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## Documentation of fungal diseases in medicinal plants growing regions of Salem district, Tamil Nadu

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### Abstract

The occurrence of disease incidence in selected 96 medicinal plants which are studied in Salem district, Tamil Nadu, India in the present investigation. A totally 96 medicinal plants were maintained and observed the disease incidence during 2014 to 2017 at Horticultural Research Station, Yercaud and Pagalpatti village of Omalur Block, Salem District, Tamil Nadu. The present study the observation on the disease incidence over the period of three years showed that, 27 plant species affected by leaf blight. Irrespective of the environmental condition the leaf blight disease was predominant over other diseases followed by leaf spot, rust, sooty mould, powdery mildew and wilt.

**Keywords:** Documentation, fungal, medicinal, plants, horticultural

### Introduction

The importance of medicinal plants growing is increasing day by day. Traditional medicine has made a comeback in recent years for a variety of reasons, including the side effects and toxicity of modern synthetic drugs, the evolution of multi-drug resistant microbes, and modern medicine's inability to find effective solutions for a number of diseases. More than 70% of the developing world's population currently relies on traditional medicine, also known as complementary or alternative medicine. (Azaizeh *et al.*, 2010) [2]. The term 'Herbal treatment' has been used in many different countries with many names such as traditional therapy, complementary therapy, or natural therapy (Avan M 2021) [1]. Traditional medicine may include formalised components of folk medicine, such as long-standing medicines passed down and practised by ordinary people. Practices known as traditional medicines includes Ayurveda, Siddha, Unani, ancient Iranian, Islamic, traditional Vietnamese, traditional Chinese, traditional Korean, acupuncture, Muti, Ifá, Kampo in Japan and Jammu in Indonesia and many other forms of healing practices (Saranraj *et al.*, 2016) [12].

India has contributes eight percent of total world bio-resources and represents one among the 12 mega-diversity countries in the world due to the species richness and level of endemism recorded in the various agro climatic areas of the country. There are about 17,000 species of higher plants, of which approximately 8,000 species are considered medicinal plants and used by village communities, particularly tribal communities, or in traditional medicinal systems, such as the Ayurveda (Devendiran *et al.*, 2020) [5].

According to the World Health Organization (WHO), traditional medicine is used in the prevention of physical and mental diseases, diagnosis, healing, or treatment as well as maintaining good health. In addition, it is the whole of knowledge, skills and practices that can or cannot be explained based on theories, beliefs, and experiences specific to different cultures (WHO, 2017) [16]. These medicinally important plants are facing serious problems of the biotic and abiotic stresses. It's adversely affected the medicinal plant parts and decreases the medicinal value of that part. It may be harmful to the human body while using these infected parts as a medicine (Chavan and Korekar, 2011) [4]. Therefore, a systematic study on the diseases and the pathogens are highly needed. As plant and pathogen are co-evaluated, medicinal plants are not the exception and are vulnerable to be attacked by several pathogens resulting crop loss in terms of both quantity as well as quality. Post-harvest loss is also a great problem of medicinal plants where toxins are produced by the pathogens. Thus, plant diseases create challenging problems in commercial agriculture and pose real economic threats.

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The cultivation of medicinal and aromatic plants has increased considerably in recent years due to their huge worldwide demands on plant-based medicines and aromatic compounds. These plants are affected by various diseases caused by fungi, bacteria, viruses and phytoplasmas. Among these diseases, especially fungal diseases are very important. Fungi infect leaves, stems and underground parts of medicinal and aromatic plants. Among these fungal diseases, Powdery mildew appears on the leaves and fresh stems, and as the disease progresses, it covers the entire developing surface of the plant. Rust diseases are airborne diseases that infect leaves, branches and fruits and cause pustules on leaves. Leaf spots and blights cause dead areas on the leaves with distinct spots over time, and in this way, they are separated from healthy tissues (Bhandari *et al.*, 2014) [3]. Blights appear on the leaves, twigs or blossoms of the plant and cause sudden death of the plant (Ramappa and Shivanna, 2013) [10]. Medicinal and aromatic plants are also highly affected by root rot, wilt, anthracnose and dieback caused by fungi and

bacteria. These diseases manifest themselves with hard, dry, spongy, soft, watery or slimy-looking rotten tissues in plants (Singh *et al.*, 2016). Therefore, the aim of the present study was carried out to study in detail the diseases and pathogens infecting medicinal plants in pot and field condition.

