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Powdery Mildew Fungi from Gautala Forest Area of Aurangabad, (Maharashtra) India

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Key words: Gautala forest, Medicinal plants, Powdery mildew fungi, Genera *Erysiphae*, *Microsphaerotheca*, *Oidium*, *Ovulariopsis*, *Phyllactinia*, *Podosphaera*

Forest is vital to mankind and is essential for life on earth, as they support biodiversity. Plants release oxygen to breath and takes in carbon dioxide, use in medicine and provides home to a variety of animals and other organisms. The wood obtained from forest is mainly used by human in multiple ways. Generally, the forests wood is used as timber, energy for the manufacturing of paper, wood excerpts and the tress leaves are used in medicines, cosmetics and some other purposes. Some species of trees are frequently important [1]. Forest also brings rainfall and prevent from soil erosion; the trees keep the water bed of land under control. These trees are sometimes susceptible to disease. Powdery mildew is one of the most common, widespread and easily recognizable plant disease; infecting about 10,000 plant species of 1600 genera [2-3]. Powdery mildew scarcely kills their host, reduce photosynthesis, increase transpiration, respiration rate and reduce the yield upto 20-40% [4].

In this research article survey of powdery mildew fungi is reported on some wild and cultivated Medicinal plants from Gautala forest, district Aurangabad.

Survey was carried out from different localities of Gautala forest Aurangabad, Maharashtra. The collected samples were packed independently in sterilized polythene bags and noted with their position, host name, date of collection, time and brought to laboratory for additional analysis.

Powdery mildew fungi were identified with help of microscope and microscopic analysis. The leaf sample was taken and slides were prepared by using cotton blue stain and lactophenol as mounting medium. The microscopic observations were carried out for morphological characteristics

of mycelia on the host, appressoria, size and shape of conidia and conidiophores and chasmothecia by using standard literature [5-7].

During investigation interesting results were notice. Total 35 plants species as the hosts of powdery mildew fungi. Present study reported tremendous diversity of host plants containing 14 wild plants *Acacia pennata*, *Aegle marmelos*, *Alianthus excelsa*, *Anogissus latifolia*, *Azadirchta indica*, *Baliospermum montanum*, *Butea monosperma*, *Dalbergia sissoo*, *Kirganelia reticulata*, *Lawsonia inermis*, *Phyllanthus nirui*, *Sanctum album*, *Tectona grandis* and *Terminallia bellirica*. 11 weeds plants *Abrus precatorius*, *Abutilon indicum*, *Acalypha indica*, *Argemone maxicana*, *Cassia tora*, *Diplocyclos palmatus*, *Euphorbia heterophylla*, *Euphorbia hirta*, *Ipomea obscura*, *Oxalis Carniculata* and *Xanthium Strumarium*. 02 Ornamental plants *Bauhinia variegata* and *Ocimum sanctum*. 04 fruit yielding plants *Carrica papaya*, *Mangifera indica*, *Tamarindus indica* and *Ziziphus Mautritiana* 04 climbers *Clitoria terneta*, *Cocculus hirsutus*, *Hemidemus indicus* and *Tinosphora cardifolia* were observed for the present study and the results obtained are summarized in (Table 1).

Total 07 fungal genera belonging to family Erysiphaceae and order Erysiphales were noticed as genera were *Erysiphae*, *Microsphaerotheca*, *Oidium*, *Ovulariopsis*, *Phyllactinia*, *Podosphaera* and *Uncinula*. The oidium species was found most species of host plants was 25, followed by Erysiphae on 03 host plant, *Uncinula* and *Phyllactinia* on 02 host plant respectively. *Microsphaerotheca*, *Ovulariopsis* and *Podosphaera* on 01 host plant (Table 1).

Many periodical surveys were under taken to study the powdery mildew fungi from different areas of Maharashtra and India. Kulkarni [8] reported powdery mildew disease for the first time in India. Powdery mildew also have been reported to infect a large number of host plants of various family as *Erysiphe cichoracearum* on hosts i.e. *Erysiphe cichoracearum* on *xanthium strumarium* [9-10].

Likewise Aligarh (UP) *Uncinula tectonae* has been reported to infect economically important host *Tectona grandis* of family verbanaceae. Oidial stages of powdery mildew have recorded on *Azadirchta indica* and *Argemone mexicana* [11], on *Mangifera indica* an important fruit plant Maharashtra [12]

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on *Carica papaya* [13]. On *Ziziphus mauritiana* a fruit tree the symptoms of disease were notice on flower and fruits [14]. In

India Preetha *et al.* [15] reported *Aegle marmelos* host caused by *oidium spp.*

Table 1 List of the host medicinal plants of powdery mildew fungi with family and common name from Gautala forest of Aurangabad districts of Maharashtra

