

Research Note

A survey report of leaf spot diseases of certain medicinal plants of Maharashtra, India

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ABSTRACT

Because of great variation in soil texture and other environmental factors, there are thousands or more than 2000 varieties of medicinal plants (Jose and Rayalaxmi, 2005). The medicinal plants are affected by fungal pathogens which degrade the quality of medicinal plant directly by disturbing the physiological and metabolic procedures of affected plant parts. Total 2 medicinal plants selected for the study were Kanghi (*Abutilon indicum*), Arusa (*Adhatoda vasica*), Aegle (*Aegle marmelos*), Ghee Kumar (*Aloe vera*), Neem (*Azadiracta indica*), Sant (*Baerhavia diffusam*), Dhak (*Butea monosperma*), Madar (*Calotropis procera*), Tarwar (*Cassia auriculata*), Turmeric (*Curcuma long*), Kala Datura (*Datura fastuosa*), Bhrangray (*Eelipta alba*), Amla (*Embllica afficinales*), Dudhia (*Euphorbia hirta*), Jasmine (*Jasminum afficinale*), Kaner (*Narium adoratum*), Kali Tulsi (*Ocimum canum*), Castor (*Ricinus communis*), Ritha (*Sapindus triloliatus*), Kateli (*Solanum anthacarpum*) and Arguma (*Terminalia aryunia*). The pathogenic fungi responsible for leaf spot diseases of medicinal plants were isolated on PDA (Potato dextrose agar) medium by food poisoning technique. The fungi were identified on the basis of growth pattern and spore types. The fungi responsible for leaf spots of various medicinal plants were *Phyllachora*, *Phyllosticta*, *Septoria*, *Colletotrichum*, *Carynespora*, *Chaetothryrium*, *Stenella*, *Oestalotiopsis*, *Pseudocercospora*, *Fusarium*, *Myrothecium*, *Drechslera*, *Ciliochorella*, *Curvularia*, *Pseudodiploidia*, *Phoma*, *Mycosphaesella* and *Septoria*.

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In India there is great variation in soil type and all other environmental factors hence it is highly favourable for the growth and development of many types of varieties of medicinal plants. In India more than 2000 varieties of medicinal plants are present (Joseph and Rayalakshmi, 2005). Human being is dependent on higher plants for their health care needs since the very beginning of human civilization.

To avoid the carcinogenic effect the world population diverted towards plant made medicines. Different parts of medicinal plants are used in preparation of medicine and Homeopathy in Ayurvedic science, homeopathy and naturopathy, for the preparation of different types of medicines against various diseases of human beings, cattle and birds etc.

It has been observed that the medicinal plants were affected by fungal pathogens which degrade the quality of medicinal plants directly by the physiological and metabolic disturbing processes of plant organ. Hence, 20 medicinal plants were selected to study the leaf spot diseases of medicinal plants caused by fungi in Maharashtra. This is the initial stage to divert plants pathologist to study diseases of medicinal plants and their management on which there is very few information is available.

The jungles and mountains of Maharashtra are famous for the largest flora of medicinal plant on which taxonomists published the list of plants through their ideas, like Flora of Marathwada by Nike *et al.* (1989), Flora of Western Ghat etc.