## Materials and Methods

### Field trial at Horticultural Research Station (HRS), Yercaud and Pagalpatti

The experimental trial laid out to document the medicinal plant diseases at Horticultural Research Station, Yercaud and Pagalpatti village, Omalur Block of Salem District, Tamil Nadu. A total of 96 medicinal plants raised in experimental field at HRS, Yercaud and Pagalpatti village, Omalur Block of Salem District to observe various disease incidences in medicinal plants. In order to study the disease incidence (%) of selected medicinal plant was observed in summer, rainy and winter season in selected region of Salem district during 2014-2017 (Table 1).

**Table 1:** List of medicinal plant species included for research (2014-17)

S. No.	Common Name	Botanical Name	Family	Economic part used	Uses
1.	Shadavari	<i>Asparagus racemosus</i>	Liliaceae	Root	Diuretic, aphrodisiac
2.	Arvada	<i>Ruta graveolens</i>	Rutaceae	All parts	Rheumatism, colic, stimulant
3.	Erukku	<i>Calotropis gigantea</i>	Apocynaceae	Root and leaf	asthma and shortness of breath and the bark in liver and spleen diseases
4.	Periyankai	<i>Polygala elata</i>	Polygalaceae	All parts	Snake poison
5.	Poduthalai	<i>Lipia nodiflora</i>	Verbinaceae	Leaves	Diuretic, dandruff
6.	Vennochi	<i>Vitex negundo</i>	Verbenaceae	All parts	Tonic, aromatic, vermifuge, headache, sinuses
7.	Karu-oomathai	<i>Datura fastuosa</i>	Solanaceae	Leaves, fruit, seeds	Insanity, cerebral complication, skin disease
8.	Vasambu	<i>Acorus calamus</i>	Acanthaceae	Rhizome	Emetic, colic, intermittent fevers, nerve tonic, bronchitis
9.	Geranium	<i>Pelargonium graveolens</i>	Geraniaceae	Leaves	Mosquito repellent
10.	Rosemary	<i>Rosemarinus officinalis</i>	Labiatae	Leaves	Carminative, stimulative
11.	Tippili	<i>Piper longum</i>	Piperaceae	Spike	Bronchitis, cough, cold
12.	Stevia	<i>Stevia rebaudiana</i>	Asteraceae	Leaves	Mainly used as a sweetener and flavor enhancer in the food and beverage industry.
13.	Palmarosa	<i>Cymbopogon martini</i>	Graminae	Leaves	Carminative
14.	Sitharathai				
15.	Perarathai	<i>Alpinia galanga</i>	Zingiberaceae	Rhizome	Rheumatism, bronchial, catarrh, aphrodisiac
16.	Multivitamin green (Checkrumeni)	<i>Sauropus androgynus</i>	Euphorbiaceae	Leaves	Vitamin supplement
17.	Parsely	<i>Petroselinum crispum</i>	Apiaceae	Leaves and roots	
18.	Betel vine	<i>Piper betle</i>	Piperaceae	Leaves	Digestive
19.	Origanum	<i>Origanum sp.</i>	Labiatae	Leaves	Digestive, tonic
20.	Origanum	<i>Origanum vulgare</i>	Labiatae	Leaves	Stimulative, colic, toothache, earache
21.	Siriyangai				
22.	Amukkiran (Aswaganda)	<i>Withania somnifera</i>	Solanaceae	All parts	Aphrodisiac, tonic, diuretic, narcotic, rheumatism
23.	Kesavardhni				Improve growth of hair
24.	Lavender	<i>Lavandula officinalis</i>	Labiatae	Leaves	Carminative
25.	Kothamalli	<i>Coriandrum sativum</i>	Umbelliferae	Leaves, seeds	Stimulative, carminative, diuretic, tonic
26.	Patchouli	<i>Pogostemon patchouli</i>	Labiatae	Leaves	Diuretic, carminative insecticidal
27.	Arurutkizhangu (Arrow root)	<i>Maranta arundinacea</i>	Marantaceae	Root	acid, cooling effect
28.	Insulin plant	<i>Costus igneus</i>		Leaves	Lower blood glucose
29.	Seendal kodi	<i>Tinospora cordifolia</i>	Menispermaceae	All parts	Aphrodisiac, diuretic
30.	Adadodai	<i>Adhatoda vasica</i>	Acanthaceae	Leaves	Cough, bronchitis, asthma
31.	Sirukurinjan	<i>Gymnema sylvestre</i>	Asclepiadaceae		Diabetes, reduce glycosuria
32.	Pepper	<i>Piper nigrum</i>	Piperaceae	All parts	stimulative, malarial fever, piles, skin disease
33.	Merugooti				
34.	Chirukattalai	<i>Aloe vera</i>	Liliaceae	Leaves	Purgative, emetic piles and rectal fissures, menstrual suppressions
35.	Lavankapattai	<i>Cinnamomum zeylanicum</i>	Lauraceae	Bark	Stimulative, carminative

