

## **CONTROL OF MANGE MITE, *Sarcoptes scabiei* ON SHEEP**

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### **ABSTRACT**

The present study was designed to determine the effect of seven chemicals used to control mange mite on sheep. These chemicals were (1) Mange cides 10%, (2) Tincture idone 4%, (3) Noromectin 1.0% used once a month, (4) Noromectin 1.0% used twice a month, (5) Mange cides + skin recovery, (5) Noromectin 1.0% injection + Mange cides and (7) Mange cides + skin recovery + Noromectin 1.0% treated twice a month.

Sheep infected with scabies were responded to the healing of the disease when treated with the compounds mentioned above (i.e., Mange cide 10%; Tincture idone 4%; Noromectin 1.0% once a month and Noromectin 1.0% twice a month) are just 45, 45, 30, and 20 days, respectively.

**Keywords:** Mange mite, *Sarcoptes scabiei*, sheep, mange cure, acaricides.

### **INTRODUCTION**

Scabies is considered one of the most common skin disease that spread to humans and animals. This disease is caused by the itch mite, *Sarcoptes scabiei* L.), this species is spread worldwide. There are several types of the scabies such as classical scabies, Norwegian scabies and clean scabies. However, classical scabies is very common in human and animals in Pakistan and many other countries. It has been reported that approximately several millions of humans and animal are affected by skin diseases including scabies (Hicks and Elston, 2009).

The gravid female of the parasite lays from 2 to 3 eggs day in burrows of the stratum corneum of epidermis. After 50-72 hours, the larvae emerge from eggs and make new skin burrows. The life cycle of *Sarcoptes scabiei* from egg to adult emergence lasts about 10-17 days (Soulsby, 1982).

The bathing by water can be removed a significant numbers of the pest from humans and animals skin. However in appropriate bathing may affect the skin of both animal and human. Washing also may cause skin dryness and scratches and may harm the skin because dry skin is more proven to severe itching and irritation. In such conditions people and animals infected with *Sarcoptes scabiei* may lead to other health problems such as; dermatitis, pyoderma and sometimes eczema and urticaria. Treatment of *Sarcoptes scabiei*. However, oral application by using ivermectin is recommended for healing crusted scabies (Mounsey *et al.*, 2008). On the other hand,

permethrin used as topical cream has been successfully used for the treatment of scabies disease in Australia (Carapetis *et al.*, 1997). However, a recent *in vitro* study on acaricidal sensitivity has demonstrated an increase tolerance of *Sarcoptes scabiei* mites to permethrin collected from indigenous people communities across northern Australia (Mounsey *et al.*, 2009). Several constraints such as resistance of *Sarcoptes scabiei* to synthetic medicines may be due to the repeated use of the same mode of action medicines in the sick people and animals, the side effects of medicines, their unaffordable cost for some people and the long residual properties of most of the synthetic medicines available in the market justify the cause to find alternative approaches to control *Sarcoptes scabiei* mite. The use of plant extracts might be useful to cope with scabies disease on human and animals.

The high national prevalence of sheep scab and pediculosis indicated that, current control methods are failing to contain these ectoparasites. The results of this study suggested that a large proportion of insecticide applications take place at times of year when they might expect to be relatively ineffective, and the use of inappropriate compounds for the parasites in question is common. The widespread use of macrocyclic lactones in particular for scab prevention and control is of concern, because of the additional use of these compounds in parasitic worm control and the potential that their overuse will hasten the development of resistance (Betty and Richard, 2008).

## **MATERIALS AND METHODS**

The present work was carried out at sheep farm in the Experimental Station of the Faculty of Agriculture, El-Kawther city, Sohag University during 2013 year. This station is located in the newly reclaimed area at the eastern desert (15 km east of Sohag Governorate).

