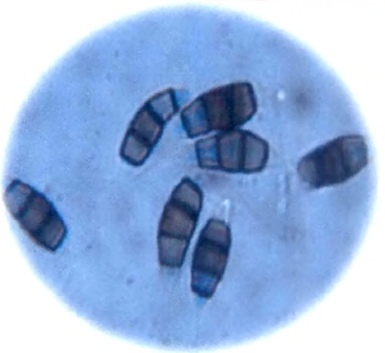
SUMMARY



Survey was conducted in Ratan Mahal WLS, Jambughoda WLS, Baria Division, Shoolpaneshwar WLS, Pavagadh forest area, for collection of diseases leaves of certain forest tree species. Isolation was done to find out associated leaf infecting fungi. Sixteen different types of leaf spot fungi were isolated from certain tree species.

From the leaves of *Tectona grandis* fungi like *Alternaria alternate, Fusarium pallidoroseum, Lasiodiplodia* theobromae, *Phomopsis tectonae, Thielavia subthermophila,* were isolated. From the leaves of *Terminalia arjuna Gloeosporium gloeosporoides, Pestalotiopsis disseminata* were recovered. From *Bambusa arundinaceae* leaves *Colletotrichium capsici, Curvularia prasadi, Drechslera rostrata, Melanconiopsis microspora, Pestalotiopsis maculans,* were isolated. *Fusarium roseum* was isolated from leaves of *Madhuca indica.*

Isolated different foliicolous fungi were maintained on PDA slants and identification was done on the basis of their morphological and cultural characteristics. Their pathogenicity trials of isolated fungi were performed to confirm the Koch's postulates

Physiological studies including effect of different culture media, pH, Temperature and utilization of sugars by certain foliicolous fungi were done.

Selection of Suitable Media

To record the variations in cultural characters (growth and sporulation), four selected fungi *i.e. L. theobromae Phomopsis tectonae, P. disseminata and P. maculans* were grown in 8 different culture media. All the four fungi showed maximum mycelial dry weight in Richard's medium followed by Czapek's media but sporulation was absent in two cases.

Sporulation of 4 fungi was better on Modified Asthana & Hawker's media 'A'. The growth was poor on host decoction and Coon's medium.

Effect of Temperature

Effect of different temperatures on growth and sporulation of 4 foliicolous fungi was observed. The fungi were grown at 9 different temperatures between 2°C – 40°C. Best growth and sporulation of *P. disseminata, L. theobromae* and *P. tectonae* were obtained at 20^0C and of *and P.* maculans at 30°C.

Effect of pH

Effect of different pH was observed on growth and sporulation of selected four fungi. Five different initial hydrogen ion concentrations were maintained. Modified Asthana and Hawker's medium 'A' was used as a basal medium. *P. tectonae, L. theobromae, P. disseminata* and *P. maculans.* showed maximum mycelial growth and very good sporulation at pH 6.

Utilization of Sugars

Chromatographic studies were undertaken to detect the utilization of mono, di and poly saccharides.

In *L. theobromae* sucrose, D-glucose, fructose was present upto 4 days and 10^{th} day Glucose & fructose was present in *Phomopsis tectonae* and in *P. disseminata.* On 14^{th} day sucrose was utilized completely in all the four fungi.

Rhamnose was utilized in 14 days by all four fungi but the spots became lighter in 12^{th} and 14^{th} day showing traces of sugars. In Raffinose the break down product was present upto 8 days. After 8 days only one sugar was prominent upto 15 days but in less concentration. In *P. tectonae* breakdown of sugar was at 8 days. After 14 days only one sugar was present while no growth was found in *P. maculans*

Effect of different Vitamins

Utilization of 8 different vitamins *i.e.* Thiamine, Pyridoxine, Riboflavin, Nicotinic acid, Folic acid, Ascorbic acid, Biotin, Cyanocobalamine was observed on 4 selected fungi.

The growth of *P. disseminata* and *P maculans*. was better in Folic acid, followed by Riboflavin and Nicotonic acid at all concentration.

In *P.* tectonae and *L. theobromae* growth was better in Biotin and Folic acid at all concentration followed by ascorbic acid and riboflavin. The inhibitory effect of Cyanocobalamine was observed on all four fungi at different concentrations. In vitamin thiamine there was decrease in dry weight of all four organisms at different concentration in compare to control sets.

Effect of different Nitrogen Sources

Utilization of Nitrogen compounds on all four fungus was observed. Peptone was a better source of nutrition for *P. disseminata* and *P. maculans*

Better growth of *P. tectonae* was recorded on Ammonium sulphate source. In *L. theobromae* Ammonium nitrate was a better source.

Phylloplane study of *Disopsyros melanoxylon* and *Madhuca indica*

Phylloplane studies were performed by three methods: direct observations, leaf washing method, cellotape method. Results indicated more number of viable fungi by serial dilution method. Fungi reported from *D. melanoxylon* and *M. indica* were *Aspergillus awamori, A. fumigatus A. niger, Cladosporium cladosporoides, Colletotrichum capsici, Curvularia lunata, Pestalotiopsis versicolor, Phyllactinia* sp., *Fusarium oxysporum, Rhizopus stolonifer.*

Biocontrol of foliicolous fungi by Botanical pesticides

Botanical pesticides were prepared by Soxhlet extraction method and tested by Poisoned Food technique. Best results were obtained in methanolic extract of *Cymbopogon martini* followed by *Withania somnifera* and *Alangium salvifolium, while Butea monsperma* and *Dalbergia sisso* leaf extract inhibited growth of fungi at higher concentration.

Percentage frequency occurrence showed *A. niger, P. citrinum , T. viride, Mucor hemalis, Rhizopus stolonifer* by dilution method in *M. indica*, while in *D. melanoxylon T. viride, Curvularia lunata, A. alternata, Pestalotiopsis* occurrence was more on phylloplane.

Conclusions