36.	Thyme	<i>Thymus vulgaris</i>	Labiatae	Leaves	Bronchitis, whooping cough
37.	Karumthulasi				
38.	Sangupoo	<i>Clitoria ternatea</i>	Fabaceae	root	Leucoderma.
39.	Zimmu	<i>Allium sp.</i>	Liliaceae	Leaves	Blood purifier
40.	Thuthuvaelai	<i>Solanum trilobatum</i>	Solanaceae	All parts	Cold, cough, asthma
41.	Ramba	<i>Pandanus sp.</i>	Pandanaceae	Leaves	Aromatic, leucoderma scabies
42.	Kuthiraipadam				
43.	Ceylon pasalai				
44.	Servasugandhi				
45.	Pirandai	<i>Cissus quadrangularis</i>	Vitaceae	Vine	Digestive troubles, scurvy irregular menstruation,
46.	Prandai				
47.	Artemisia	<i>Artemisia absinthium</i>	Compositae	Flower head	Vermifuge, tonic in intermitent fever
48.	Artemisia	<i>Artemisia annua</i>	Compositae	Leaves & seed	Jaundice, skin disease
49.	Artemisia	<i>Artemisia nilgrica</i>	Compositae	Leaves	Aromatic, diuretic
50.	Java tea	<i>Orthosiphon stamineus</i>	Labiatae	Leaves	Kidney and bladder disease
51.	Karpura thulasi	<i>Ocimum kilimandchorigum</i>	Labiatae	Leaves, seeds	Carminative, diuretic, Blood pressure
52.	Perumseeragam				
53.	Sambal nochi				
54.	Marudondri	<i>Lawsonia alba</i>	Lythraceae	All parts	Jaundice, skin diseases, leprosy, burning of feet
55.	Serpagandi	<i>Rauwolfia serpentina</i>	Apocynaceae	All parts	Sedative, blood pressure
56.	Neelakodi velli	<i>Plumbago capensis</i>	Plantaginaceae	Root bark	Skin diseases
57.	Kattumilagu				
58.	Perumthulasi				
59.	Isabgol	<i>Plantago major</i>	Plantaginaceae	Seed husk	Constipation
60.	Lemongrass	<i>Cymbopogon flexuosus</i>	Graminae	Leaves	Stimulative
61.	Kalli				
62.	Karpooravalli	<i>Coleus aromaticus</i>	Labiatae	Leaves	Carminative, colic, urinary diseases
63.	Marunthu koorkan	<i>Coleus forskholii</i>	Labiatae	Root	Blood pressure and glaucoma eye diseases
64.	Venkodivelli	<i>Plumbago zeylanica</i>	Plantaginaceae	Root bark	Skin disease, leprosy
65.	Marikolundu				
66.	Nandiyavattai				
67.	Vettiver	<i>Vetiveria zizanioides</i>	Graminae	Roots	Refrigerant, stimulative
68.	Pudina	<i>Mentha arvensis</i>	Labiatae	Leaves	Carminative, stimulant, diuretic
