



ISOLATION OF FUNGI FROM FRUITS OF *TRICHOSANTHES TRICUSPIDATA* LOUR. DURING STORAGE.

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ABSTRACT

Trichosanthes tricuspidata Lour. fruits are used as raw material for the preparation of some important drugs for curing various human diseases. During unscientific methods of storage of plant parts causing fungal contamination. The fungal contamination affect on the chemical composition of raw materials and thereby decrease potency of drugs. Regarding the above fact the present experiment was studied and concluded that the young fruits showed no incidence of fungi on Blotter Paper Method except *Curvularia lunata*. In case of stored fruits, the maximum incidences of fungi were reported as compared to young and mature flowers

KEYWORDS : *Trichosanthes tricuspidata*, fungal contamination, Isolation.

INTRODUCTION.

Trichosanthes tricuspidata Lour commonly known as Lal Indrayan. It grows as a large climber, often attaining a height of 9-10 meters. Fruits are used for the curing migraine, fever and diabetic (Snehlata et al., 2008). (Masoumeh and Deokule, 2013; Durakovic et al. 1989) suggested that medicinal plants may be associated with a broad variety of microbial contaminants, represented by bacteria, fungi and viruses. Inevitably, this microbiological background depends on several environmental factors and responsible for changing the quality of herbal products and preparations. The traditional methods of collection, storage and marketing coupled with humid climatic condition make them victim to the fungal contamination (Kumar et al., 2009) investigated that the moulds are responsible for biodeterioration of a number of substrates including raw materials of some medicinal plants. These moulds reduce raw herbal drugs shelf life and market value. Similarly (Muntanola, 1987 and Durakovic et al, 1989) found that the fungal contaminates has been reported to affect on the chemical composition of the raw materials and thereby decreases the medicinal potency of the plant material whereas mycotoxins produced by these fungal contaminants causes several ailments of respiratory organs, digestive tract, genital organs, muscular, skin, etc. (Pinkey, 2014) concluded that the unscientific methods of harvesting, collection, storage of raw materials, post harvest processing, transport and storage of herbal drugs in unhygienic conditions, are the main causes considered to make both, raw materials as well as herbal drugs prone to microbial infections leading to deterioration in safety and quality and can also cause health hazard to consumer in spite to cure the disease. Many researchers have reported that the presence of potential contaminants in herbal preparations viz. (Martins et al., 2001; Czech et al., 2001; Kulshrestha et al., 2008; Alwakeel 2008, Kosalec et al., 2009 and Idu et al., 2011). Similarly (Okunlola et al., 2007) noted that the manufacturers should ensure the lowest possible level of microorganisms in the raw material, finished dosage forms and the packaging components to maintain appropriate safety efficacy and quality of the natural products.

(Hamayun et al., 2004) studied and concluded that 60% of the population use herbal medicines prescribed by traditional practitioners due to non availability of medical health facilities in rural areas. 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 present investigation is an attempt to identify the mycoflora associated with the fruit of *Trichosanthes tricuspidata* Lour.

According to the WHO, about 80% of the population of the world depends on traditional medicine, mostly herbal remedies, for their primary health care needs. Moerman.(1996). 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. Hamayun et al. (2004) So present investigation is an attempt on the isolation of fungi from fruits sample of *Trichosanthes tricuspidata* Lour. during storage.

MATERIAL AND METHODS

1) COLLECTION OF PLANT MATERIAL.

Trichosanthes tricuspidata Lour. fruits were collected from different authentic stores of Jalna district in pre-sterilized polythene bags and brought to the laboratory. Samples were identified using the Flora of Marathwada Naik, (1998) at Department of Botany, Dr. Babasaheb Ambedkar Marathwada University Aurangabad. Stored flowers were inoculated aseptically on the sterilized petriplates containing Potato Dextrose Agar (PDA) Medium and Blotter Method incubated at 25±2°C temperature for 7 days.

2) ISOLATION OF MYCOFLORA.

Mycoflora was isolated by using Blotter Method and Potato Dextrose Agar (PDA) Medium.

3) IDENTIFICATION OF FUNGI.

The fungi occurring on plant material in the plates were identified preliminary on the basis of 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 Mukadam et al, (2006), (Alexopoulous, 1996; Barnett, 1970). Similarly confirmation of identification was made at Department of Plant Pathology Laboratory, Dr. Babasaheb Ambedkar Marathwada University Aurangabad. Pure cultures of these fungi were prepared and maintained on Potato Dextrose Agar (PDA) slants.

RESULTS AND DISCUSSION.

In order to study the different physical changes of fruits were observed after 6, 12, 18 and 24 months intervals during storage and results are summarized in the table 1. It is clear from table no. 1 that Spherical appearance of fruit was found in 6, 12, 18 and 24 months storage period while foul odor and breakable texture was found in fruit at 18 and 24 months storage period.

