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A REPORT ON NEW RECORDS OF PHYTOPHAGOUS MITES ON MEDICINAL PLANTS FROM EASTERN HIMALAYAN REGION

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ABSTRACT

The present paper reports the occurrence of phytophagous mites belonging to 11 genera and 3 families collected on Medicinal plants from Eastern Himalayan Region which included 6 new records from India and there was one species which is likely to be undescribed,to be described later.

INTRODUCTION

Medicinal plants are attacked by a good number of pests belong to insects, mites and nematodes .Of those ,the mites which were earlier very innocuous, are now becoming important pests mainly due to injudicious use of synthetic chemical pesticides. This is on one hand eliminates the natural enemies of mite pests and on the other hand causes some changes in physiological activities of plants which, in turn, reduces production of secondary metabolites, the key components (active ingredients) being used in preparation of herbal medicines.

The studies on mites infesting medicinal plants in eastern Himalayan region are not adequate though a good number of publications have been made in this aspect from other parts of West Bengal. Some of those works which are pertaining to eastern Himalayan region are Gupta (2005, 2012), Gupta *et al.* (2004), Poddar *et al.* (2014), Roy *et al*. (2008, 2009, 2010, 2012). Since many parts of the eastern Himalayan region barring Darjeeling and adjoining areas have not been properly surveyed, this study was taken up during July 2013 – December 2014 and the results thereof are presented in this paper.

MATERIAL AND METHODS

A total of 3 surveys were conducted during July 2013 – December 2014 in some areas of eastern Himalayan region *viz*. Darjeeling, Kurseong, Sonada, Ghum, Mungpoo, Tagda, Medicinal plants garden at Sukna maintained by The Forest Department ,and Medicinal plants garden of North Bengal University at Siliguri. The mites were collected in the field itself by examing different plant parts under a 20X folding hand lens and picking out the mites with the help of a fine brush moistened with alcohol. The preservation was done in 70% alcohol and the permanent mounting of mites was done in Hoyer's medium.

RESULTS AND DISCUSSIONS

The identified mite specimens revealed the occurrence of a total of 29 species of phytophagous mites which belonged to 11 genera, 3 families and one order as listed in table 1. This included 6 species (marked with*), the occurrence of which was earlier unknown from India. Out of these 29 species,there was one species of *Aponychus* which appeared to be undescribed as its morpho-

Table 1. List of mites along with their localities, hosts and economic importance collected from Eastern Himalayan Region

Mite Species	Locality	Host	Remarks
Order PROSTIGMATA Family I TETRANYCHIDAE			
1. *Aponychus corpuzae* Rimando, 1966	Derjeeling	*Bambusa vulgaris*	This was collected from under surface of leaves, feeding produced whitish spots
2. *Aponychus bambusae* Gupta & Gupta, 1990	Tung	*Dendrobium nobile*	Population low, no damage
3. ***Aponychus* spn.	Medicinal Plants Garden of Forest department, Sukna	*Dendrobium nobile*	This is close to *Aponychus corpuzae* but differs in dorsal chaeotaxy and in structure of aedeagus, to be published as new only after confirmation
4. *Eotetranychus pruni* (Oudemans, 1931)	Tung	*Crescentia cujete*	Casual occurrence, no damage symptoms
5. *Eotetranychus ranikhetensis* Gupta & Gupta, 1994	Kalimpong	*Withania somnifera*	,,
6. *Eotetranychus syzygii* Gupta & Gupta, 1979	Sukna Forest department	*Citrus aurantium*	,,
7. *Eutetranychus bilobatus* Nassar & Ghai, 1981	Sukna Forest department	*Stevia rebaudiana*	Casual occurrence. No damage symptoms
8. *Eutetranychus maximae* Nassar & Ghai, 1981	Ghum	*Citrus medica*	Occurred on upper surface of leaves, produced yellowish patches on leaf lamina
9. *Eutetranychus orientalis* (Klein, 1936)	Kurseong	*Tacca integrifolia*	,,
10. *Oligonichus indicus* (Hirst, 1923)	Kurseong	*Musa acuminata*	Colony formed on under surface of leaves, feeding produced whitish patches on leaf lamina.
11. *Oligonychus mangiferus* (Rahman & Sapra, 1940)	Tindharia	*Mangifera indica*	Occurred on upper surface of leaves, produced brownish patches, huge population noticed.

