MITES PARASITIC AND / OR ASSOCIATED WITH POULTRY AND SOME MAMMALS IN HISAR, HARYANA WITH KEY TO IDENTIFICATION

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ABSTRACT

Study on mites associated with the skin diseases of camel, dog, rabbit, fowl, turkey and quail resulted in the recovery of a wide range of mites under Astigmata, Prostigmata and Mesostigmata belonging to nine families. The mites identified are Acarus farris (Oudemans), A. siro (Linnaeus), Sarcopsetes scabiei canis Gerlach, S. s. dromedarii Gervais, Dermoglyphus elongatus Megnin, Notoedres cati Hering. Pygmeorphorus nilanjana Putatunda, Bdella sp. Cheyletus malaccensis Oudemans, C. malayensis Cunliffe, Prosocheyla acantha Smiley and Moser, Demodex canis Leydig, Stigmaeus sp. and Macrocheles whartoni Delfinado and Baker. The importance of mites and a key to the identification has been incorporated in the text.

INTRODUCTION


Parasitic mites associated with dog, buffalo, camel, cattle and man have already been reported from Haryana (Tikaram et al., 1979, 1980a, 1980b, 1984, 1986a, 1986b and 1991a, 1991b, Satiija et al., 1981, Tikaram and Rupra, 1986). The present work was undertaken to have an idea of mites associated with birds and mammals of Hisar, Haryana.

MATERIAL AND METHODS

Poultry birds (Fowls, Turkey, Quail) and animals (Rabbit, Dog, Camel) were selected at random from Haryana Agricultural University at Hisar. Mites were collected from feathers by funnel method (Putatunda et al., 1975) and then examined under microscope. Skin scraping of mammals were examined under microscope. Temporary slides were prepared in lactic acid whereas permanent slides were prepared in Hoyers medium. Identification was done with the help of available literatures.

RESULTS AND DISCUSSION

In the present study, the mites observed on six different host are given in Table 1 and 2. Mites recorded are discussed herewith.

Acarus farris (Oudemans)

Only “Hypopus” form of Acarus farris were observed on poultry birds including fowl and turkey both. Hypopus are the non-feeding stage of mites that adhere temporarily on some host like birds, mammals, insects etc. for shelter to avoid unfavourable environmental conditions and may not be of any harm to the host unless their population go very high to cause

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<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Host</th>
<th>Mite</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Acarus siro</td>
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<td></td>
<td></td>
<td>Dermatophagoides</td>
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<td></td>
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<td>Notoedra scabies</td>
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<td>Sarcoptes scabiei</td>
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<td>Macrocheles whartonii</td>
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<td></td>
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<td>Bdella sp.</td>
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<td>Cheyletiella malaccensis</td>
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<td>Cheyletiella acarina</td>
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<td>Pyemetra nilajana</td>
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<td></td>
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<td>Sigmotus sp.</td>
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<tr>
<td></td>
<td></td>
<td>Demodex canis</td>
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<tr>
<td>1.</td>
<td>Fowl</td>
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<td>Quail</td>
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<td>3.</td>
<td>Turkey</td>
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<td>4.</td>
<td>Camel</td>
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<td>5.</td>
<td>Dog</td>
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<td>+</td>
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<td>6.</td>
<td>Rabbit</td>
<td>+++NH</td>
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**Notes:**
- + = On an average less than 5 mite/infested host
- ++ = On an average less than 10 mite/infested host
- +++ = On an average very high population of mite (above 25/infested host)
- NI = New to India
- NH = New to Haryana
- NBH = New Bird Host
- NHB = New to Haryana on bird.
According to Hughes (1976) the mite is reported from England, Scotland, Wales, Netherlands, Germany, Kenya, USA, Poland and Czechoslovakia from stored barley, hay, cheese, oat, poultry food and also from birds nests and from deep litter of poultry. It is known to cause skin irritation of men handling infested material.

This appears to be the 1st report of the mite from India.

