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OBSERVATION OF COMMON EXTERNAL PARASITES, MITES IN POULTRY AND FLOUR MILL FROM PUNE (M.S.) INDIA

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ABSTRACT

The poultry and flour mill mites were reported from Pune district (M.S.) India. The mites are cosmopolitan in occurrence distributed all over the world. The observation revealed rich mite fauna at these different sites in Pune district exhibiting seasonal fluctuation at all sites. The present work was carried out from 2008-10 by pick up method. During these studies 07 different mites were found belonging to three Orders i.e. Mesostigmata, Prostigmata and Astigmata under the class Arachnida of five families such as Pyroglyphidae cheyletidae, Ascaridae, Pyroglyphidae and Urodiaspididae. The mites observed in poultry are *Dermatophagoides pteronyssinus* (Trouessari, 1897), *Dermatophagoides farina* (Hughes, 1968) *Cheyletus eruditus* (Schrank, 1781), *Dermanyssus gallinae* (De Geer, 1778), *Urodiaspis tecta* (Kramer, 1876) and *Caloglyphus oudemansi* (Oudemans, 1938). A single mite species *Acarus siro* (Linnaeus, 1758) was found in flour dust.

INTRODUCTION

Mites belong to the very heterogenous phylum of Arthropoda- joint legged animals. The main morphologic characters are the possession of four pairs of legs. (F. Th. M. Spieksma, 1997 Allergy). It belongs to the class Arachnida. The mites investigated are from the family Cheyletidae, Pyroglyphidae, Dermanissidae, Glyciphagidae, Acaridae of Orders Prostigmata, Astigmata, Mesostigmata. Their mouthparts are grouped in front of the body, resembling a head. There are diverse habitats of mites, they are found in soil, plants, in air, water. Birds host a rich diversity of acarine symbiotes, many different types studied by Heather C. Proctor in 2003. The mites are known to be found in Polar Regions. They are found extramural as well as intramural regions.

Mites are parasitic, free living and predatory mites. They are found intramural and in house, sheds, of cattles, poultry, stores house. They are also extramural found in birds, pigs, groundnuts. The feathers of birds, the pelts of animals also have mites in it. The follicle mites are found in the facial pores of humans. Fresh water streams, lakes, ponds have their mite fauna. Many species of mites are known to be present in stored food products, such as grain etc. mites have been recognized for a long time. Mites are of medical or veterinary importance in any of the ways. 1. Through transmission of pathogenic agents either as vectors or as intermediate hosts, 2. It causes dermatitis or other tissue damage directly and through loss of blood or other fluids. Infestation of mites is called acariosis. 3. They are commonly thought as external parasites; some cause damage in ears, respiratory passages those results into allergic manifestations. 4. They are reported to control aquatic weed like *Eichhornia* by Haq *et al.*, 1990.

Significant role of house dust mites responsible for health hazards such as respiratory allergy in sensitive individuals (Talib and Hare, 1985). HDM found in the poultry dusts are allergens causing allergy in sensitive individuals. Some of them have also been found to cause diseases in poultry birds and poultry workers, and create ecological imbalance in nature. It also results into aero bio pollution problems.

The poultry workers exposure to poultry dust is substantial. Workers with occupational respiratory diseases may develop permanent breathing problems, and are unable to work. It not only affects the individual working in the poultry but also the poultry birds and has affected the growth of birds and laying of the eggs. People working in the poultry breathe in many different airborne particles which together are called poultry dust. The activities that create airborne mites are spreading of straw/ wood shaving by hand, placing out trays of chicks, transferring of hens into cages and also ruffling of feathers and other activities of the poultry birds. Spieksma F.Th.M in 1991 in his research found that HDM are very often the cause of allergic rhinitis and asthma in sensitive people. Some mites have been found to cause allergy in sensitive victims and is potential allergens. Jogdand S.B., 2007.

The present work deals with collection, observation and identification of mites in poultry and flour mill from different sites of Pune district (M.S.), India.

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MATERIALS AND METHODS

Sample collection

The site selected is the poultry farms. The dust was collected from the poultry houses. The surface layer was removed. It is the poultry litter. It is coarse and consists of bigger size gravel, saw dust, groundnut hulls, chopped straws and paddy husk. The immediate lower layer below surface is fine which was collected manually. It was then put in sterilized bag of paper. Another site for the collection of flour dust was from flour mill. It is the place where the whole grains like wheat, jowar, bajri, cereals are ground. The flour dust was collected from the side of the walls, corners and near the flaps of mill. It was brushed from the floor with the help of 10mm brush gathered and then collected in paper bags.

Mounting and observation

The dust was then sieved on the petri plates and spread uniformly. It was then observed under the dissecting binocular microscope. The mites were picked up from the Petri dish and kept in cavity blocks containing lactic acid. They were then picked up from lactic acid and then placed on slides, with ventral side facing up. This helps in identifying the mites. Excess of lactic acid was wiped out from the slide. A drop of freshly melted glycerin jelly was put on the mite and immediately cover slip was mounted over it. It is then pressed slightly. It is held for few seconds and the slide was then placed on filter paper and rolled, so as remove the excess of jelly which seeps out through the sides of cover slip. The slides were then scanned and the mites observed and identified.

Observation

Mites found belong to order Astigmata, prostigmata and mesostigmata. The mites found in the investigation are *Dermatophagoides pteronyssinus*, *D. farina*, *D. Sp.*, *Cheyletus eruditus*, *Dermanyssus gallinae*, *Urodiaspis tecta*, and *Caloglyphus oudemansi*. A single mite species *Acarus siro* was found in flour. Scanning of flour dust from flour mill revealed the presence of single mite which is *Acarus siro*.

