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"A survey report of leaf spot diseases of certain medicinal plants of India"

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Abstract:

Because of great variation in soil texture and other environmental factors, those are thousands or more than 2000 varieties of medicinal plants (Jpseph Jose and Rayalaxmi, 2005). Human beings are dependent on higher plants for their health care needs since the very beginning of human civilization. The different parts of medicinal parts are used to prepare different types of medicines for various diseases of human beings, cattles and birch etc. 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 part. 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 (Emblica afficinales), Dudhia (Euphorbia hirta), Jasmine (Jasminum afficinale), Dudhia (Euphorbia hirta), Jasmine (Jasminum afficinale), Kaner (Narium adoratum), Kali Tulsi (Ocimum canum), Castor (Ricinus communis), Ritha (Sapindus triloliatus), Kateli (Solanum zanthacarpum) and Arguma (Terminalia aryuna).

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 Cumcospora, Phyllachora, Phyllosticta, Septoria, Colletotrichum, Carynespora, Chaetothyrium, Stenella, Oestalotiopsis, Pseudocercospora, Fusarium, Myrothecium, Drechslera, Ciliochorella, Curvularia, Pseudodiploidia, Phoma, Drechslera, Mycosphaesella and Septoria.

Keywords: Leaf spots of medicinal plants.

Introduction:

In India there is great variation in soil type and all other environmental factors hence it is highly favorable 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 Jose and Rayalakshmi, R, 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 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 we hav selected 20 medicinal plants to study the leaf spot diseases of medicinal plants caused by fungi in India. This is the initial stage to divert plants pathologist to study diseases of medicinal plants and their management on which there is very few data is available.

Methodology:

The jungles and mountains of Maharashtra are famous for the largest flora of medicinal plant on which Taxanomist 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 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 is completed during the period of April 2008 - June 2010.

The separate sterile polythin 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 23 ± 1 C^0 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 (Potato Dextrose Agar) 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.

Table

The leaf spot diseases of certain medicinal plants of Maharashtra

Sr. No.	Medicinal Plant	Fungal species causing leaf spot disease
1	Kanghi (Abutilon indicum) (Malvaceae)	Cercospora ep.
2	Acacia (Acacia Arabica) (Mimosaceae)	Phyllachora acaciae, Phyllosticta sp. Septoria sp.
3	Arusa (Adhatoda vasica) (Acanthaceae)	Cercospora adhatodae, Colletotrichum capsici, Corynespora sp.
4	Bel (Aegle marmelos) (Rutaceae)	Cercospora, Chaetothyrium, Stenella aegles
5	Ghee-Kumar (Aloe vera) (Liliaceae)	Colletotrichum pestalotiopsis
6	Neem (Azadiracta indica) (Meliaceae)	Cercuspora meliae, Pseudocercospora
7	Sant (Boerhavia diffusa) Nyctagiraceae	Cercospora sp., Colletotrichum, Leptosphaerulina sp.

8	Dhak (Butea manosperma) (Papilionaceae)	Botryodiploidia, Cercospora, Ciliochorella, Cochliobolus, Colletotrichum, Curvularia, Pestalotia, Phomopsis, Phyllosticta, Pseudodiploidia
9	Madar (Calotropis procera) (Asclepiadaceae)	Alternaria, Cescospora, Fusarium, Mycosphaerella, Myrothecium
10	Tarwar (Cassia auriculata) (Caesalpiniaceae)	Alternaria, Cercospora, Drechslera, Phyllachosa, Phyllosticta, Septoria
11	Turmeric (Curcuma longa) (Zingibesaceae)	Alternaria, Cersocpora, Colletortichum, Phyllosticta, Pyricularia, Sphaceloma
12	Kala Dathura (Datura fastuosa) (Solanaceae)	Alternaria, Ascochyta, Cercospora, Colletotrichum, Phyllosticta, Pseudoercorpora
13	Bhrangray (Eclipta alba) (Compsitae)	Cercospora, Septoria
14	Amla (Emblica afficinales) (Euphorbiaceae)	Non parasitic
15	Dudhia (Euphorbia hirta) (Euphorbiaceae)	Alternaria, Ascochyta, Cercospora, Pestalotia, Phoma
16	Jasmine (Jasminum afficinale) (Oleaceae)	Alternasia, Asterina, Cercospora, Colletotrichum, Cruvulasia, Drechslera, Mycosphaerella, Phyllosticta, Physalospora, Septoria
17	Kaner (Nerium odorum (Apocynaceae)	Ascochyta, Corcospora, Phyllosticta, Septoria, Sphaceloma
18	Kali tulsi (Ocimum canum) (Labiatae)	Cercospora, Corymespora, Glomerella, Myrothecium, Phyllosticta
19	Castor (Ricinus communis) (Euphorbiaceae)	Alternaria, Cercispora, Carynespora, Phyllosticta

20	Ritha (Sapindus trifoliatus) (Sapindaceae)	Alternasia, Cercospora, Colletotrichum, Macrophoma, Phomapsis
21	Kateli (Solanum zanthocarpum) (Solanaceae)	Alternaria, Ascochyta, Cercospora, Cladosporium, Colletotrichum, Curvularia, Drechslesa, Phyllosticta
22	Arjuna (Terminalia arjuna) (Combretaceae)	Cercospora, Colletrotrichum, Pestalotia, Phyllachora, Phyllactinia

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