_Acarus siro_ Linnaeus

In the present study the mite _Acarus siro_ was observed on poultry birds (fowls) of Hisar. According to Prasad (1974) the mite is known in India from Poona in Maharashtra from bran. According to Gupta and Paul (1989) _Acarus_ sp. have been reported in India on three species of birds namely _Ploceus philippinus, P. inornata_ and _P. m. flaviceps_. Putatunda _et al._ reported this mite from fowls, specially from poultry beds in West Bengal in 1981. According to Hughes (1976) this is one of the most important mites of store products and is to be expected in all parts of the globe, beside this it is also reported from poultry deep litter and from bee hives.

_Dermoglyphus elongatus_ Megnin

In the present study the mite _Dermoglyphus elongatus_ was observed on fowls from poultries in Hisar. According to Prasad (1974) the mite has been reported to infest fowl, house sparrow and turkey in Madras in Tamilnadu (Lalitha and Alwar, 1961; Alwar 1970; Balasundaram _et al._ 1972). According to Zumpt (1961) the mite was originally described from domesticated fowl in Europe.
and later from different cage birds. In West Bengal the mite was found in large number on fowls and in low population on turkey (Putatunda et al., 1981). Putatunda et al. (1989) reported Dermoglyphus sp. in West Bengal from three species of birds namely Lonchura malacca, Padda oryzivora and Tardus merula. This is the first record of the mite from Haryana state.

Notoedres cati Hering

The mite Notoedres cati were found to be serious pest of laboratory rabbits in Hisar. Symptoms associated with this mite are the alopecia, self-inflicting (trauma) injury due to vigorous scratching by rabbits due to irritation caused by mites burrowing in the skin (epidermis) of ear, neck, face or other parts of body. The skin becomes thick, whitish, dry and wrinkled. In serious cases the whole body turn dirty and gives unhealthy and poor look. The mite has been reported to infest cats and rabbits in Cuttack of Orissa and in Mukteswar of U.P. (Prasad, 1974).

Sarcoptes scabiei

Sarcoptes scabiei were found to infest both camel and dog, in good number. The mites are dorsoventrally flat, round disc like with short legs. They burrow into the skin (epidermis) and are recovered in skin scrapings along with eggs and immature stages. According to Yunker (1973) S. scabiei causes sarcoptic mange, or scabies of many domestic and wild animal throughout the world. It is found in different races, that are morphologically alike but differ in their ability to parasitize different host species. Inter host transmission may occur but are temporary in nature. In India, according to Prasad 1974, Sarcoptes bovis Cameron infests buffaloes in AP and UP, S. caprae Furstenberg infests goats in Bombay and Poona in Maharashtra, Allahabad, Etah, Izatnagar and Mukteswar in U.P. and Punjab, S. equi Gerlach infests donkeys, horses and mules in Mukteswar in U.P. and S. Precox Canestrini infests rabbits in Cuttack in Orissa. The buffalo calves of Govt. Livestock farm of Hisar, were found 88.2% positive for the sarcoptic skin disease. Infected animals are seen vigorously rubbing their body on the walls of sheds very frequently. The lesions are present mostly on the neck, head, wither, axial, legs, brisket, back and abdomen.

Sarcoptes scabiei canis Gerlach

The mite S. s. canis was found to infest dogs of Hisar region. Symptoms associated with the mite is dermatitis, rupture and crusting of lesions, pruritus. The skin turns dry, rough and thickened and alopecia occurs. Self inflicted trauma (injury) is a common cause of complication of the disease due to exposure to various microorganisms. So far India is concerned, according to Prasad (1974) S.s. canis has not been reported from India. According to Zumpt (1961) the mite was originally described from domestic dog in Europe and that it has been recorded from man and dog in South Africa.

