

USE OF SALICYLIC ACID, ZINC SULPHATE, FENVALERATE AND SULPHUR WITH PETROLEUM JELLY AS BASE FOR TREATMENT OF SARCOPTIC MANGE IN A CAMEL

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ABSTRACT

The present study describes use of ointment containing salicylic acid, zinc sulphate, fenvalerate and sulphur with petroleum jelly as base for successful and effective treatment of severe mange in an adult male dromedary camel. The affected camel had severe lesions on neck, axilla, inner surface of thigh, inguinal region, perineal region, root of tail, flank region, head, lip neck and brisket region. The case did not respond to Ivermectin treatment. Itching disappeared 7 days after application of acaricidal ointment and fresh shiny skin appeared at 7 day after second application.

Key words: Camels, petroleum jelly, salicylic acid, sarcoptic mange

Sarcoptic mange in camels caused by *Sarcoptes scabiei var cameli* is considered to be one of the most serious, contagious, zoonotic (Basu *et al*, 1996) and debilitating disease (Singh *et al*, 1996).

Synthetic pyrethroid like fenvalerate used topically was reported to be successful in treating the sarcoptic mange (Bowman, 1999). The systemic use of ivermectin, though costly but having distinct advantage over topical therapy with acaricides gained preference as treatment of sarcoptic mange (Abu-Samra, 1999) but its efficacy has been in question after documentation of *in vivo* and *in vitro* ivermectin resistance in *Sarcoptes scabiei* (Currie *et al*, 2004). The importance of concomitant keratolytic therapy and topical scabicides to kill mites in the thick crusts has been emphasised (Chosidow, 2000). In order to utilise anti-inflammatory properties of salicylic acid (Weirich *et al*, 1976) and zinc sulphate (Gupta *et al*, 2014) together with acaricidal effect of fenvalerate (Bowman, 1999) and sulphur (Guichou *et al*, 2002), a new formulation was tried in petroleum jelly to treat the the mange in a male camel and is reported here.

Materials and Methods

A male camel (breeding stud) aged 10 yrs belonging to the herd of ICAR- National Research Centre on Camel, Bikaner was presented with mange. The camel was treated with ivermectin previously alongwith other camels of the herd. But it did not

respond to the treatment. The severe lesions were found on neck, in the axillae, inner surface of thigh, inguinal region, preputial sheath, perineal region, root of the tail, entire flank region, head lips neck and brisket region. Keratinisation, thickening, corrugation and wrinkling of the skin, exudation, fissured skin and scab formation were also noticed. Alopecia was severe on legs, head, neck, trunk, abdomen, flank, perineum (Fig 1). Histopathological study of skin of mange affected camels is well studied (Mathur *et al*, 2005).

The affected camel lacked proper rest because of intense pruritis and spent much time in biting, scratching and rubbing against objects and was totally restless. As a result substantial loss of libido was observed during the breeding season.

An ointment with following formulation was prepared,

1. Salicylic acid- 3%
2. Zinc sulphate- 3%
3. Fenvalerate dust (0.04%)- 6%
4. Sulphur- 6%
5. Petroleum jelly (I.P.)- Base

The ingredients were homogenously mixed in a bucket. The camel was restrained in sitting position and ointment was applied and spread on the affected skin area with the help of muslin cloth. In

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the present case of severe mange where whole body was involved about 2 kg ointment was sufficient to cover the affected portion in an adult camel. A second application of ointment was made after 15 days.

Results and Discussion

The ointment was found to be effective in treating the mange in dromedary camel. The recovery of skin and return to normalcy of “skin coat” was rapid and is characteristically shown in fig 2. There was marked clinical improvement in appearance with reference to healing of skin lesions and texture. The crusts and wrinkling disappeared and there was substantial reduction in skin folds. The disappearance of clinical signs of itching was noticed by 6-7 days. Appearance of fresh shiny skin was observed at 7 days after second application.

Salicylic acid is a lipid soluble, miscible with epidermal lipids and considered as a keratolytic, desmolytic and peeling agent because of its ability to disrupt cellular junctions and breaking or lysing intercellular keratin filaments (Arif, 2015) therefore it helps in penetration of drugs deep into the skin. Salicylic acid possess anti-inflammatory properties (Weirich *et al*, 1976). Zinc sulphate has been found useful in several dermatological ailments owing to its anti-inflammatory properties (Gupta *et al*, 2014). Fenvelarate is the 3rd generation synthetic pyrethroids having acaricidal effect (Bowman, 1999). For more than one hundred years Sulphur is being used as fungicide and acaricide (Guichou *et al*, 2002).

The male mite does not burrow into the skin and remains on the surface but the female mite cuts skin rapidly with its mouth parts and claws becoming completely embedded in two and a half

minutes. She remains within the horny layer of the skin forming tortuous tunnels for about two months laying eggs. The tunneling and the secretory and excretory products produced by the mites produce an itching sensation in the infested camel (Roberts and Janovy, 2000). It was suggested that ivermectin is not ovicidal because of inadequate penetration of the thick eggshell (Currie *et al*, 2004) and this may be the reason for its ineffectiveness in treating the mange completely in some animals. Petroleum Jelly is a purified mixture of semi-solid, saturated hydrocarbons, mainly of paraffinic nature, obtained from petroleum. The application of acaricides in a petroleum jelly base has benefit of spot treatment of acaricides to control ticks at specific body sites such as the perineum region. The acaricides in this spot on treatment can act for longer time. It has superiority over vegetable oils because it helps in healing of skin crevices. Secondly, it is retained longer than vegetable oil on the affected part and hence is more effective vehicle for the drugs. The application of acaricide by spraying tends to be uneconomical as excess acaricide solution, which drips off animals, is not recovered. This loss of medicament when applied through sprays is reduced with petroleum jelly as base. However, a herbal formulation has also been used successfully for treating mange in camels (Pathak *et al*, 1996).

Salicylic acid together with zice sulphate, sulphur, fenvalerate and petroleum jelly commonly used in human beings have not been reported for the treatment of skin affection in camel. Therefore, in the present study these were used as an ointment which was found to be effective in treating the skin affection in severe case of mange in an adult dromedary male camel.



Fig 1. Extensive mange infestation in a male camel.



Fig 2. The effect of ointment with petroleum jelly as base in mange infested camel.

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