The body of the mite *Dermatophagoides pteronyssinus* is small and oval; it is broader in middle and narrow at both ends. The general body structure has two parts- Gnathosoma and Idiosoma. Eyes are absent, the gnathosoma has pedipalp. The first pair of leg is directed forward. *Dermatophagoides farinae* was first found by Hughes in 1968. The 1st pair of leg is directed forward and is curved. 1st leg is expanded laterally. Anterior dorsal shield only about 1.4 times longer than width. *Cheyletus eruditus* is a common predatory mite. The mites were numerous in the present investigations. It has modified mouth parts. *Dermanyssus gallinae* It is an important pest of domestic birds, especially chickens in all parts of the world. Mite is oblong and broader at posterior end. Chelicerae are long whip like. A single dorsal plate is present. The legs are long. *Acarus siro* mites are picked from the dust of flour mill. It is a mesostigmatid mite. The mite is oval in shape. The body has the presence of long setae all over. The length of seta is as long as the length of the body of mite. *Urodiaspis tecta* is reduced and has long pedipalp. Depressions for the legs are found on the ventral surface, so that short legs can be folded completely against the body. Grooves for the leg are well

developed. *Caloglyphus oudemansi* is round and reddish brown in colour. The body is flat. The first two pairs of legs are directed forward and IIIrd and IVth pairs of legs are directed backward.

RESULTS AND DISCUSSION

The present investigation seven specimens are found in different places of Pune district (M.S.) India during the period of 2008-10. These specimens are mounted and slide were observed for identification. Following morphological characters are observed in seven species of mites.

Dermatophagoides pteronyssinus, Trouessari, 1897 (Fig. 1)

The present form comes closer to *Dermatophagoides pteronyssinus* in having legs of equal size. All tarsi with short stalked caruncles. Genital papillae of male lateral to genital opening. Idiosoma without hysterosomal shield. Leg IIIrd is equal in size with leg IVth in female. Cuticle is weakly sclerotized.

Dermatophagoides farina, Hughes, 1968

The present form comes closer to *D. farinae* in having large body and 1st pair of leg which is expanded laterally. Tarsus I bearing claw spine- like process. External opening with sclerotized vestibulum. In Males leg 1st thicker than leg IInd. Seminal receptacle not visible.

Cheyletus eruditus Schrank, 1781

The present form comes closer to *Cheyletus eruditus* in having modified mouth parts. No peritreme. Gnathosoma with enlarged palps with an apical claw.

Dermanyssus gallinae, De Geer, 1778

The present form comes closer to *Dermanyssus gallinae* De Geer, 1778. Chelicerae are long whip like. A single dorsal plate is present. The legs are long. The shape of mite is oblong. It is a chicken mite found in poultry. All legs have pretarsi,

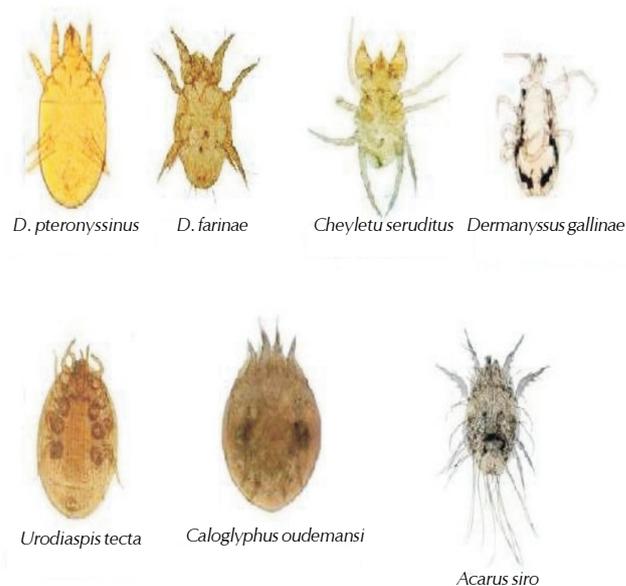


Figure 1:

Anal plate has three characteristic setae.

***Urodiaspis tecta*, Kramer, 1876**

The present form comes closer to *Urodiaspis tecta* in having a large, distinct, posterior dorsal plate. Depressions for the legs in ventral surface of the body. The anterior ventral portion of the body is excavated so that the gnathosoma is enclosed in a cavity.

***Caloglyphus oudemansi*, Oudemans, 1938**

The mite comes closer to *Caloglyphus oudemansi*. They are found in late rainy and in winter season. The body is flat. It is round and reddish in color. The first two pairs of legs are directed forward and IIIrd and IVth pairs of legs are directed backward. The legs are slender, short and pointed at ends. The gnathosoma is minute and mouth parts pointed and projecting forward. Dorsal body plate is shield like.

***Acarus siro*, Linnaeus, 1758**

The present form comes closer to *Acarus siro* in having 16 pairs of dorsal seta. They are long. The mite is a storage mite. Seta vi is twice the length of ve. It is soft bodied storage mite.

All above observed species of mites from poultry and flour mill are redescribed as *Dermatophagoides pteronyssinus*, *Dermatophagoides Farina*, *Cheyletus eruditus*, *Dermanyssus gallinae*, *Urodiaspis tecta*, *Caloglyphus oudemansi* and *Acarus siro*.

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