Sarcoptes scabiei dromedarii Gervais

The mite S. s. dromedarii was found to infest camels of Hisar. The symptoms associated with the mite is scabby popular dermatitis, pruritus, patches of lesions due to scratching with wall or hard objects. In India according to Prasad (1974) the mite has been reported to infect camel in Punjab. The disease is highly contagious skin disease of camel and is of common occurrence in Rajasthan and that the infected camels spends most of the time in biting and scratching the affected parts, stops feeding and are rendered useless for work. In Hisar, Haryana Tikaram et al. (1980, 1987 and 1991b) observed sarcoptic mange and orchitis in camel infected with Sarcoptes mites and Human scabies from contact with camels.

Macrocheles whartoni Delfinado and Baker

The mite Macrocheles whartoni was observed associated with turkey. Kumar et al. (1994) observed M. whartoni at Hisar in the soil in the vicinity of tick Boophilus microplus.
from cattle sheds. Putatunda (Kapil et al., 1985) observed *Macrocheles* sp. of mites associated with wild honey bee *Apis dorsata* in Hisar, Haryana. In India according to Prasad (1974) *Macrocheles hastatus* Ewing *M. hyatti* Krantz and Filipponi, *M. indicus* Bhattacharyya *M. kraepelini* (Berlese), *M. merdarius* (Berlese), *M. orientalis* Bhattacharyya *M. rabustulus* (Berlese) are all reported from soil or bark of trees from, Tamilnadu, Assam, Arunachal Pradesh, W.B. and U.P. but not on birds or animals. This is the 1st report of the mite from birds.

*Bdella* sp.

The mite *Bdella* sp. was found associated with quail. This is basically a predatory beneficial mite and feeds on harmful mites and eggs and immature stages of insect pests. Gupta and Paul (1989) reported *Bdella* sp. from bird *Streptopelia chinensis* in West Bengal. This is the 1st record of *Bdella* sp. of mite from bird of Haryana.

*Cheyletus malaccensis* Oudemans

In the present investigation this well known predatory mite was encountered often on poultry birds like fowls and also on turkey. In India the mite has been reported from stored fish and prawns feeding on the pest mite *Lardophyus konoi* in Kerala (Prasad, 1974). Putatunda et al. (1981) observed this mite from poultry, fowls and turkey in W.B. Putatunda et al. (1989) observed this mite in West Bengal on 4 species of birds namely *Emberiza bruniceps*, *Eudynamys scalopacea*, *Psittacula cyanocephala* and *P. eupatria*. According to Baker (1949) this mite was obtained from bird skin probably feeding on feather mites in Malacca. This is a well known predatory mite of store the world over (Hughes, 1976). This is the 1st report of the mite from birds in Haryana.

*Cheyletus malayensis* Cunliffe

In the present study the mite have been observed on good number of fowls in Hisar condition. They are also basically predator and feeds on harmful mites and insects. The mite is known from Malaya from the nest of three bird species namely *Mynis atricapilla*, *M. striata* and *Pygmonotus goiave* (Baker, 1949). This is the 1st report of the mite from India and on poultry birds.

*Prosocheyla acantha* Smiley and Moser

The mite was recovered in small number from poultry birds (fowls). It is also basically a predatory mite. *Prosocheyla traubi* was described from India and collected from tent in Assam and in USA mites of the genus are known from soil and from citrus leaf (Baker, 1949). This is the 1st record of the mite from India from bird host.

*Pygmonorphus nilanjanae* Putatunda

*Pygmonorphus nilanjanae* was recovered from quail. This is the 1st record of the mite from Haryana state on bird. According to Zumpt (1961) *Pygmonorphus* sp. are basically parasite of insects but have been recorded on rodents in Europe and USA and on beetle in South Africa. The mite was reported from the bird Malayan crestless fire back peasant (*Lophura erythrophthalma*) from Zoological garden in Calcutta, West Bengal (Putatunda 1979).

*Stigmaeus* sp.

The mite *Stigmaeus* sp. was observed on quail. *Stigmaeus* spp. are predatory mites in nature. In India Gupta and Paul (1989) reported *Stigmaeus* sp. of mite from West Bengal on bird *Streptopelia chinensis*. This is the 1st record of the mite from Haryana on bird.