Sheep infested with *Sarcoptes* spots were treated with the following materials:

- Mange cides 10%.
- Tincture idone 4%.
- Noromectin 1.0% once a month (1 ml injection/50 kg of animal).
- Noromectin 1.0% twice a month (1 ml injection/50 kg of animal).
- Mange cides + skin recovery.
- Normectin 1.0% injection + Mange cides.
- Mange cides + skin recovery + Normectin 1.0% (twice a month).

Each transaction of these materials referred to above are used for three sheep. According to the skin injury, the animals were classified as follows:

- 1-Heavily infested animals (+++).
- 2-Moderately infested animals (++)
- 3-Slightly infested animals (+).
- 4-No infested animals and the wool started to cure (-).
- 5-Normal skin and wool (N).

The observations were taken after 1, 3, 5, 7, 10, 15, 20 and 25 days.

**Treatments:**

- 1- Mange cides (Benzyle benzoate, Salicylic acid, Sulphur, Phenol, Tar)
- 2- Tincture idone 4%.
- 3- Noromectin 1.0% w/v

The materials used are characterized as colorless, clear, slightly viscous, sterile, non aqueous solution containing 1.0% w/v ivermectin with a wide safety margin and no adverse effect on breeding performance.

These materials were manufactured by Norbrok Laboratories Limited, Newry, N Ireland, BT35 6JP, and the chemical group is macrocyclic lacton (Ivermectins) that used as injection.

**RESULTS AND DISCUSSION**

Data in Table (1) show the effect of materials used to control mange mites infesting sheep. The treatment with Mange cides, Tincture idone, Normoectin 1.0% once a month and Noromectin 1.0% twice a month, revealed that the treated animals with Mange cides and Tincture idone began to respond after 45 days, this may be due mainly to blocking oxygen from the mite. When used Noromectin 1% (injection) (one a month) and Noromectin 1% (injection) twice a month, they gave satisfactory results after 30 and 20 days of treatment, this may be due to the effect of ivermectin paralysis and ultimately kills parasitic nematode arachnids and insects by their effects on the nervous systems of these parasities, with adverse effect on the husbandry animals.

**Table (1):Effect of Mange cides; Tincture idone; Noromectin 1.0% (once) and Noromectin 1.0% (twice) on sheep mange under field conditions, during 2013/2014.**

Treated materials	Mange cides Method (1)	Tincture idone Method (2)	Noromectin 1.0% (once a month) Method (3)	Noromectin 1.0% (twice a month) Method (4)
Days	N= 3	N= 3	N= 3	N= 3
1	+++	+++	+++	+++
3	+++	+++	++	++
5	++	+++	+	+
7	++	++	+	-
10	+	++	-	-
15	+	+	-	-
20	-	+	-	N
30	-	-	N	N
45	-	-	N	N

Sings:

- Heavily infested animals (+++).
- Moderately infested animals (++).
- Slightly infested animals (+).
- No infested animals and the wool started to cure (-).
- Normal skin and wool (N).

These results coincided with those obtained by Ibrahim (1994) when used Diazinon and Ivermectin on infested sheep, he found that the mean time for recovery was 26.4 days in animals treated with Diazinon and 28.4 days in

Ivermectin treatments. In general, sheep treated with Ivermectin take lesser time to recover than in Diazinon treatment. Cozma *et al.* (2010) in a study of three acaricides, Doramectin (Dectomax, Pfizer) used at a single dose of 300 µg/kg (b.w.) given intramuscularly showed high efficacy (95%) against *Psoroptes ovis*, in naturally infected sheep. All Doramectin treated animals were clinically normal and all skin scrapings were negative for mites 50 days after treatment. At the end of experiment (70 days) only 5% of the animals showed skin lesions and low infestation score (1+), compared to 10% for Ivermectin.