69.	Modakathan				
70.	Senkeelanelli				
71.	Chenkodivelli	<i>Plumbago rosea</i>	Plantaginaceae	Root bark	Rheumatism, paralytic affections, syphitis, eprosy
72.	Maruvu	<i>Marjorna hortensis</i>	Labiatae	Leaves	Carminative, expectorant tonic to liver
73.	Nithyakalyani				
74.	Asthumakodi	<i>Tylophora asthmatica</i>	Asclepiadaceae	Leaves	Asthma, bronchial disorders
75.	Nagamalli	<i>Rhinacanthus communis</i>	Acanthaceae	Leaves	Antidote to snake bite, skin diseases
76.	Karisalnganni (Y)	<i>Eclipta alba</i>	Compositae	Leaves	Catarrh emetic, purgative
77.	Ruellea	<i>Ruellea elegans</i>	Acanthaceae	Leaves	Gonor, ear diseases
78.	Sage	<i>Salvia sclarea</i>	Labiatae	Seeds	Cure for eye diseases
79.	Vallarai	<i>Centella asiatica</i>	Umbelliferae	Leaves	Skin disease, leprosy, improving memory
80.	Kamamayil				
81.	Akarkarha	<i>Spilanthus acmela</i>	Compositae	All parts	Toothache, increase salivation mosquito larvicide
82.	Manatakkali	<i>Solanum nigrum</i>	Solanaceae	Leaves	Fever, eye diseases, liver problems, ulcer
83.	Kuppaimeani				
84.	Nerpavalam	<i>Coix lachryma</i>	Gramineae	Seeds	Tonic, diuretic and menstrual disorders
85.	Elumichan tulasi	<i>Ocimum gratissimum</i>	Labiatae	Leaves, seeds	Rheumatism, paralysis
86.	Bergamot mint	<i>Mentha citrata</i>	Labiatae	Leaves	Carminative, stimulant, diuretic
87.	Peppermint	<i>Mentha piperita</i>	Labiatae	Leaves	Carminative, stimulant, diuretic
88.	Spearmint	<i>Mentha spicata</i>	Labiatae	Leaves	Carminative, stimulant, diuretic
89.	Pepino				
90.	Wedelia (Karisalnganni ornamental)	<i>Wedelia calendulacea</i>	Compositae	Leaves	Tonic, alterative, skin diseases, uterine haemorage
91.	Achillea	<i>Achillea millefolium</i>	Compositae	Leaves	Stimulative, diaphoretic
92.	Ammanpatcharisi	<i>Euphorbia hirta</i>	Euphorbiaceae	Leaves	Bowel complaints, toothache, bronchial asthma
93.	Karisalai (W)				
94.	Dhavanam				
95.	Naai tulasi	<i>Ocimum canum</i>	Labiatae	Leaves	Headache, seminal weakness, expectorant bronchities
96.	Thulasi	<i>Ocimum sanctum</i>	Labiatae	Leaves	Expectorant, branchities, malarial fever