During the survey we have visited the thickly populated

Table 1 : The leaf spot diseases of certain medicinal plants of Maharashtra

Sr. No.	Medicinal plants	Fungal species causing leaf spot disease
1.	Kanghi (<i>Abutilon indicum</i>) (Malvaceae)	<i>Cercospora</i> sp.
2.	Acacia (<i>Acacia arabica</i>) (Mimosaceae)	<i>Phyllachora acaciae</i> , <i>Phyllosticta</i> sp., <i>Septoria</i> sp.
3.	Arusa (<i>Adhatoda vasica</i>) (Acanthaceae)	<i>Cercospora adhatodae</i> , <i>Colletotrichum capsici</i> , <i>Corynespora</i> sp.
4.	Bel (<i>Aegle marmelos</i>) (Rutaceae)	<i>Cercospora</i> , <i>Chaetothyrium</i> , <i>Stenella aegles</i>
5.	Ghee-Kumar (<i>Aloe vera</i>) (Liliaceae)	<i>Colletotrichum pestalotiopsis</i>
6.	Neem (<i>Azadiracta indica</i>) (Meliaceae)	<i>Cercospora meliae</i> , <i>Pseudocercospora</i>
7.	Sant (<i>Boerhavia diffusa</i>) Nyctagraceae	<i>Cercospora</i> sp., <i>Colletotrichum</i> , <i>Leptosphaerulina</i> sp.
8.	Dhak (<i>Butea monosperma</i>) (Papilionaceae)	<i>Botryodiplodia</i> , <i>Cercospora</i> , <i>Ciliochorella</i> , <i>Cochliobolus</i> , <i>Colletotrichum</i> , <i>Curvularia</i> , <i>Pestalotia</i> , <i>Phomopsis</i> , <i>Phyllosticta</i> , <i>Pseudodiplodia</i>
9.	Madar (<i>Calotropis procera</i>) (Asclepiadaceae)	<i>Alternaria</i> , <i>Cercospora</i> , <i>Fusarium</i> , <i>Mycosphaerella</i> , <i>Myrothecium</i>
10.	Tarwar (<i>Cassia auriculata</i>) (Caesalpiniaceae)	<i>Alternaria</i> , <i>Cercospora</i> , <i>Drechslera</i> , <i>Phyllachosa</i> , <i>Phyllosticta</i> , <i>Septoria</i>
11.	Turmeric (<i>Curcuma longa</i>) (Zingibaceae)	<i>Alternaria</i> , <i>Cercospora</i> , <i>Colletotrichum</i> , <i>Phyllosticta</i> , <i>Pyricularia</i> , <i>Sphaceloma</i>
12.	Kala Dathura (<i>Datura fastuosa</i>) (Solanaceae)	<i>Alternaria</i> , <i>Ascochyta</i> , <i>Cercospora</i> , <i>Colletotrichum</i> , <i>Phyllosticta</i> , <i>Pseudoecorpora</i>
13.	Bhrangray (<i>Eclipta alba</i>) (Compsitae)	<i>Cercospora</i> , <i>Septoria</i>
14.	Amla (<i>Emblica officinales</i>) (Euphorbiaceae)	Non parasitic
15.	Dudhia (<i>Euphorbia hirta</i>) (Euphorbiaceae)	<i>Alternaria</i> , <i>Ascochyta</i> , <i>Cercospora</i> , <i>Pestalotia</i> , <i>Phoma</i>
16.	Jasmine (<i>Jasminum officinale</i>) (Oleaceae)	<i>Alternaria</i> , <i>Asterina</i> , <i>Cercospora</i> , <i>Colletotrichum</i> , <i>Curvularia</i> , <i>Drechslera</i> , <i>Mycosphaerella</i> , <i>Phyllosticta</i> , <i>Physalospora</i> , <i>Septoria</i>
17.	Kaner (<i>Nerium odorum</i>) (Apocynaceae)	<i>Ascochyta</i> , <i>Cercospora</i> , <i>Phyllosticta</i> , <i>Septoria</i> , <i>Sphaceloma</i>
18.	Kali tulsi (<i>Ocimum canum</i>) (Labiatae)	<i>Cercospora</i> , <i>Corynespora</i> , <i>Glomerella</i> , <i>Myrothecium</i> , <i>Phyllosticta</i>
19.	Castor (<i>Ricinus communis</i>) (Euphorbiaceae)	<i>Alternaria</i> , <i>Cercospora</i> , <i>Carynespora</i> , <i>Phyllosticta</i>
20.	Ritha (<i>Sapindus trifoliatu</i>) (Sapindaceae)	<i>Alternaria</i> , <i>Cercospora</i> , <i>Colletotrichum</i> , <i>Macrophoma</i> , <i>Phomopsis</i>
21.	Kateli (<i>Solanum zanthocarpum</i>) (Solanaceae)	<i>Alternaria</i> , <i>Ascochyta</i> , <i>Cercospora</i> , <i>Cladosporium</i> , <i>Colletotrichum</i> , <i>Curvularia</i> , <i>Drechslera</i> , <i>Phyllosticta</i>
22.	Arjuna (<i>Terminalia arjuna</i>) (Combretaceae)	<i>Cercospora</i> , <i>Colletotrichum</i> , <i>Pestalotia</i> , <i>Phyllachora</i> , <i>Phyllactinia</i>

plant areas of Maharashtra (Mahabaleshwar, Westers Ghats, Kinwat Forest, Satara, Gawatala Forest, Mountains near Ajantha, Mountaneous area closer to Pune). The collection of leaf spots diseases of certain medicinal plants was completed during the period of April 2008 – June 2010.

The separate sterile polythn bag was used for each type of leaf spot. The infected material was brought to the laboratory for further study. The fungal pathogen responsible for leaf spot was isolated on solid PDA (Potato dextrose agar) medium, by inoculating small infected areas of leaf on to the PDA amended Petriplates in sterile conditions. The same procedure was adopted for isolation of responsible fungus of leaf spot disease of each type of medicinal plant.

The inoculated plates were incubated at room temperature $25 \pm 1^\circ\text{C}$ temperature. The plates were observed daily. The fungus causing leaf spot disease of medicinal plant

was purified by repeated transfer of single hyphal thread on PDA medium.

The pathogenic fungus was identified on the basis of growth pattern, hyphal details and spore type. Bilgrami (1963) reported list of leaf spot diseases of same ornamental plants.

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