Data in Tables (2 and 3) showed the effect of the treatment of sheep with mixed of Mange cides + skin recovery the animals, began to respond after 30 days, 20 days for Mange cides + Noromectin 1.0% injection (once and twice a month) and 10 days for Mange cides + recovery + Noromectin 1.0% injection (twice a month), wholly in agreement with Witmer *et al.* (1995), Abo Elmaged (1998), Hagawane *et al.* (2010) and Desoky (2011) who found that, the best results in controlling scabies were obtained when used Ivermectin injection mixed with sulfur on body surface of sheep infested with mange. Ivermectin injection is the best way to control animals mane when sprayed on animals. Also, where used as Injection 9twice a month) it gave a satisfactory results as compared with once a month.

**Table (2):Effect of Mange cides; Tincture idone; Noromectin 1.0% (once) and Noromectin 1.0% (twice) on sheep mange under field conditions, during 2013/2014.**

Treated materials	Mange cides + skin recovery Method (5)	Mange cides + Noromectin 1.0% injection Method (6)	Mange cides + recovery + Noromectin 1.0% injection (twice month) Method (7)
Days	N= 3	N= 3	N= 3
1	+++	+++	+++
3	++	++	+
5	++	+	+
7	+	+	-
10	-	-	N
15	-	-	N
20	-	N	N
30	N	N	N
45	N	N	N

Sings:

- Heavily infested animals (+++).
- Moderately infested animals (++).
- Slightly infested animals (+).
- No infested animals and the wool started to cure (-).
- Normal skin and wool (N).

**Table (3): Mean time in days for treated sheep by some chemicals to recover from scabies during 2013/2014.**

<b>Treatment</b>	<b>Infestation area</b>	<b>Mean time of skin recovery (days)</b>
Mange cides		45
Tincture idone		45
Noromectin 1.0% (once a month)		30
Noromectin 1.0% (twice a month)		20
Mange cides + skin recovery		30
Mange cides + Noromectin 1.0% injection		20
Mange cides + skin recovery + noromectin 1.0% injection (twice a month)		10

## **CONCLUSION**

In general, the best method for controlling sheep mange is the method (1) when used Mange cides + skin recovery + Noromectin 1.0% injection (twice a month) on body surface of sheep, the skin of animal was completely healed in less time. This may be due to the presence of sulfur compound that prevent oxygen from mite.

The second method (2) when used Noromectin injection is the best way to control animals, it can be used twice a month; the Noromectin injection is highly effective against internal and external parasites at a dose volume of 1 ml/50 kg body weight.

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### مكافحة الجرب الساركوبتي الذي يصيب مزارع الأغنام

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تمت هذه الدراسة لتقييم سبع طرق لمكافحة الجرب في الأغنام، كانت الطريقة الأولى باستخدام مرهم الكبريت دهان علي الجسم، الطريقة الثانية هي استخدام صبغة اليود ، الثالثة استخدام النورمكتين حقن مرة واحدة في الشهر ، الرابعة استخدام النورمكتين مرتين في الشهر، الخامسة إزالة الجلد المصاب ميكانيكياً مع وضع مرهم كبريت، السادسة مرهم كبريت مع الحقن بالنورمكتين والسابعة إزالة الجلد مع وضع مرهم وحقن بالنورمكتين.

أظهرت النتائج أن مرهم الكبريت وصبغة اليود أخذت أكثر من 45 يوم لإعادة الجلد لطبيعته أما الحقن بالنورمكتين مرة واحدة في الشهر فقد أعاد الجلد المصاب إلي طبيعته بعد 30 يوم وعند استخدامه مرتين في الشهر أعاد الجلد طبيعياً بعد 20 يوم بينما عند استخدام إزالة الجلد المصاب ميكانيكياً ووضع مرهم كبريت أعطي نتائج مرضية بعد 30 يوم و 20 يوم عند استخدام المرهم سطحياً، والحقن بالنورمكتين داخلياً، كما أظهرت النتائج أن أفضل الطرق هي إزالة الجلد مع استخدام المرهم والحقن بالنورمكتين مرتين شهريا حيث أعادت الجلد إلي طبيعته بعد 10 أيام من المعاملة.