CHAPTER-I

INTRODUCTION
Pteridophytes, so called seedless cryptogams comprising of ferns and fern allies still remain one of the enigmatic group of vascular plants. It is represented by about 305 genera, comprising more than 10,000 species all over the world. About 191 genera and more than 1000 species have been reported from India.

It is true that most of the human needs are met with the higher plants especially flowering plants. The pteridophytes are also useful to the mankind but their usefulness has been very rarely made to the public. It also plays a pivotal role in the structure and function of any ecosystem.

Even after centuries of work on phylogeny and classification, in 20th century the taxonomic work was continued along with cytology, morphology, anatomy and palynology.

The economic importance of ferns is well known. Theophrastus (327-287 BC) and Dioscorides (50 AD) had referred the medicinal attributes of certain ferns. Mention has been made by sushruta and charak regarding the medicinal uses of Marsilea minuta L. and Adiantum capillus-veneris L. in their samhitas (Singh, 1999) which reveal their importance since ancient time. The ferns had an important role in folk fore. These plants have been successfully used in the Aurvedic, Unani, Homeopathic and other systems of medicines as well as in the human history. However, a detailed scientific documentation is needed to
preserve the knowledge for posterity. Kirtikar et al., (1935) have
described 27 species of medicinal ferns, Nayar, (1959) recorded 29
medicinal ferns. Chopra et al., (1956) have included 44 species and
Nadkarni, (1954) recorded 11 species of pteridophytes having medicinal
importance.

Ferns are the least exploited group of plants in India, when
compared to other countries of the world. Phytochemical studies of these
plants are equally important while evaluating plant wealth of any region.
It is also not possible to determine the source of any economically useful
materials without any phytochemical study. The phytochemistry has been
studied in less number of non-flowering plants in contrast to flowering
plants. Phytochemistry is one of the more fashionable and rapidly
expanding areas of plant taxonomy (chemosystematics) which utilizes
chemical information to improve the classification of plants. The
phytochemical characters could be used as markers to identify and
differentiate the species. Phytochemical analysis of ferns makes the basis
for the investigations on medicinal uses of these plants. But the work on
phytochemistry of ferns is also found to be meager. In order to fill this
lacuna in the knowledge the present study is undertaken.

Leaves of ferns are typical and generally they bear the reproductive
structures. In some ferns the vegetative leaves at a later stage bear
reproductive structures and accordingly they are then called as reproductive leaves or sporophylls. In ferns, the sporophylls are similar to foliage leaves and are photosynthetic organs. As a departure from this generalization, is the production of sporangia in restricted regions, some portions becoming strictly reproductive and non-photosynthetic and as an extreme the entire leaf produces only sporangia which are produced on specialized structures, the sporocarps. This results in dimorphic condition i.e. sterile and fertile fronds. In some pteridophytes sterile and fertile fronds are different while some bear reproductive organs on modified leaves or on specialized structures. So it is interesting to know the phytochemistry of pteridophytes in these parts also. No work has been done on the phytochemistry of dimorphic pteridophytes. Hence in the present investigation it was thought worthwhile to study the pattern of phytoconstituents at vegetative as well as reproductive fronds resulting in dimorphism. Attempts have also been made to study the relationship of these phytoconstituents with the habitats of the dimorphic pteridophytes. For this purpose, the dimorphic pteridophytes were categorized according to their varied habitats and life forms into terrestrial, twinner, aquatic and epiphyte.