



ETHNOBOTANY

A SURVEY OF SOME MEDICINAL PLANTS FOR FUNGAL DISEASES FROM OSMANABAD DISTRICT OF MAHARASHTRA STATE

S.P. Chavan^{1*} and S.L. Korekar²

¹Department of Botany, Chatrapati Shivaji College, Omerga Dist., Osmanabad (M.S.), India

²Y.C. College, Department of Botany, Tuljapur Dist., Osmanabad, (M.S.), India

Abstract

The present investigation was carried out in various Talukas of Osmanabad District, India during the years 2008 & 2009. In the present research we have selected commonly found and economically important three medicinal plants viz. *Aloe vera* (L.) Burm. f., *Datura metel* L. and *Withania somnifera* (L.) Dunal from various locations of Osmanabad District for the survey of fungal diseases. Plants were examined *In situ* for disease symptoms as well as samples being collected for laboratory analyses. Fungi were identified using morphological characteristics, and where necessary with molecular techniques. The survey resulted in a range of fungi identified from the target plants. Common diseases on all the three plants were leaf spots, leaf blight and leaf rust causes harmful effects on medicinal value of the plant parts. *Alternaria* spp. was attacked on *Aloe* and *Datura* leaf while *Cercospora withaniae* causes leaf spot diseases of *Withania*. Other fungi observed were *Fusarium solani*, *Aspergillus niger*, *Penicillium* spp., etc. These found to be very harmful for the medicinal uses of the plant parts and may be adversely affect to the body.

Keywords: Medicinal plants, health care, analyses, pathogen

Introduction

Medicinal plants traditionally occupied an important position in rural and tribal lives of India and are considered as one of the most important sources of medicines since the dawn of human civilization. Medicinal plants constitute the basis of primary health care for the majority of the population in India and are a critical source of income for rural population. Approximately 90% of the plants still collected from the forests. The primary aim of the present survey was to identify fungal diseases and pathogens associated with the selected medicinal plants of the Osmanabad district, India. The medicinal plant *Withania somnifera* Dunal is widely used in Ayurvedic medicine, the traditional medical system of India. It is an ingredient in many formulations prescribed for a variety of musculoskeletal conditions (e.g., arthritis, rheumatism), and as a general tonic to increase energy, improve overall health and longevity, and prevent disease in athletes, the elderly, and during pregnancy (Mishra, 2000). Many herbal drugs and drinks have been formulated from *A. vera* plants for the maintenance of good health (Davis and Moro, 1989). *A. vera* gel has been reported to be very effective for the treatment of sore and wounds, skin cancer, skin disease, cold and cough, constipation, pile, fungal infection etc. (Gill, 1992; Kafaru, 1994; Daodu, 2000; Djeraba and Quere, 2000; Olusegun, 2000). The use of *Aloe* plants in the treatment of other diseases such as asthma, ulcer and diabetes have also been reported (Davis and Moro, 1989). In cosmetic industries,

Aloe is used in the production of soap for bathing, shampoo, hair wash, tooth paste and body creams (Daodu, 2000). *Datura metel* L. is another important and widely available medicinal plant of this region. It has parasympholytic with anticholinergic property, it reduces secretion, and it is also an antidote in opium chloralhydrate (Jarald, 2006). These medicinally important plants are facing serious problems of the fungal attack. Various pathogens adversely affect the medicinal plant parts and decrease the medicinal value of the part. It may be harmful to the human body while using these infected parts as a medicine. So identification of the infected fungi is important.

Materials and Methods

Sample collection

Infected plant part (leaves, stem or root) were collected and placed into individually labeled plastic bags and sealed. The survey was not based on statistical methods but the examination and sampling of observed diseased sample.

Detection of mycoflora from different medicinal plant samples

The mycoflora was isolated by using standard moist blotter method (SBM) and Agar plate methods (APM)

Identification of fungi

The fungi occurring on all infected samples in the plates were identified preliminary on the basis of

* Corresponding Author, Email:

sporulation characters like sexual or asexual spores with the help of stereoscopic binocular microscope. The identification and further confirmation of fungi was made by preparing slides of the fungal growth and observing them under compound microscope. The identification was made with the help of manuals. Pure cultures of these fungi were prepared and maintained on potato dextrose agar (PDA) slants.

Results and Discussion

After two-year survey and identification of the pathogens by various methods, it was observed that the medicinal plant *Withania somnifera* was attacked by the leaf rust, leaf spot & root rot diseases. All the three diseases were found in rainy season while leaf spot disease caused by *Fusarium solani* was observed in winter as well as summer season. Leaf rust disease caused by the fungus *Aecidium withaniae*

was observed in winter also. These diseases may cause the adverse effect on medicinal value of the *Withania* plant. *Aloe vera* plant was affected by the leaf spot disease caused by the *Alternaria alternata*, *Fusarium spp.* in winter and rainy season while root disease caused by *Fusarium oxysporum* was found in all three seasons. Leaf spot disease of *Datura metel* caused by *Alternaria alternata* was found in all three seasons while seed spot disease caused by fungus *Aspergillus flavus* observed in only rainy season. It is clear from the results that most of the diseases were found in rainy season while in summer season less diseases occurred, it may happen because of favourable temperature and humid conditions. These affected plant parts may be less effective for the medicinal use and economic value.

Table 1. Fungal diseases of medicinal plants

Medicinal Plant	Disease	Seasons			Causal organism
		Summer	Winter	Rainy	
<i>Withania somnifera</i>	Leaf rust	-	+	+	<i>Aecidium withaniae</i> , <i>Mucor mucedo</i>
	Leaf spot	+	+	+	<i>Fusarium solani</i> , <i>Alternaria alternata</i> , <i>Aspergillus niger</i>
<i>Aloe vera</i>	Root	-	-	+	<i>Rhizopus solani</i>
	Leaf Spot	-	+	+	<i>Alternaria alternata</i> , <i>A.tenuissima</i> , <i>Fusarium Spp.</i>
	Root	+	+	+	<i>Aspergillus verocosa</i> , <i>Fusarium oxysporum</i>
<i>Datura metel</i>	Leaf spot	+	+	+	<i>Alternaria alternata</i> , <i>Curvularia cragrotidis</i>
	Seed spot	-	-	+	<i>Aspergillus flavus</i> , <i>Penicillium citrinum</i>

References

- Daodu, T. (2000). *Aloe vera*, the miracle healing plant. Health Field Corporation, Lagos, p. 36.
- Davis, R.H., Moro NP (1989). *Aloe vera* and gibbrellin, anti-inflammatory activity in diabetes. J. Am. Paediatr. Med. Assoc. 79(1): 24-26.
- Djeraba, A., Quere P (2000). *In vivo* macrophage activation in Chicken with acemannan, a complex carbohydrate extracted from *Aloe vera*. Int. J. Immunopharmacol. 22(5): 365-372.
- Gill, L.S. (1992). Ethnomedical uses of plants in Nigeria. University of Benin Press, Benin, City, p. 276.
- Jarald, E. E. (2006). *Datura metel*, Medicinal plants, cbs publication, New delhi, p.106-107
- Kafaru, E. (1994). Immense help from nature's work shop. Elikaf Health Service Limited, Lagos, p. 212.
- Mishra, L., (2000). Scientific Basis for the Therapeutic Use of *Withania somnifera* (Ashwagandha): A Review, Alternative Medicine Review 5(4), p.334
- Olusegun, A. (2000). One hundred medicinal uses of *Aloe vera*. Good health Inc. Lagos, p. 76.