*Demodex canis* Leydig

In the present investigation the mite *Demodex canis* has been observed to be an important pest of dogs of Hisar area. Putatunda et al. (1976) recorded the mite from dogs in Calcutta, West Bengal. Tikaram et al. (1980) reported Demodectic acariasis in dogs in Hisar,
Haryana. *Demodex canis* is the common follicle mites of dog and caused demodectic mange. Infestation was common in both pet dogs as well as Laboratory dogs. Symptoms includes alopecia, dry scaly dermatitis. In advance cases chronic moist dermatitis were observed. The mite occurs throughout the world in all breeds of dogs (Yunker, 1973). In India according to Prasad (1974) *Demodex canis* is reported to infest dogs at Mukteswar in U.P. Moreover *D. bovis* infested buffaloes and cows in Assam, at Bombay and Poona in Maharashtra, Orissa, at Izzatnagar and Muketswar in U.P. and that *D. caprae* Railliet infests goats at Bhubaneswar in Orissa. Roychoudhury and Chakrabarty (1969) in Assam treated dogs infested with this mite with Benzyl-Benzoate and Methanol (50 : 50).

Key to the identification of the Mites associated with Birds and Mammals in Hisar

1. Body long, narrow worm like with very short legs ........................................... *Demodex canis*  
   - Not as above........................................2

2. Stigmata and peritreme (respiratory structure) well developed situated between legs II to IV. ........................................... *Macrocheles whartoni*  
   - Not as above........................................3

3. In the ventral view, with a number of suckers (adhering organ); gnathosoma reduced to nonfeeding organ. ........................................... *Hypopus : Acarus farris*  
   - Not as above........................................4

4. Pseudostigmatic organs present (balloon like) at the anterior part of body ........................................... *Pygmephorus nilanjana*  
   - Not as above........................................5

5. Gnathosoma snout like, pedipalp club like with elbow joint ........................................... *Bdella sp.*  
   - Not as above........................................6

6. Stigmata in the anterior region of body  
   - Stigmata absent, soft bodied mites (respiration via skin) ........................................... 7

7. Pedipalp with comb and sickle like setae (Cheyletidae) ........................................... 9
   - Not as above............................................ *Stigmaeus sp.*

8. Dorsoventrally flattened, round mites with short legs (Sarcoptidae) ........................................... 10
   - Not as above............................................ 11

9. All tarsi (legs) with paired claws (Cheyletus) ........................................... 12
   - Tarsus I (leg I) without paired claws. ........................................... *Prosocheyle achantha*

10. Anus positioned dorsal and not at the posterior end of body; scale (wave like) like design on central dorsum present ........................................... *Notoedres catt*  
   - Anus terminal and not on dorsum. Triangular scales (design) present on central part of dorsum (Sarcoptes scabiei) ........................................... 13

11. Body elongated, length over two times the width, with strong legs. ........................................... *Dermoglyphus elongatus*  
   - Body oval, not as above........................................ *Acarus sriro*

12. Distance between propodosmal and hysterosomal shields more than the length of 1st pair of dorsolateral setae on hysterosoma ........................................... *Cheyletus malaccensis*  
   - Distance between propodosmal and hysterosomal shields less than the length of first pair of dorsolateral setae on hysterosoma ........................................... *Cheyletus malayensis*

13. Host dog; length and width equal, perfectly round ........................................... *Sarcoptes scabei canis*  
   - Host camel; length more than width, slightly oval shaped ........................................... *Sarcoptes scabei dromedari*

ACKNOWLEDGEMENT

The authors are thankful to the authorities of CCS HAU and to ICAR New Delhi for the facilities and fund.
REFERENCES

Putatunda, B.N. (1979). Mites associated with some important birds in West Bengal (India) Ph.D. Thesis, Banaras Hindu University, India pp. 1-164 and I to XVIII.