



*Chapter - 6*



**SUMMARY**

1. A review of literature pertaining to this investigation has been presented which deals mainly with ethnobotanical study, biochemical, antimicrobial and antioxidant properties of the plant and hypoglycemic suppression.
2. Materials used in this investigation and experimental procedures followed have been discussed in details.
3. The entire work was divided into two phase. In the first phase the traditional knowledge about medicinal plants of the villagers was collected from the selected areas of the district and in the second phase detailed investigation of a few selected plants was carried out.
4. An ethnobotanical study has been carried out during 2005-2006 in the selected areas of Dakshin Dinajpur district (latitude  $25^{\circ}10'5''N$  and longitude  $89^{\circ}0'30''E$ ) of West Bengal.
5. The data were collected through repeated interactions particularly by the participatory rural appraisal method with the help of elder peoples especially tribal, using a structured questionnaire.
6. In the ethnobotanical study, the uses of 107 medicinal plants of 96 genera of 47 families have been found.
7. The information on scientific name along with family name, local name, part(s) used, uses and method of doses have been provided.
8. Plant specimens were collected from the study area and the herbarium specimens were prepared using conventional method. Identification of plant specimen was done with the help of literature and comparison with authentic specimens at Central National Herbarium (Cal) and North Bengal University Herbarium and the specimens were deposited to the North Bengal University herbarium.
9. The maximum numbers of plants used by the villagers for the diseases were dysentery, diabetes, stomach/ liver diseases, cold-cough, rheumatism, gynecological problems, male sexual problems, urinary tract infection etc.

10. For the treatment of diabetes plants used by the villagers were *Abroma augusta*, *Aegle marmelos*, *Cajanus indicus*, *Catheranthus roseus*, *Cinnamomum tamala*, *Coccinia cordifolia*, *Enhydra fluctuans*, *Ficus carica*, *Melia azadiracta*, *Mimosa pudica*, *Momordica charanta*, *Moringa oleifera*, *Murraya koenigi*, *Musa paradisiacal*, *Piper longum*, *Punica granatum*, *Scoparia dulcis*, *Syzigium cumini*, *Tamarindus indica*.
11. After analysis of investigated plant specimens, four plants viz., *Clerodendrum viscosum*, *Cinnamomum tamala*, *Moringa oleifera* and *Scoparia dulcis* have been selected for the detailed study.
12. The effectiveness of biochemical, anti-microbiological, antioxidant properties of the leaves of *C. tamala*, *C. viscosum*, *M. oleifera* and *S. dulcis* has been studied.
13. Preliminary phytochemical screening of *C. viscosum*, *C. tamala*, *M. oleifera* and *S. dulcis* revealed that the presence of active principles including alkaloids, flavonoids, tannins, saponins, cardiac glycosides, terpenoids.
14. Results revealed that steroid is present in *C. viscosum*, *C. tamala*, *M. oleifera* but absent in *S. dulcis*. Results also revealed that *C. tamala* contained the highest percentage crude yield of alkaloid while *S. dulcis* contained the lowest yield of alkaloid.
15. *M. oleifera* contained the highest amount of protein among the four studied leaves extracts and *C. viscosum* contained the least amount.
16. *M. oleifera* also contained the highest amount of total sugar while *C. viscosum* contained the least amount of total sugar. Again results revealed that leaves of *M. oleifera* contained higher quantity of reducing sugar; *C. tamala*, *S. dulcis* also contained moderate amount but *C. viscosum* contained the least amount.
17. *C. tamala* contained the highest amount of carotenoids followed by *M. oleifera* and *S. dulcis*.
18. Among the antioxidant capacities of *C. tamala*, *M. oleifera*, *C. viscosum*, *S. dulcis* studied highest quantity was detected in *C. tamala*.

19. *C. tamala* contained highest amount of ascorbic acid and phenol followed by *M. oleifera*, *S. dulcis* and the least amount was in *C. viscosum*.
20. Solvent extracts analyzed by UV-spectrophotometry showed maximum absorbance in the range 199-298 nm. None of the extracts showed antimicrobial activities except small inhibitory zone was observed against *Poria hybrunnea*.
21. For detecting the hyperglycemia in rats the parameters tested were fasting blood glucose, urine sugar, and glycogen content in liver tissue, TBARS and GSH of liver tissue.
22. The body weight of the diabetic rats decreased significantly after the treatment with STZ. The body weights of *C. tamala*, *M. oleifera* and *S. dulcis* treated groups increased significantly after the 20<sup>th</sup> day compared with control and diabetic control.
23. The results of urine test were positive (+++) in diabetic rats and amount of sugar was nil in *C. tamala*, *M. oleifera* and *S. dulcis* (250mg/kg) treated groups.
24. Diabetic rats treated with *C. tamala*, *M. oleifera*, *S. dulcis* showed a significant reduction in the fasting blood glucose levels within 20 days compared with the control groups.
25. Diabetic rats treated with leaves of study plants showed a significant increase in glycogen level of liver tissue. *C. tamala* treated group showed maximum increase and brought the level of glycogen near normal.
26. *S. dulcis* treated group exhibited the most significant TBARS lowering effect in liver tissue followed by *M. oleifera* and *C. tamala*.
27. There was a significant reduction in glutathione in liver in diabetic rats. Oral administration of *C. tamala*, *M. oleifera* and *S. dulcis* leaves extracts to diabetic rats significantly increased the liver glutathione to near normal.
28. Significant correlation was obtained between body weight increase in diabetic treated rats and other parameters like blood sugar, TBARS, glycogen and GSH.