2. RESEARCH ENVISAGED

Nature has provided nearly 80% of all pharmacological and therapeutic lead compounds and the National Cancer Institute estimates that over 60% of the compounds currently in pre-clinical and clinical development in its laboratories are of natural origin. Thus, higher plants remain an important and reliable source of potentially useful chemical compounds not only for direct use as drugs, but also as unique prototypes for synthesizing drug analogues.

In view of the changing scenario towards utilization of medicinal plants coupled with newer techniques that are available for isolation, characterization and evaluation of bioactive molecules, a lot of emphasis is being given currently to the study of herbal drugs and folklore medicines. Substantial information is available about the folklore therapeutic uses and phytocomponents of orchids, however, very few have been explored of their potential. A large number of orchids are reported from India and some of them are integral part of Indian System of Medicine. These orchids, therefore, have good potential to be transformed to modern drugs and are strong contenders to be investigational candidates in any drug discovery programme.

Literature survey in the preceding section revealed that a number of bibenzyl derivatives are of common occurrence in orchids. These compounds are also reported from other plant sources and have exhibited wide spectrum of biological activities. Their occurrence in orchids and other plants is of chemotaxonomic and biological significance.

Ayurveda holds promise to transform ancient knowledge to modern drugs. *Malaxis acuminata* D. Don (syn. *Microstylis wallichii* Lindl.) is an important medicinal orchid of Ayurveda and Unani system of medicine known for over 3000 years by the name *Jeevak* or *Rishwak*. It is one of the prominent constituent of *Chyawanprash* and *Astavarga* (combination of eight herbs used as rejuvenating tonic). However, until now only one preliminary
Consider the popularity, potential, lack of work on biologically active constituents and pharmacological profile of the drug *M. acuminata*, it was decided to undertake the present work. The project aimed to isolate the phytoconstituents and validate traditional use of this drug. The preliminary investigations had indicated the presence of bibenzyls (stilbenoid derivatives) in this plant, so it was planned first to isolate and characterize them and then to synthesize a series of related bibenzyls to establish structure activity relationship. In order to validate traditional use of this plant, evaluation of antioxidant activity, which a tonic plant is expected to have, was first planned. It was further planned to subject the synthesized stilbenoids to antioxidant scrutiny. The antimicrobial investigations of the plant were thought to be carried out from the clue that some of the compounds of stilbenoid category are known antifungal resistance providing compounds of orchids. The plant was also planned to be investigated for general analgesic and anti-inflammatory potential.

In brief, the project was an attempt to investigate an important traditional age-old medicinal plant of Indian System of Medicine and to isolate its active constituents, which could have the potential to become a modern drug or serve as lead compounds in the drug discovery programmes. The project was planned to be accomplished in the following phases.

- phytochemical investigations of the plant material for the isolation of chemical constituents,
- investigations of the plant for antioxidant, antimicrobial, anti-inflammatory and analgesic activities,
- synthesize a series of stilbenoids and to evaluate their antioxidant potential.