Table 1 contd.

Mite Species	Locality	Host	Remarks
12. *Oligonychus oryzae* (Hirst, 1926)	Kalimpong	*Cynodon dactylon*	No damage symptoms
13. *Panonychus citri* (McGregor, 1916)	Kurseong	*Citrus medica*	This was collected from under surface of leaves, population poor, no damage.
14. *Tetranychus hypogeae* Gupta, 1976	North Bengal University Medicinal plant garden	Eupatorium adenophorum	Occurred on under surface of leaves, colony made near mid rib, damaged leaves turned pale yellow.
15. *Tetranychus ludeni* Zacher, 1913	Tindharia	Rauvolfia serpentina	Huge population, infested leaves turned yellow and later brown.
16. *Tetranychus urticae* Koch, 1836	Tindharia	Caesalpinia bonduc	Good population of all stages noticed on infested leaves which turned initially yellow and then brownish patches produced.
Family II TENUIPALPIDAE			
17. **Brevipalpus absens* De Leon, 1965	Mungpoo	*Musa ornata*	The occurrence of this species is new to India, no damage noticed
18. **Brevipalpus cercidium* Baker, Tuttle & Abbatiello, 1975	Sukna Forest department	*Magnolia grandiflora*	New report from India.
19. **Brevipalpus creber* Chaudhri, 1972	Mungpoo	*Cinchona pubescens*	Earlier unreported from India.
20. *Brevipalpus deleoni* Pritchard & Baker, 1958	North Bengal University	*Justicia adhatoda*	Produced brownish patches
21. **Brevipalpus dipholisi* De Leon, 1961	Sukna Forest department	*Justicia adhatoda*	New report from India, stray occurrence, no damage.

Table 1 contd.

Mite Species	Locality	Host	Remarks
22. **Brevipalpus melichrus* Pritchard & Baker, 1952	Kurseong	*Phoenix* sp.	Occurred on under surface of leaves in association with *Raoiella indica*
23. **Brevipalpus mitrofanovi* (Pegazzano, 1975)	North Bengal University	*Justicia adhatoda*	The occurrence of this species is new to India, no damage.
24. *Brevipalpus rostratus* De Leon, 1961	Mungpoo	*Alpinia calcarata*	Stray occurrence, new record from India.
25. Brevipalpus *rugulosus* Chaudhri, Akbar & Rasool, 1974	North Bengal University	*Cinchona pubescens*	Stray occurrence, no damage.
26. *Raoiella indica* Hirst, 1924	North Bengal University Medicinal plant garden	*Phoenix* sp.	The colony formed on under surface of leaves, causing reddish patches
Family III ERIOPHYIDAE			
27. *Phytoptus cyperi* (ChannaBasavanna, 1966)	Sukna Forest department	*Curculigo recurvata*	Casual occurrence.
28. *Aceria* sp.	Sukna Forest department	*Gynocardia odorta*	--
29. *Eriophyes negundi* Hodgkiss, 1913	North Bengal University	*Vitex negundo*	Noticed as vagrants on under surface of leaves

taxonomic characters did not tally with any of the know species of this genus from the world. The number of species which belonged to Tetranychidae, Tenuipalpidae, and Eriophyidae were 16, 10 and 3, respectively.

Among the tetranychid mites, the species which were found to be highly damaging were *Tetranychus ludeni* and *Tetranychus urticae* which seriously infested the medicinal plants affecting their growth and vigour.

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