S. No.	Name of host medicinal plants	Family	Common name in Maharashtra	Powdery mildew fungus
1.	<i>Abrus precatorius</i>	Fabaceae	Ratti, Gunj	<i>Oidium abri</i>
2.	<i>Abutilon Indicum</i>	Malvaceae	Sweet kanghi	<i>Oidium abutili</i>
3.	<i>Acacia pennata</i>	Mimosaceae	Shemba, Subabhul	<i>Erysiphae acaciae</i>
4.	<i>Acalphya indica</i>	Euphobiaceae	Khokali	<i>Erysiphae acalphyae</i>
5.	<i>Aegle marmelos</i>	Rutaceae	Bel	<i>Oidium sp.</i>
6.	<i>Alianthus excelsa</i>	Simarubaceae	Mahanim	<i>Oidium ailanthi</i>
7.	<i>Anogissus latifolia</i>	Combretaceae	Axlewood, Dhava	<i>Uncinula sp.</i>
8.	<i>Argemone maxicana</i>	Papaveraceae	Pivla dhotra	<i>Oidium papaveracearum</i>
9.	<i>Azadircta indica</i>	Meliaceae	Neem	<i>Oidium azadirchtae</i>
10.	<i>Baliospermum montanum</i>	Euphorbiaceae	Jamalgota	<i>Oidium sp.</i>
11.	<i>Butea monosperma</i>	Fabaceae	Palas	<i>Oidium state of Erysiphe</i>
12.	<i>Bauhinia variegata</i>	Caesalpiniaceae	Kanchan	<i>Oidium bauhiniae</i>
13.	<i>Carrica papaya</i>	Cariaceae	Papee	<i>Oidium caricae-papayae</i>
14.	<i>Cassia tora</i>	Fabaceae	Tarota, Takala	<i>Oidium cassiae</i>
15.	<i>Cloterea ternetea</i>	Fabaceae	Gokarnna, Kajali	<i>Oidium clitoriae</i>
16.	<i>Cocculus hirsutus</i>	Menispermaceae	Vasanvel	<i>Microsphaera pseudolonicerae</i>
17.	<i>Dalbergia sissoo</i>	Fabaceae	Sisam	<i>Phyllactinia dalbergiae</i>
18.	<i>Diplocyclos palmatus</i>	Cucurbitaceae	Shivlingi	<i>Oidium sp.</i>
19.	<i>Euphorbia heterophylla</i>	Euphobiaceae	Dudhi,	<i>Oidium sp.</i>
20.	<i>Euphorbia hirta</i>	Euphobiaceae	Lal dudhi	<i>Podosphaera euphorbiae-hirtae</i>
21.	<i>Hemidemus indicus</i>	Asclepidaceae	Anantmul	<i>Oidium hemidesmi</i>
22.	<i>Ipomea obscura</i>	Convolvulaceae	Vajvel	<i>Oidium ipomoea</i>
23.	<i>Kirganelia reticulata</i>	Euphobiaceae	Panjuli	<i>Oidium sp.</i>
24.	<i>Lawsonia inermis</i>	Lythraceae	Mehandi	<i>Ovulariopsis lawsoniae</i>
25.	<i>Mangifera indica</i>	Anacardaceae	Aam, Amba	<i>Oidium mangiferae</i>
26.	<i>Moringa oleifera</i>	Moringaceae	Drumstick tree, Shevga	<i>Erysiphe aquilegiae</i>
27.	<i>Ocimum sanctum</i>	Labiaceae	Tulsi,	<i>Oidium ocimi</i>
28.	<i>Oxalis Carniculata</i>	Oxalidaceae	Amrul	<i>Oidium oxalidies</i>
29.	<i>Phyllanthus nirui</i>	Euphorbiaceae	Bhuiamla	<i>Oidium phyllanthi</i>
30.	<i>Santalum album</i>	Santalaceae	Chandan	<i>Oidium santalacearum</i>
31.	<i>Tamarindus indica</i>	Caesalpiniaceae	Chinch	<i>Oidium tamarindi</i>
32.	<i>Tectona grandis</i>	Verbanaceae	Sag	<i>Uncinula tectonae</i>
33.	<i>Terminalia bellirica</i>	Combretaceae	Baheda, Bhenda	<i>Phyllactinia terminaliae</i>
34.	<i>Tinospora cardifolia</i>	Menispermaceae	Gulvel	<i>Oidium sp.</i>
35.	<i>Ziziphus mauritina</i>	Rhamnaceae	Bor	<i>Oidium zizyphi</i>

While *Ocimum sanctum* an important medicinal plant was found to be affected by dense white powdery growth mildew first appeared as a small whitish spot on the upper surface of the leaves which enlarge and covered entire leaf surface. Some powdery mildew of Himachal Pradesh, India and reported five powdery mildew [16]. Shahare [17] studied the diversity of powdery mildew fungi on some local plant in Amravati, Maharashtra, India and reported four different fungal species which is *Leveillula clavata*, *Sphaerotheca balsaminae*, *Erysiphe cichoracearum* and *podosphora Xanthii*. Tanda and Hirose [18] investigated the powdery mildews and their causal on some spice and medicinal plants and reported two fungal pathogens on spice and two pathogens on medicinal plants.