All plant parts were morphologically evaluated for colour, texture, and the appearance of disease symptoms on the plant. Each part of the infected plant viz. leaves, collar and roots were observed carefully to record the symptoms of the infection, colour & diameter of spots and changes in the morphological characteristics as compared to the healthy plants. The disease incidence viz., leaf spot, leaf blight, rust, wilt, powdery mildew and sooty mould, was observed in different medicinal plants during different stages of crop growth.

Disease incidences were recorded in fortnightly on 5 plants selected at random. The damage by leaf spot, leaf blight, rust, sooty mould, powdery mildew, and blight was assessed based on 0-9 scale.

Grade	Description	Leaf damage (%)
0	No symptoms on the leaf	0
1	Small spots	<1
3	Small spots scattered on the lamina	1-10
5	Lesions enlarging	11-25
7	Lesions coalescing with other lesions to form blighted patches	26-50
9	Leaf blighting due to spreading of lesions	> 51

For wilt disease, viral mosaic and leaf curling disease the percent disease incidence is assessed using the following formula,

$$\text{Per cent disease Incidence} = \frac{\text{Number of infected plants}}{\text{Total number of plants observed}} \times 100$$

### Result and discussion

In the current study, the occurrence of plant disease in selected 78 medicinal plants was studied in Horticultural Research Station, Yercaud and Pagalpatti village, Omalur block of Salem District, Tamil Nadu, India during 2015 to 2017, and the list of diseases are furnished in Table – 2 to 4. The medicinal plants which are selected to study the disease prevalence are listed by plant name, disease and incidence caused by fungi in medicinal plants. Some of the commonly observed diseases are Leaf spot, Powdery mildew, rust, Wilt disease and Leaf blight.

**Disease incidence of medicinal plants in field at HRS, Yercaud:** Observation on field experiment at HRS, Yercaud results revealed that, out of 96 plant species studied only 20 plant species were affected by various diseases viz., leaf

blight, wilt and leaf spot. A maximum of disease incidence viz., wilt (57.8%) in karunthulasi, leaf spot (19.1%) in vallarai and leaf blight (18.6%) in adathodai was recorded (Table 2).

### Disease incidence of medicinal plants in glass house condition at HRS, Yercaud

Observation on disease incidence of medicinal plants under glass house condition revealed that out of 96 plant species only 29 plant species were affected by various diseases viz., leaf blight, rust, sooty mould, powdery mildew and leaf spot. A maximum disease incidence viz., sooty mould (28.5%) in arvadha, leaf blight (21.4%) in insulin plant, powdery mildew (18.8%) in ammanpacharisi, rust (16.2%) in vasambu and leaf spot (14.1%) in nochi was recorded (Table 3).

### Disease incidence of medicinal plants in Pagalpatti, Salem district:

Under tropical field condition (Pagalpatti, Salem), three year observation on disease incidence of medicinal plants revealed that out of 82 plant species only 23 plant species were affected by various diseases viz., leaf blight, wilt, rust and leaf spot. A maximum of 30.4 percent leaf blight damage was recorded in perarathai followed by adathodai (27.0%) and insulin plant (26.2%). The leaf spot disease (9.3%) in maruthondrai, wilt incidence (5.0%) in Artemisia and rust (6.8%) in vasambu were recorded (Table 4). It is clear from the literature that there is a significant information on the incidence of fungal diseases on crop plants. Fusarium wilt caused by *Fusarium solani* on commercial field lavender was identified in China (Ren *et al.*, 2007). Several species of powdery mildew fungi have been recorded on rosemary (*Leveillula* spp.) from Europe and *Podosphaera fuliginea* from USA (Farr and Rossman, 2009)<sup>[6]</sup>. Powdery mildew on rosemary associated with *Golovinomyces biocellatus* in Asia (Park *et al.*, 2010)<sup>[9]</sup>. Zhai *et al.* (2013)<sup>[17]</sup> was first reported of leaf spots in Aloe vera caused by *Nigrospora oryzae* in China. Tamil Nadu and Karnataka states in southern India witnessed a severe outbreak of leaf blight, during 2008–2009 by the infection of *A. alternata* (Manjunath *et al.*, 2012)<sup>[8]</sup>. Fungal diseases also were reported on medicinal plants around the world. *Rhizoctonia solani* was identified as a leaf spot disease in Malabar nut (*Adhatoda vasica*) in India (Verma *et al.*, 2006)<sup>[14]</sup>. *Pithomyces chartarum* is known to cause leaf spot diseases of ashwagandha (*Withania somnifera*) in India (Verma *et al.*, 2007)<sup>[15]</sup>. *Macrophomina phaseolina* was found to cause root rot in medicinal coleus (*Coleus forskohlii*) in India (Kamalakaran *et al.*, 2005)<sup>[7]</sup>.

