CHAPTER-6:
SUMMARY AND CONCLUSION
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10 Leguminous crops viz. Cajanus cajan L. (Arhar), Dolichos lab-lab L. (Sem), Glycine max L. (Soyabean), Vigna radiata L. (Mung), Vigna mungo L. (Urid), Lathyrus sativus L. (Teora) Pisum arvense L. (Chhota batra), Pisum sativum L. (Matar), Lens culinaris L. (Massoor) Trigonella foenum-graecum L. (Methi) have been selected for their phytopathological studies and the nutritional properties of the selected crops were evaluated.

• The folliculous necrotic fungi were isolated, identified and pure cultures were maintained on PDA slants for study and analysis of all parameters designed for the present research work. 17 different fungal pathogens were isolated from the leaves of ten leguminous crops viz. 5 isolates of Alternaria Spp., 2 isolates of Cladosporium sphaerospermum (LC) and 3 other pathogens as Glomerella cingulata (GM), Colletotrichum dematium (CD) and Fusarium semitectum (VM).

• Seasonal variations had a great impact on disease emergence. The infection varied from mild, moderate to severe. Maximum incidence and intensity of disease appeared with high humidity and moderate temperature conditions.

• Pot culture method was adapted to ensure Koch’s postulate for the pathogenicity test.

• Mineral composition of the selected host crops was determined using standard techniques.

• Richard’s broth medium, out of the five different broth media tested, served, as the most suitable medium for growth.

• Biochemical characteristics of isolates were studied with reference to sugar biomass ratio, protein, amino acids, organic acids and sugars and certain extra and intra cellular enzymes.

• Enzymological study of three extracellular enzymes viz. Cellulase (Cx), polymethylgalacturonase (PMG) and pectin methylesterase (PME) was done.

• Intracellular enzymes viz. acid and alkaline phosphatase (ACP) and alkaline phosphatases (AKP) were estimated.
• On the basis of biochemical and enzymological characterization of the isolates, it was evident plant pathogenic fungi exhibited a variable host range, which was manoeuvred through certain adaptive modifications at the molecular level being instrumental in their pathogenicity and pathogenesis which helped to elaborate the factors involved in their disease causing mechanism. This relative potential has been considered to denote the phytopathogenic abilities of the organisms.

• The disease protection experiments were done to find out the effect of different types of fungicides, antibiotics and angiospermic sources on all the isolates.

• Out of three antibiotics their effectivity could be equated as Blitox > Carbendazim + Manojeb > Antracol

• Similarly the fungicides activity could be represented as Grisofulvin > Teramycine > Norfloxacin.

• Amongst the angiospermic sources obtained for growth inhibition could be equated as Ziziphus jujuba L. > Carica papaya L. > Eugenia janbolana L. > Psidium guajava L.

The work can be summarized as

• Seventeen pathogenic organisms were isolated.

• Their pure cultures were maintained on PDA slant.

• Pathogenicity was proved by applying Koch’s postulate.

• Mineral analysis of host crops was done.

• Richard’s broth media was selected as basal medium for growth of all isolates.

• Biochemical test for sugar utilization, protein, extra cellular enzymes cellulase (Cx), polymethylgalacturonase (PMG), methylesterase (PME) and intracellular enzymes served instrumental to express the phytopathogenic abilities of the organism.

• Intracellular enzymes Viz. acid phosphatase (ACP) and alkaline phosphatases (AKP).

• Grisofulvin exhibited higher antimicrobial activity as compared to other antibiotics evaluated.
• Bblitox showed higher antimicrobial activity than other fungicides tested.

• *Ziziphus jujuba* was found to be more effective than other angiospermic sources.

**Conclusion**

• Rural and urban population of Chhattisgarh sustains economically on paddy cultivation. But since last few years legume crops are also cultivated here.

• Survey, screening and isolation of follicolous necrotic fungi from some common Kharif & Rabi crops of Chhattisgarh shall definitely contribute in the collection of base line data of legume plant diseases.

• Isolated pathogens of legume crops exhibited variation in host range which is clear from pathogenicity and pathogenesis.

• Pathogenicity test, growth and cultural characteristics will certainly manifest the disease incidence and helpful in deriving out the host pathogen relationships.

• Biochemical analysis of fungal pathogens, enzymological studies will help to assess the process of disease development and manifest the phytopathogenic abilities in them.

• Disease protection with the help of antibiotics, fungicides and angiospermic sources will aid to get healthy and disease free leguminous crops in Chhattisgarh.

• Nutritional analysis of the host crops was to explore out the importance of these crops for the consumers. Phytopathological investigations and disease protection of such measures nutritionally rich and easily cultivated crops shall immensely help to derive out healthy disease free crops

• The study is an attempt to create awareness towards protection of the leguminous crops of immense nutritive and medicinal values. The phytopathological investigations shall definitely contribute to produce and procure healthy crops of legumes.