

# Treatment of Mycotic Dermatitis in Domestic Animals with Poly Herbal Drug

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**Abstract**—Globally, mycotic dermatitis is very common but there is no single proven specific allopathic treatment regimen. In this study, domestic animals with skin diseases of different age and breed from geographically varied regions of Tamil Nadu state, India were employed. Most of them have had previous treatment with native and allopathic medicines without success. Clinically, the skin lesions were found to be mild to severe. The trial animals were treated with poly herbal formulation (ointment) prepared using the indigenous medicinal plants – viz *Andrographis paniculata*, *Lawsonia inermis* and *Madhuca longifolia*. Allopathic antifungal drugs and ointments, povidone iodine and curable (Terbinafine HCl, Ofloxacin, Ornidazole, Clobetasol propionate) were used in control. Comparatively, trial animals were found to have lesser course of treatment time and higher recovery rate than control. In Ethnoveterinary, this combination was tried for the first time. This herbal formulation is economical and an alternative for skin diseases.

**Keywords**—Allopathic drugs, dermatitis, domestic animals, poly herbal formulation.

## I. INTRODUCTION

GLOBALLY, skin disease in domestic animals caused by many factors including keratinophilic fungi is a major problem and is of zoonotic importance. It causes loss of production, contamination of the premises, heavy economic loss due to skin damage. Effective topical lotions, shampoos, ointments or antifungal drugs used to treat but reoccurrence and side effects are common. To eliminate these problems an alternative medicine is needed.

Plants serves as an alternative medicine to cure various ailments as it contains secondary metabolites such as alkaloids, terpenoids, tannins, saponins, glycosides, etc. The secondary metabolites play an important role as medicinal and pharmaceutical agents not only as purified isolates but also as lead compounds for treating ailments.

## II. MATERIALS AND METHODS

Animals with skin diseases were randomly selected from Tamil Nadu state, like Coimbatore, Pollachi, Madurai, Theni, Perambalur and Trichy districts. They belong to different age and breed. The disease was diagnosed based on the symptoms like alopecia, loss of hair, grayish-white and crusty raised extensive lesion over the infected area. Most of the animals

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had previous treatment with native and allopathic medicines with partial or without recovery. These randomly selected animals were made into five groups (Group A, B, C, D, and E). Each group had five cattle, three dogs and two horses, with infection ranging from mild to severe. Group A, B, C, D and E were treated with herbal formulation I, herbal formulation II, povidone iodine ointment and curable, respectively. Group E received no treatment (Control). The lesions were most commonly found on the head, neck, chest, back and dorsal side.

Herbal formulation was prepared with selected plants such as *Andrographis paniculata*, *Lawsonia inermis* and *Madhuca longifolia*. Two methods of preparation were adopted for comparing their response and recurrence.

### A. Formulation – I - Traditional Method

The ointment was prepared by following the method detailed in Gunapadam [1].

Fresh leaves of *Andrographis paniculata* (1000 gm), *Lawsonia inermis* (1000 gm) were ground with distilled water (300 ml) and extract is collected. The leaf extracts along with madhuca oil (1000 ml) boiled till uniform mixture obtained. Paraffin wax (700 gm) was added as a base and the content while as molten form (approximately at 50°C) was transferred to a wide mouthed container and allowed to cool.

### B. Formulation – II- Industrial Method

The ointment was prepared by the modified method [2]. In this method, fresh leaves of *Andrographis paniculata* (1000 gm) and *Lawsonia inermis* (1000 gm) were ground with distilled water (100 ml) and the extract is boiled at 65 °C in a silica crucible. Borax (10 gm) is added to the extract. Parallel to this, 180 gm of bee wax is melted in another silica crucible to which 610 ml of *Madhuca* oil is added and heated. Later the plant extract is slowly added to the bee wax - *Madhuca* oil mixture and stirred continuously until it gets uniformly miscible without any lumps. For fragrance few drops of rose oil was added. Finally transferred to wide mouthed bottles in molten form, allowed to cool and stored in cool place.