Pawar and Patil [19] reported that 35 wild and medicinal plants species as a host of powdery mildew fungi from Khandesh region of Maharashtra was carried out. Among this *oidium* was major genus containing 19 species. Similar results were also recorded from present investigation. Bankar *et al.* [20], powdery mildew fungi from Phaltan area of Satara district,

Maharashtra and reported total 54 host plant species and 7 fungal genera of powdery mildew were reported among them majority of *Oidium species* was 48 and other *Blameria graminis*, *Uncinula tectonae*, *Euoidium labiatarum*, *Phyllactinia dalbergiae*, *Leveillula taurica* and *Ovulariopsis sp.*

SUMMARY

Powdery mildews are probably the most common, conspicuous, wide spread and easily recognizable plant disease. Powdery mildew fungi infect many species of medicinal plants in including many trees, shrubs, vegetables, cereals, grasses, numerous ornamentals and even weeds. On the host plants powdery mildew causes morphological, anatomical and physiological damages of plants and remarkable destruction and loss in plants. Powdery mildew disease have been known to various medicinal plant throughout India and across the world keeping this in view, present paper deals with the survey

of powdery mildew was carried out in Gautala forest Aurangabad district Maharashtra. During 2019-2021 there were 35 medicinal plants noticed as the host of powdery mildew

fungi in Gautala forest of maharashtra. Among them 14 wild plants, 11 weeds plants, 04 fruiting yielding plants, 04 climbers and 02 ornamental plants.

LITERATURE CITED

1. Anonymous. 1999. Non wood forest products for rural income and sustainable forestry. *Food And Agriculture Organization of The United Nations*, Rome, Italy.
2. Zheng RY. 1985. Genera of the Erysiphaceae. *Mycotoxan*. 22: 209-263.
3. Amano K. 1986. Host range and geographical distribution of powdery mildew. *Japan Scientific Press Tokyo*. pp 741.
4. Gautam AK, Avasthi S. 2018. Diversity of powdery mildew fungi from North Western Himalayan region of Himachal Pradesh – a check list. *Plant Pathology and Quarantine* 8(1): 78-99.
5. Paul YS, Thakur VK. 2006. *Indian Erysiphaceae*. Scientific Publishers, Jodhpur India.
6. Hosagoudar VB, Agrawal DK. 2009. Powdery mildew of India: Checklist Associated Publishing Company, New Delhi, India. Mycological information-IV. Dept. of Myco and Pl. Path. J.n. Agri. Univ. Jablpur. India. pp 204.
7. Yenez- Morales M, Braun U, Minnis AM, Torar- Padraza JM. 2009. Some new records and new species of powdery mildew fungi from Mexico. *Schlechtendalia* 19: 47-61.
8. Kulkarni GS. 1924. Report of work done in the plant pathology section during the year 1922-23. Annual Report Agriculture Bombay Presidency for Year, 1922-23. pp 167-171.
9. Meeboon J, Takamatsu S. 2016. Notes on powdery mildew (Erysiphales) in Thailand I. Podosphaera Sect. Sphaerotheca. *Plant Pathology and Quarantine* 6: 142-174.
10. Todawat NJ. 2016. The Powdery mildew disease from Aurangabad district (M.S.). India. *Life Science International Research Journal* 3(1): 71-73.
11. Biju CK, Thomas S, Sreekumar S, Krishnan PN. 2013. Addition to the powdery mildew of Kerala II. *Journal of Environmental Science, Toxicology and Food Technology* 6(4): 31-33.
12. Uppal BN, Patel MK, Kamat MH. 1994. Powdery mildew of mango, J. Univ. Bombay. N. S. *Biol. Sci. Sect.* 95: 12-16. *Rev. Apple. Mycology* 20: 414-449.
13. Thite SV, Kore BA. 2013. Diversity of powdery mildew fungi from Satara district. *International Journal of Multidisciplinary Research* 2(7V): 119-122.
14. Gupta JH. 1989. Perpetuation and Epidemiology of powdery mildew of mango. *Act Horticulture, Leuven* 231: 528-533.
15. Preetha R, Reshmy V, Midhun MS, Gopalkumar S, Vidya Sagar K. 2007. First report of powdery mildew (*Oidium sp*) on *Aegle marmelos* from Kerala. *Journal of Plant Disease Sciences* 2(1): 114.
16. Gautam AK. 2015. Studies on some powdery mildew of Himachal Pradesh, India. *New Botanist* 22: 81-175
17. Shahare NH. 2006. Diversity of powdery mildew fungi on some local plants in Amravati, Maharashtra, India. *Journal of Environmental Science, Toxicology and Food Technology* 10(2): 45-45.
18. Tanda S, Hirose T. 2003. Powdery mildews and their causal fungi on some spice and medicinal plants. *Jr. Agri. Sci. Tokyo Univ. of Agriculture* 47(4): 274-282.
19. Pawar VP, Wankhede CV, Chaudhari NA. 2019. Biodiversity of forest plants of powdery mildew on Jalgaon Maharashtra India. *Int. Jr. Life Science* 13: 292-293.
20. Bankar P, Kadam V. 2019. Powdery mildew fungi from Phaltan area of Satara district, Maharashtra. *Int. Jr. Curr. Microbiology App. Science* 8(7): 2181-2186.