**Table 2:** Pooled mean of disease incidence under field condition at HRS, Yercaud

Sl. No.	Plant species	Disease Name	Disease incidence (%)			Mean (%)
			2014-15	2015-16	2016-17	
1	Stevia	Leaf blight	4.1-13.8	-	-	4.1-13.8
2.	Aloe vera	Leaf spot	3.3-14.8	5.2-9.0	3.1-6.1	3.8-9.9
3.	Karunthulasi	Wilt	21-57.8	-	-	21-57.8
4.	Adathodai	Leaf blight	5.6-16.6	6.1-20.6	-	5.8-18.6
5.	Nochi	Leaf spot	3.0-12.9	-	-	3.0-12.9
6.	Indian ginger	Leaf blight	17.2-20.6	5.9	-	11.5-13.25
7.	Marudondrai	Leaf spot	8.4-8.5	-	-	8.4-8.5
8.	Aswagandhi	Leaf spot	5.6-5.8	-	-	5.6-5.8
9.	Karisalai	Blight	4.8-13.5	-	-	4.8-13.5
10.	Kesavardhni	Blight	6.2-18.0	5.2-7.4	-	5.7-12.7
11.	Kothamalli	Leaf blight	7.0	3.4-.3.7	-	5.2
12.	Poduthalai	Leaf spot	8.9	-	8.8	8.8
13.	Marundukoorkan	Leaf spot	8.4	-	-	8.4

14.	Insulin Plant	Leaf blight	-	4.7-12.3	3.5-10.0	4.1-11.1
15.	Perarathai	Leaf spot	-	2.7-15.2	2.0-7.7	2.3-11.4
16.	Arrow root	Leaf blight	-	2.3-15.6	6.6-10.0	4.4-12.8
17.	Vallarai	Leaf spot	-	3.7-14.8	5.5-23.5	4.6-19.1
18.	Artimisia	Wilt	-	5.2-10.5	-	5.2-10.5
19.	Sitharathai	Leaf blight	-	-	5.5	5.5
20.	Beetle vine	Leaf blight	-	-	2.7	2.7

**Table 3:** Pooled mean of disease incidence under glass house condition (HRS, Yercaud)

Sl. No.	Plant species	Disease Name	Disease incidence (%)			Mean (%)
			2014-15	2015-16	2016-17	
1	Betel vine	Leaf spot	7.6	-	-	7.6
2.	Arrow root	Leaf blight	14.1-28.9	4.7-13.6	2.7-10.0	7.1-20.1
3.	Insulin	Leaf blight	11.9-30.1	7.6-16.3	7.2-17.9	8.9-21.4
4.	Coleus	Leaf blight	8.7	-	-	8.7
5.	Pudina	Blight	7.9-16.6	-	-	7.9-16.6
6.	Vasambu	Leaf rust	9.7-12.9	5.6-14.2	5.0-21.6	6.7-16.2
7.	Patchouli	Blight	8.9	-	-	8.9
8.	Stevia	Blight	8.3	7.0-9.6	-	7.6-8.9
9.	Arvadh	Sooty mould	9.5-28.5	-	-	9.5-28.5
10.	Tippili	Leaf Blight	6.7	5.8-9.5	2.2-3.8	4.9-6.6
11.	Servasugandi	Leaf spot	8.3	-	-	8.3
12.	Zimmu	Blight	7.0	-	-	7.0
13.	Poduthalai	Leaf spot	6.3	7.4-11.7	-	6.8-9
14.	Nochi	Leaf spot	5.7-13.8	8.5-14.5	-	7.1-14.1
15.	Aloe vera	Leaf spot	7.6	-	-	7.6
16.	Ramba	Blight	5.2	7.8	-	6.5
17.	Adathodai	Leaf blight	6.4-11.8	-	-	6.4-11.8
18.	Sitharathai	Blight	7.4	9.5-10.4	-	8.4-8.9
19.	Perarathai	Blight	6.8	-	-	6.8
20.	Vallarai	Leaf spot	8.7-12.6	4.7-12.3	-	6.3-10.1
21.	Manathakali	Powdery mildew	8.3-13.6	-	-	8.3-13.6
22.	Sambalnochi	Leaf spot	7.8	-	-	7.8
23.	Cinnamom	Leaf spot	3.0	-	-	3.0
24.	Periyankai	Leaf spot	-	6.2-7.0	-	6.2-7.0
25.	Pudina	Powdery mildew	-	6.1-13.4	5.5-7.2	5.8-10.3
26.	Ammanpacharisi	Powdery mildew	-	-	5.0-18.8	5.0-18.8
27.	Karpoorathulasi	Leaf blight	-	-	5.0	5.0
28.	Maruvu	Leaf blight	-	-	2.2-5.0	2.2-5.0
29.	Senkodiveli	Leaf blight	-	-	6.6	6.6