The herbal and allopathic ointments were applied ad-libidum over the infected regions of the respective groups of animals. The efficacy was assessed by the disappearance of symptoms and animals regaining their normal feeding and other habits. The time taken for complete recovery was assessed.

The skin scrapings and hair plucks of the infected and controlled animals were inoculated in Dermatophytes test medium (DTM) to find the etiology.

### III. RESULTS AND DISCUSSION

Clinical trials showed different course recovery (Table I). Animals treated with herbal formulation I and II recovered faster in 8-9 days in cattle, 11-12 days in dogs and 8-9 days in horse (Figs. 1-6). Povidone iodine took 17, 21 and 26 days for cattle, dogs and horse respectively. Curable showed recovery in 19, 20 and 28 days for cattle, dogs and horses, respectively. No recovery was seen in control animals up to 28 days.

The percentage of recovery was also high animals treated with herbal formulations than allopathic drugs. Much difference was not noticed in recovery between the herbal formulations despite of altering the methodology.

Severely infected animals had recovered from their behavior like rubbing their body over hard objects, reduction in feed and water intake and restless movements. Hair growth regained in animal treated with herbal formulations.

TABLE I  
 CLINICAL STUDIES OF TRIAL ANIMALS

Sl. No	Trial groups	No. of recovery	Trial animals recovery rate out of Cattle-5: Dogs-3: horses-2							
			Cattle			Dogs			Horse	
			Average No. of days required for recovery	% of recovery	No. of recovery	Average No. of days required for recovery	% of recovery	No. of recovery	Average No. of days required for recovery	% of recovery
1.	Group A	5	8	100	3	12	100	2	9	100
2.	Group B	5	9	100	3	11	100	2	8	100
3	Group C	3	17	60	1	21	33	0	26	0
4	Group D	3	19	40	2	20	67	1	28	50
5	Group E	0	-	0	0	-	0	0	-	0

DT medium showed the presence of dermatophytes like *Aspergillus niger*, *Curvularia geniculata*, *Microsporum gypseum*, *Rhizopus rhizopodiformi*, *Rhodotorula minuta* and *Trichophyton mentagrophytes*. Bacterial pathogens like *Streptococcus* sp. and *Staphylococcus* sp.

Andrographolide, the major active principle of *A. paniculata* has inhibitory activity of against pathogens [3]. Lawsone, the active compound of *L. inermis* possess higher antioxidant and antifungal property [4]. *M. longifolia* seed extract contain triterpenoids, steroids, saponins, flavonoids and glycosides which are its medicinal principles [5]. Glycosides of *M. longifolia* serve as a defense compound against many microbes [6]. Steroids are known for their cardiotoxic activities, insecticidal and antimicrobial properties [7]. Synergistic action of these medicinal principles must have inhibited the growth and metabolism of dermatophytes. Thus, herbal ointment cures faster by the action of their chief phytoconstituents and accumulation of the phytochemicals on the skin will not cause any serious side effect [8]. Allopathic drugs cure the disease slower and continue application of these drugs leads to accumulation of chemicals on the skin of animals which cause side effects [9]. In the trial, quantity of the herbal ointments requirement was less due to recovery in short course. The important criteria are non-reoccurrence of symptoms up to three years. The herbal ointments were proved to be safe with good curing property. Hence, the ointment may be recommended for the treatment of skin disease on domestic animals.



(a) Before treatment



(b) After treatment

Fig. 1 Infection in hind limbs-[Cow]



(a) Before treatment



(b) After treatment

Fig. 2 Infection on neck region



(b) After treatment



(a) Before treatment



(c) Regained hair growth

Fig. 4 Infection in tail



(b) After treatment

Fig. 3 Infection in hind limb



(a) Before treatment



(a) Before treatment



(b) Before treatment



(c) After treatment



(d) Cured animal

Fig. 5 Infection in forelimb



Fig. 6 (a) Before treatment (Note - Whole body infected)



Fig. 6 (b) After treatment (Note the glossy coat)

#### IV. CONCLUSION

Considering all these, it is concluded that the herbal ointments developed are economical, safe and has good curability without side effects. Hence, it can be recommended for treatment of skin disease on domestic animals.

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