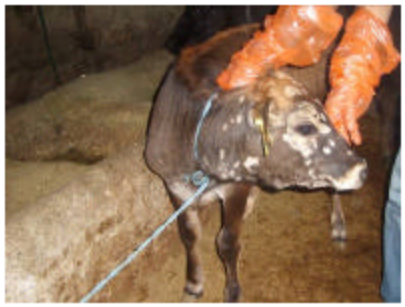

Fig. 2: Fifteenth day after treatment

Fig. 3: Thirtieth day after treatment

Fig. 4: Forty-fifth day after treatment

Fig. 5: Sixtieth day after treatment

Table 1: These are the assessment of the recovery that seen in the lesions of the experiment group animals according to 15 days and within-group statistical analysis

		Improvement period (weeks)			
Experiment group	Animal No.	2th ($\bar{X}\pm S_x$)	4th ($\bar{X}\pm S_x$)	6th ($\bar{X}\pm S_x$)	8th ($\bar{X}\pm S_x$)
With light	1	+	++	+++	+++
lesions (n = 2)	2	+	++	+++	+++
Mean±SE	-	1.0±0.0c	2.0±0.0b	3.0±0.0a	3.0±0.0a
With bland	3	+	++	++	+++
lesions (n = 5)	4	+	++	++	+++
	5	++	++	+++	+++
	6	+	++	+++	+++
	7	+	++	++	+++
Mean±SE	-	1.2±0.4c	2.0±0.0b	2.4±0.5b	3.0±0.0a
With severe	8	+	++	+++	+++
lesions (n = 8)	9	++	++	+++	+++
	10	+	++	+++	+++
	11	+	++	+++	+++
	12	+	+	++	++
	13	+	++	++	+++
	14	+	++	+++	+++
	15	+	++	++	+++
Mean±SE	-	1.1±0.3c	1.8±0.3b	2.6±0.5a	2.8±0.3a

-: No recovery +: Spillage of keratinized tissue ++: Beginning of usage; +++: Full recovery; In statistical assessments has been valued as + (1); Within-group statistical analysis according to 15 days in experiment group animals, improvement rates were assessed as significant at a level of $p<0.001$

Fig. 6: Sixtieth day after treatment

Trichophyton verrucosum was insolated in the 13th of them, *T. mentagroplytes* was increased in one of them, *Aspergillus* sp. was increased in one of them.

DISCUSSION

Dermatofitosis is an important infection in terms of human and animal health (Gokce *et al*., 1999; Kirmizigul *et al*., 2008). Moreover, as a diseas zooncz causes substentionaly denger in terms of health of especially people who do care for animals, children and vet (Imren and Sahal, 1996; Gokce *et al*., 1999). Even though, it creats a superficial skin disorders it causes in the effected cattle live weight loss, growth deficiency, depending on disease emerged loss of meat and milk, impairment of quality integument and also causes economic loss depending on the difficulty in purchase and sale of diseased animal (Imren and Sahal, 1994).

Fungus named as dermatophytes connected to genus of trichophyton, microsporum and epidermophyton causes the diseas (Parker and Yager, 1997; Gokce *et al*., 1999; Cenesiz *et al*., 2007). Fungus named as dermatophytes connected to genus of trichophyton, microsporum and epidermophyton causes the diseas. Trichophytie of cattle is constituted almost only by *Trichophyton verrucosum* and occurs as a Table 1 of enzootik chronic disease usually in under an age of young animals. The most common factor in cattle dermatofitosis is *T. verrucosum* (Gudding and Lund, 1995; Parker and Yager, 1997; Gokce *et al*., 1999; Cenesiz *et al*., 2007).

Dermatofitosis events among the infectious diseases of cattle show a wide spread all over the world. The severity of disease in cattle show an alteration according to the number of sports and virulence of factor. Also, the severity of disease can be change according to the age and constitution of animals. Mostly animal care and breeding, high relative air humidity, barn temperature, vitamin A Table 1, number of animal, age, the number of sport in ambient, bad hygienic conditions and immunity of animals have role in the epizootology of dermatofitosis (Imren and Sahal, 1994; Burt, 2001; Cenesiz *et al*., 2007). Owing to the long winter in Afyon region and hosting of animals in unsuitable weather conditions the frequency of the illness is on the increase. In this research it was seen that the barns of the animals with dermatofitosis infection were unventilated and humidity and the animals were closely spaced together in their barns (Fig. 7 and 8). As reported in earlier studies, it shows similarities in the studies, too.

It is notified that the cause of dermatofitosis in cattle and closely isolated sort of the fungus is *T. verrucosum* and also, different types of it, causes dermatofitosis

Fig. 7: Dermatofitozis lesions in animals

Fig. 8: Their living ambient

(Parker and Yager, 1997; Gokce *et al*., 1999; Cenesiz *et al*., 2007). In one of the study Al-Ani *et al*. (2002), they isolated most closely *T. verrucosum*, one of the factors in the cause of cattle dermatofitozise and secondly *T. mentagrophytes*. In the same study, they isolated less closely *T. schoenleinni*, *T. terrester*, *T. violaceum*, *M. nanum*, *M. distortum*, *M. audouinni*, *Alternaria* sp., *Fasurium* sp., *Penicillium* sp., *Cephalosporidium* sp. and *Aspergillus* sp. Kirmizigul *et al*. (2008), notified in one of their study that, while *Trichophyton verrucosum* in 14th of the 16 animals was increasing, *Alternaria* sp. was increasing in two of them. In the study, it was seen that, while *Trichophton verrucosum* was increasing 13th of the 15 animals, *T. mentagrophytes* was increasing in one of them, *Aspergillus* sp. was increasing in one of them. In this study, shows similarities with the sorts of fungus, reported in earlier studies.

So far, numerous preparations with various combinations have been tested in the fight against dermatofitosis disease (Imren and Sahal, 1994; Gokce *et al*., 1999; Kirmizigul *et al*., 2008). But still, continuous, effective and at the same time economical drugs doesn't emerge. It is put forward that recovery can be accelerate with the vaccine in the areas, where the disease is frequently seen (Gokce *et al*., 1999). Enilconazole can be used in the inadequate cases of grafting in the treatment of dermatofitosis. Enilconazole, belongs to the imidazole group is a broad-spectrum antimycotic (Thienpont *et al*., 1981; Burt, 2001; Kirmizigul *et al*., 2008). Following the drug administration, in 2nd and 4th weeks a decrease in the keratinized tissues and becoming pilosity were observed in the lesional parts in all experiment group animals (Fig. 2 and 3). It was observed in the 6th week that keratinized tissues completely decreased, pilosity became dense and began the recovery (Fig. 4). Complete recovery of lesions was determined in 8th week (Fig. 5 and 6). It was seen that when any application was made to the control groups animal there were no change in dermatofitosis lesions. In the within-group statistical analysis (Variance) that was made 15 days apart in experiment group animals, improvement rates were assessed as significant at a level of $p<0.001$ (Table 1).

CONCLUSION

In one of the study, Kirmizigul *et al*. (2008), used oil based 10% Enilconazole in the way of bulking from the back and they reported that the dermatofitosis lesions recovered quickly in the region, in which the drug was applied. The admistraiton shows similarities with this study. As a result, it was of the opinion that owing to easy using, being curative in a short time and being economic of the 10% enilconazole solution was a useful and an alternative medicine for the dermatofitosis therapy in the cattle.

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