

Prevalence of *Sarcoptes scabiei* var. *suis* infestation in pigs of Meghalaya and its treatment

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Abstract

Aim: The aim was to study the prevalence of *Sarcoptes scabiei* var. *suis* infestation in pigs of Meghalaya and to treat the infested pigs with the chemotherapeutic agent.

Materials and Methods: A total of 196 numbers of pigs were suspected for *Sarcoptes scabiei* var. *suis* infestation maintained in both organized and unorganized pig farms as well as pigs brought for slaughter to pig slaughterhouses of Meghalaya. Deep skin scrapings were collected from all these 196 numbers of pigs. The collected scrapings were digested in 10% potassium hydroxide separately and centrifuged. The sediment portions were examined under both low and high power of the microscope to find any mite. Except the infested pigs that were brought for slaughter, all other infested pigs were treated with ivermectin @ 300 µg/kg body weight (b.wt) subcutaneously.

Results: Of 196 numbers of suspected pigs, 21 (10.71%) numbers of pigs were found infested with *Sarcoptes scabiei* var. *suis* after microscopical examination of skin scrapings. Except the infested pigs that were brought for slaughter, all other infested pigs were treated successfully with ivermectin @ 300 µg/kg b.wt subcutaneously.

Conclusion: It can be concluded from the present study that sarcoptic mange caused by *Sarcoptes scabiei* var. *suis* is very much prevalent in pigs whether maintained in organized farms, as well as pigs maintained in unorganized way in village conditions. Pig owners should not neglect this infestation as it has economic significance. Ivermectin @ 300 µg/kg b.wt subcutaneously has been found to be effective to treat this infestation.

Keywords: Meghalaya, Pig, *Sarcoptes scabiei* var. *suis*.

Introduction

Sarcoptes scabiei var. *suis* infestation causes sarcoptic mange in pigs. This infestation in pigs is important because it causes economic losses to the pig owners. Pig owners generally neglect this infestation assuming its non-impact on health and production in pig industry. However study on available literature revealed that this infestation has economic significance [1]. This economic losses to the pig owners occurs may be due to decreased growth rate, decreased fertility and lower feed conversion ratio [2,3]. *S. scabiei* var. *suis* infestation have been found as detrimental for the production performance in pigs [4-6]. In experimental *S. scabiei* var. *suis* infestations in growing pigs, a depressed mean growth rates from 9.2% to 12.5% has been recorded [7]. This mite infestation makes the pigs to rub their skin against wall, etc. leads to scratching in the skin, and the damaged skin may undergo secondary bacterial infection. This infestation may cause pig handlers itch also [8]. The research work related to sarcoptic mange infestation of pigs in

India is less in comparison to some other countries [9], might be its consideration as a neglected parasite. But, like other parasites, research work on sarcoptic mange in the aspects of the immunodiagnosis and molecular diagnosis using polymerase chain reaction are going on [10,11]. Most of the tribal population of Meghalaya reared pigs for their livelihood. As the infestation causes economic losses to the pig owners, so there is a need to study the prevalence of *S. scabiei* var. *suis* in pigs of Meghalaya maintained in organized pig farms as well as in village condition.

Keeping in view of all these adverse effects of this infestation, this present study was undertaken to know the prevalence of *S. scabiei* var. *suis* infestation in pigs of Meghalaya along with its treatment.

Materials and Methods

Ethical approval

The samples were collected as per standard sample collection procedure without harming the pigs.

For a period of 3 years (September 2010 to August, 2013), a total of 196 numbers of skin scrapings of pigs, suspected for *S. scabiei* var. *suis* infestation, were collected from pigs of hilly region of Meghalaya maintained in organized pig farms of Indian Council of Agricultural Research (ICAR)

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Complex for NEH Region, maintained in village conditions in different villages of RiBhoi District of Meghalaya and pigs brought for slaughter to pig slaughter houses of Meghalaya (Table-1). Deep skin scrapings were collected from all these 196 numbers of pigs. The collected scrapings were digested in 10% potassium hydroxide separately and centrifuged. The sediment portions were examined under both low and high power of the microscope to find any mite. Except the infested pigs that were brought for slaughter, all other infested pigs were treated with ivermectin @ 300 µg/kg body weight (b.wt) subcutaneously.

