

CONCLUSION

It was in June, 2008 when I joined The Molecular Genetics Laboratory, Department of Botany and decided to pursue my research work for PhD degree. The very first question was 'what to work on?'. I was determined to work on any economically important indigenous plant of North Bengal. After consulting my PhD guide and searching available literature I was convinced that virtually no work has been done on the various species and varieties of bamboos of North Bengal. Although this particular plant is widely used by the local people for various purposes including food, fodder, home decoration, building houses, making scaffolds and even for the last ride for making stature. Moreover, particularly the poor people extensively use bamboo for day to day activities. Thus, keeping this in mind I initiated my work with collection of bamboo samples from all the six districts and once considerable germplasm was obtained, I started working on

molecular documentation, micropropagation, assessing the therapeutic properties of bamboos encountered in North Bengal and finally compiled the information in a database. The extensive studies on the different aspects of bamboo resulted in the following outcomes.

1. The inventory resulted in documentation of 35 different species and varieties of bamboo under 13 genera from North Bengal, some of which have not been reported from India.
2. A high level of polymorphism was detected among the different accessions of bamboo using both RAPD and ISSR based analysis.
3. The PCR-RFLP study of TrnL-TrnF region of chloroplast genome though showed low level of polymorphism as compared to RAPD and ISSR analysis, but resulted in 26 GenBank accession numbers for 13 species (representative of each genus).

4. Exploration of 16S rDNA region of chloroplast genome using PCR-RFLP technique failed to show any polymorphism.
5. A protocol for successful *in vitro* micropropagation of *Dendrocalamus strictus* using nodal culture was standardized.
6. The study of somaclonal variation using both RAPD and ISSR primers revealed no genetic variability among the *in vitro* regenerated plantlets compared to the mother plant.
7. The study of antioxidant potential using different parameters like DPPH scavenging activity, ferric reducing power assay (FRP) and hydrogen peroxide scavenging activity showed that bamboo leaf had considerable amount of natural antioxidants. The polyphenol (phenol, flavonoid, flavonol and proanthcyanidin) content was also significantly high.
8. HPLC analysis of the aqueous extract of *Bambusa balcooa* leaf resulted in identification of three compounds i.e. gallic acid, rutin and β sitosterol.
9. The aqueous extract of *Bambusa balcooa* leaf was also found to have anti-diabetic effect.
10. Bambooinfoline- a database on North Bengal bamboos, thus created contains relevant information with respect to all the species documented.