In order to study the percent incidence of fungi on fruits was studied and the results are summarized in table 2. It is clear from result that the young fruits showed no incidence of fungi on Blotter Paper Method except *Curvularia lunata* (05) whereas the six fungi were found when young fruits kept on PDA. In case of mature fruits, the Blotter Paper Method showed incidence of four fungi like *Alternaria*

alternata (05) *Aspergillus fumigatus* (10), *Mucor globsus* (10), *Penicillium notatum* (05), whereas PDA Method showed eight fungi viz. *Alternaria alternata* (15), *Aspergillus flavus* (10), *Aspergillus niger* (40), *Aspergillus fumigatus* (15), *F. oxysporum* (30), *Mucor globsus* (15), *Penicillium notatum* (10) and *Trichoderma viride* (15).

In case of stored fruits, the maximum incidences of fungi were reported as compared to young and mature flowers. In stored fruits, sixteen fungi were reported viz *Alternaria alternata* (30), *Aspergillus flavus* (40), *Aspergillus niger* (60), *Aspergillus fumigatus* (20), *Aspergillus nidulance* (40), *Aspergillus terreus* (15), *Curvularia lunata* (15), *Cladosporium sp.*(20), *Fusarium oxysporum* (55), *Fusarium roseum* (10), *Mucor globsus* (20), *Phoma sp.*(20), *Penicillium notatum* (15), *Rhizopus stolonifer* (40), *Rhizoctonia solani* (05) and *Trichoderma viride* (15) on PDA. whereas in case of Blotter Paper Method only twelve fungi were observed such as viz *Alternaria alternata* (05), *Aspergillus flavus* (05), *Aspergillus niger* (30), *Aspergillus fumigatus* (10), *Aspergillus nidulance* (10), *Aspergillus terreus* (10), *Curvularia lunata* (05), *Fusarium oxysporum* (10), *Fusarium roseum* (10), *Mucor globsus* (15), *Penicillium notatum* (05) and *Rhizopus stolonifer* (10).

Table 1. Physical changes in fruit of *Trichosanthes tricuspidata* under different storage period.

Parameters	Storage period (months)				
	Fresh	6	12	18	24
Appearance	Spherical	Spherical	Spherical	Spherical	Spherical
Color	Red with orange strip	Red orange	Yellow	Yellow	Black
Odor	Odorless	Odorless	Odorless	Foul odor	Foul Odor
Texture	Normal	Normal	Breakable	Breakable	Breakable

Table 2. Incidence of fungi on fruits of *Trichosanthes tricuspidata* from different age.

Fungi	Young		Mature		Stored	
	Blotter	PDA	Blotter	PDA	Blotter	PDA
<i>Alternaria alternata</i>	-	-	05	15	05	30
<i>Aspergillus flavus</i>	-	10	-	10	05	40
<i>Aspergillus niger</i>	-	10	-	40	30	60
<i>Aspergillus fumigatus</i>	-	05	10	15	10	20
<i>Aspergillus nidulance</i>	-	-	-	-	10	40
<i>Aspergillus terreus</i>	-	-	-	-	10	15
<i>Curvularia lunata</i>	05	05	-	-	05	15
<i>Cladosporium sp.</i>	-	-	-	-	-	20
<i>Fusarium oxysporum</i>	-	05	-	30	10	55
<i>Fusarium roseum</i>	-	-	-	-	10	10
<i>Mucor globsus</i>	-	-	10	15	15	20
<i>Phoma sp.</i>	-	-	-	-	-	20
<i>Penicillium notatum</i>	-	10	05	10	05	15
<i>Rhizopus stolonifer</i>	-	-	-	-	10	40

<i>Rhizoctonia solani</i>	-	-	-	-	-	05
<i>Trichoderma viride</i>	-	-	-	15	-	15

Sumanth et al. (2010) who isolated fungal genera from tested spices and found that the most common fungi isolated were *Aspergillus* spp. followed by *Alternaria alternata*, *Cladosporium*, *Curvularia*, *Fusarium* spp., *Helminthosporium* and *Trichoderma* show maximum incidence on Agar plate method. Roy, (2003) studied and concluded that the frequent occurrence of *Aspergillus*, *Fusarium* and *Penicillium* species on different crude herbal drugs. Santhosh et al. (2011) found that 41 endophytic fungi from 195 samples of healthy leaves and stem of a red listed endangered medicinal plant *Coscinium fenestratum*. The herbal preparations had the presence of fungal contaminants with predominance of *Aspergillus* spp. and *Penicillium* spp. The fungal deterioration adversely affects the chemical composition of the raw materials and thereby decreases the medicinal potency of herbal drugs, respectively, supporting the findings of present investigations. In general, fruits (young, mature) material showed decrease in the growth and incidence of fungi as compared with stored fruits material of *Trichosanthes tricuspidata*. It was found that both the Potato Dextrose Agar (PDA) Method and Blotter Paper Method are effective, routinely and consistently applicable and provide reliable results.

CONCLUSION.

The present study was aimed to isolate the fungi from fruit sample of *Trichosanthes tricuspidata* lour. during storage. In the stored fruits sample the maximum incidence of fungi was reported as compared to young and mature fruits. This study stresses the importance of scientific methods for proper storage of plant parts. Therefore this study suggests that the methods of harvesting, collection, preparing and storage of medicinal plants part must be improved for reducing percentage incidence of mycoflora and mycotoxins contaminations.

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