**Table 4:** Pooled mean of disease incidence under tropical condition (Pagalpatti, Salem)

Sl. No.	Plant species	Disease Name	Disease incidence (%)			Mean (%)
			2014-15	2015-16	2016-17	
1	Perarathai	Leaf blight	13.7-26.7	5.6-34.2	-	9.6-30.4
2.	Arrow root	Leaf blight	9.7-23.9	7.6-12.9	5.5-12.0	7.6-16.2
3.	Insulin plant	Leaf blight	18.0-27.2	6.4-31.6	5.0-20.0	9.8-26.2
4.	Kesavardhni	Blight	7.6-20.1	3.6-17.5	-	5.6-18.8
5.	Sirianangai	Blight	7.6	6.2	2.2-4.4	5.3-6.0
6.	Lavender	Leaf blight	8.6-15.4	-	-	8.6-15.4
7.	Artemisia	Wilt	5.0	-	-	5.0
8.	Zimmu	Leaf blight	7.6-19.5	3.2-5.6	2.2	4.3-9.1
9.	Pudina	Blight	7.2-14.2	-	-	7.2-14.2
10.	Akhrahara	Blight	7.4-19.2	-	-	7.4-19.2
11.	Vetiver	Blight	18.2	-	-	18.2
12.	Maruthondrai	Leaf spot	9.3	-	-	9.3
13.	Patchouli	Blight	6.8-18.3	3.9-20.6	-	5.3-19.4
14.	Tippili	Blight	6.7	7.4-13.4	2.2-13.8	5.4-11.3
15.	Pepper mint	Blight	6.5-18.7	3.8-4.7	-	5.1-11.7
16.	Vasambu	Rust	7.0	6.8	3.3-6.6	5.7-6.8
17.	Keelanelli	Blight	7.6	-	-	7.6
18.	Ramba	Blight	7.6-17.9	4.3-12.3	-	5.9-15.2
19.	Adathodai	Leaf blight	-	-	8.6-27.0	8.6-27.0
20.	Sitharathai	Leaf blight	-	7.6	3.3-5.5	5.4-6.5
21.	Coleus	Leaf blight	-	-	5.0	5.0
22.	Beetle vine	Leaf blight	-	-	1.1-4.0	1.1-4.0
23.	Seethilkodai	Leaf spot	-	-	5.0	5.0

## Conclusion

From the current investigate it was concluded that numerous pathogenic fungal species cause diseases to important medicinal plants in fields. The current research act as a basic platform and summarizes a detailed account of various severe diseases. The spreading of these fungal diseases on medicinal plants may causes setback to the industry associated with the formulation of its medicinal products. It is necessary to maintain the medicinal plants in gardens or nurseries by using biopesticides which can make the medicinal plants free from infectious fungal diseases.

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