CHAPTER - I

## -:- INTRODUCTION AND HISTORICAL ACCOUNT -:-

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INTRODUCTION :

Luttrell (1951) reviewing the evidence from the development of ascocarp, suggested that within the ascomycetes as a whole, the occurence of the unitunicate and bitunicate asci should be regarded as a criterion of the first order in establishing major divisions of such fungi. Later Luttrell (1955) proposed class Loculoascomycetes to accomodate the bitunicate series and Euascomycetes to include unitunicate series. Barr (1982) also pointed out that Ascomycetes and Loculoascomycetes are two large and separate classes and remarked that more developmental studies on fungi ... of tropical taxta are needed for confirming or redesigning the present system of classification and hypothesis on phyllogeny are needed. Even Luttrell (1973) remarked that there remains a number of Loculoascomycetes ... most of which occur in tropical and subtropical regions. These present the most difficult problems of the classification, chiefly because of the small size of their ascocarps and lack of study of their development.

Hence, I have undertaken taxonomic, cytological, developmental and cultural studies of Pringsheimia, Leptosphaerulina, Uncinula and Salmonomyces.

The dissertation submitted here covers in all five sections. Section I - reviews, historical account. Section II

deals with materials and methods. Section III covers taxonomy and Section IV covers cytological and developmental studies. Section V covers the summary and conclusions.

## R E F E R E N C E S


1. Luttrell, E.S. 1951 Taxonomy of Pyrenomycetae. Univ. Missouri Studies, 24 : 1 - 120.

2. Luttrell, E.S. 1955 The Ascostromatic Ascomycetes. Mycologia, 47 : 511 - 532.

3. Barr, M.E. 1982 The Ascomycetes connection. Mycologia, 75(1) : 1 - 13.

4. Luttrell, E.S. 1973 Loculoascomycetes in the Fungi. Academic Press, New York, Vol. 4 A : 148.


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HISTORICAL ACCOUNT :

Ascomycetous fungi have been studied on large scale by enthusiastic workers world over. These cover works of Salmon (1900), Harper (1905), Gaumann (1952), Yarwood (1957-1973), Golvin (1958), Hirata (1966,1968), Dennis (1968), Homma (1973), Luttrell (1973), Muller (1973), Arx (1974), Barr (1979,1982), Broun (1980,1981) and others.

But in India little investigations pertaining to the ascomycetous fungi were done (Kamat,1975) mainly because of the concentration and attention of Mycologists and Pathologists to the fungi responsible for the destructive diseases of crop plants than the fungi on other plants. During the last quarter of this century there had been spurt of activity in the study of this group. Madras School of Thought (Ramkrishnan and his colleagues), M.A.C.S. Lab. (Late Dr.Kamat and his students), Marathwada University (Tilak and his students), Delhi people (Tandon, Kapoor, Munjal and others) have greatly contributed to the understanding of this group in India.

Kamat (1962) has taken extensive review of historical account about the work done by pathologists and mycologists from 1900 - 1962. Later in year 1976 he has reviewed the work on Ascomycetes for the last 25 years covering the period 1962-1975. In all he points out following facts about the Ascomycetes

1) Saprobes in their ascigerous states have not attracted the attention of Indian Mycologists.

2) The study of the powdery mildew has been done only by workers like Narayanswami and K.Ramkrishnan from Madras and by Patwardhan, Damale and Tare from Maharashtra.
3) Erysiphaceous genera like Phyllactinia, Erysiphe, Uncinula and Salmonomyces were studied by Damale (1960), Tare (1955), Patwardhan (1966-b), Jagtap (1967) and Ponnappa (1970).
4) Patwardhan (1966) in his cytological studies in the powdery mildew fungi (Erysiphaceae) showed that the chromosome complements are the suggestive of relationship and evolutionary trends within the genus Phylloctinia; there may be two basic numbers (4 and 5 haploid) for this genus and resulting (8 and 10 diploid) is derived from them.

Pringsheimia is included in Loculoascomycetes, Luttrell (1973), Verona and Benedek (1970) have described this genus in detail while Dennis (1968) has treated it within it's British Ascomycetes.

Genus Pringsheimia has been reported on many dicot and monocot hosts from Maharashtra by Tilak and his associates (1965-1967) and Tilak and Rao (1965) have reviewed work on genus Pringsheimia. The genus Vestergrenia has been reported for first time from Maharashtra by Hosagoudar (1984).

The genus Leptosphaerulina was erected by Mc Alpine in the year 1902 to accomodate an ascomycetous fungus with bitunicate, saccate asci arising individually within central parenchyma and having ellipsoid hyaline to brown dictyosporus ascospores (Rao and Karan, 1964).

Grahm and Luttrell (1961) studied six species of Leptosphaerulina infecting the forage plants and they have enlisted morphological and pathogenical characters of them. They have provided a key to those six species.

From India Nayadu (1963) reported for the first time a species of Leptosphaerulina viz. L.arachidicola Yen Chen and Huag on Arachis hypogoea wild. This report was from Chittor (A.P.). Karan and Rao (1968) reported the occurence of the same species from Hydrabad (A.P.) on the same host plant.

A reference to the list of Indian fungi (Tilak and Rao 1968 and Rangaswami et al.,1970) showed that Karan (1984) have described three species of Leptosphaerulina viz. L.ricini Karan and L.brassicae Karan as two new species and L.oryzea (Miyke) Karan was proposed as a new combination.

Satya and Raj Lakshmi (1964) reported Leptosphaerulina trifolii (Rost.) Petr from India on three new host plants viz. Cassia obtusifolia L.C. tara L. and C.obsus L.

Pavgi and Singh (1965) reported L.briasiana (Poll) Graham and Luttrell on Cajanus cajan (L.) Mill sp. from Varanashi, (U.P.).

Ponnappa (1967 a,b) later reported the L.trifoli (Rost.) Petr. on two new hosts from Banglore, Mysore) viz. Passiflora leschnultii D.C. and Marsilea quadrifoliata L. Karan and Rao (1968) reported L.argentinensis Speg. on living leaves of

Boerhavia diffusa L. and L.australis McAlp. on other new hosts from Hydrabad (A.P.).

Naphade (1970) reported Leptosphaerulina for the first time from Maharashtra on Crotolaria juncea. Barge (1974) reported Leptosphaerulina alysicarpii and in its culture, he reported that the diameter of perithecia, length of asci and ascopores have always increased and the number of vertical septa has decreased in culture, only breadth of asci and ascospores and the number of transverse septa have always remained constant in both natural and cultured materials. So he has traced that only these criteria be used for differentiating the species within the genus Leptosphaerulina.

Yarwood (1973) has taken extensive review of Erysiphaceae and Hirata (1966) and Blumer (1967) have given comprehensive bibliography of this group. Robinow and Baker and Spigel (1973) and Olive (1973) have studied somatic nuclei and forms of mitosis and nuclear behaviour during mesiosis in fungi.

There is only one report of Uncinula on the host genus Sterculia and it is by Yadav (1963). This Uncinula has been accomodated in new species as Uncinula sterculia Yadav.

The genus Salmonomyces chiddarwar has been reported within India only from the locality of Maharashtra by Chiddarwar (1959) and Patwardhan (1966-a).

Indian work on Ascomycetes is mostly restricted to taxonomic studies and very little work is done on cytology, sexuality and developmental studies. So it was proposed to take up cytotaxonomical and developmental studies of Ascomycetous fungi in our laboratory.

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