Results and Discussion

Of 196 numbers of suspected pigs (Figure-1), over all 21 (10.71%) numbers of pigs were found infested with *S. scabiei* var. *suis* after microscopical examination of skin scrapings (Figure-2). The prevalence of infestation was found more in organized pig farms (20.45%) than the pigs maintained in individual houses in village condition (8.64%). The prevalence of infestation among pigs brought for slaughter was 7.04%. Except the infested pigs that were brought for slaughter, all other infested pigs were treated successfully with ivermectin @ 300 µg/kg b.wt subcutaneously.

In a study on 583 pigs of Indian Punjab, typical sarcoptic lesions were observed in 80.6% pigs and 42.76% pigs showed the presence of *S. scabiei* [12]. In another study, five out of 15 suspected pigs which were suffered from skin lesions showed as positive for

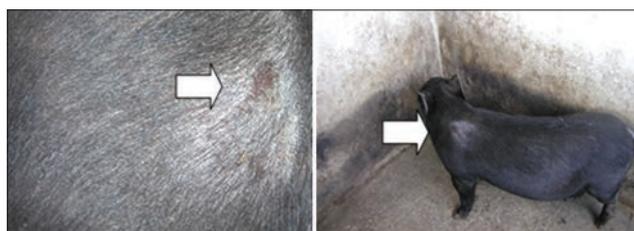


Figure-1: Skin lesions of pigs suspected for Mange infestation.



Figure-2: Diagnosis of *Sarcoptes scabiei* var. *suis* from suspected skin lesions.

Table-1: Prevalence of *Sarcoptes scabiei* var. *suis* infestation in pigs from various sources.

Organised Farms		Villages		Slaughter house		Total	
Nos. of pigs examined	Nos. of pigs positive (%)	Nos. of pigs examined	Nos. of pigs positive (%)	Nos. of pigs examined	Nos. of pigs positive (%)	Nos. of pigs examined	Nos. of pigs positive (%)
44	9 (20.45)	81	7 (8.64)	71	5 (7.04)	196	21 (10.71)

the presence of *S. scabiei* var. *suis* infestation in an organized pig farm of Meghalaya [13]. In an organized pig farm of Assam, overall 23.61% pigs were recorded as infested with *S. scabiei* var. *suis* [14]. A study on suspected skin lesions of pigs from Chhattisgarh revealed 37.50% pigs were affected with sarcoptic mange [15]. The pigs that were maintained in organized farm were found more infested than pigs maintained in different households in village conditions in this study. The pigs of organized farms remained in a close contact and in village condition they remained in isolated. There is a chance of spread of infestation among the pigs maintained in close contact as it has been reported that spread of mite infestation in organized farm occurred by close contact between pigs or by contact with recently contaminated surfaces [13]. Besides, the pigs of organized farms were cross bred pig. They have less resistance in comparison to local pigs that might be the reason behind higher prevalence in organized pig farm. Ivermectin @ 300 µg/kg b.wt subcutaneously was found suitable for the treatment of *S. scabiei* var. *suis* infestation in pigs in this study. Similarly, injection of ivermectin subcutaneously @ 300 mg/kg body weight have been used successfully for the treatment of *S. scabiei* var. *suis* infestation in pigs [16-18]. Injectable ivermectin was selected as a drug of choice for the treatment of *S. scabiei* var. *suis* infestation because it can be used for treatment of both internal parasitic infections and external parasitic infestations [19,20], as it has been observed that 34.00% pigs of this area are infected with gastrointestinal parasites [21].

Conclusion

It can be concluded that sarcoptic mange caused by *S. scabiei* var. *suis* is very much prevalent in pigs of the hilly region of Meghalaya, whether maintained in organized farms or maintained in unorganized way in village conditions. Pig owners should not neglect this infestation as it has economic significance. Ivermectin @ 300 µg/kg b.wt subcutaneously has been found to be effective to treat this infestation.

Authors' Contributions

RL designed the experiment, collected and processed samples, treated animals, prepared revised manuscript and also worked as a corresponding author. PKB and SK collected samples from organized farm and treated animals. MD collected and processed samples, treated animals. AG collected references. AS prepared manuscript and participated in scientific discussion. All the authors read and approved the final manuscript.

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Competing Interests

The authors declare that they have no competing interests.

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