CHAPTER – VI
SUMMARY AND CONCLUSION

The preliminary phytochemical screening of the ethanolic leaf extracts of *A. Sanderiana* revealed strong presence of tannins, flavonoids, phenols and steroids, moderate presence of glycosides. Trace amount of saponins, terpenes, carbohydrates and proteins are also present. Stem extracts revealed strong presence of tannins, moderate presence of flavonoids and phenols. Trace amount of saponins, terpenes, carbohydrates, proteins, glycosides and steroids are also present. Alkaloids and amino acids are not present in leaf and stem. Root extracts revealed moderate presence of tannins, trace amounts of glycosides, steroids, saponins, terpenes, alkaloids, flavonoids, carbohydrates, proteins and phenols. Amino acids are not present. When all the three plant parts are compared, leaf shows more potential than the stem and root. These activities may be due to the strong occurrence of polyphenolic compounds such as flavonoids, tannins, steroids, and phenols.

Antibacterial activities of ethanolic extracts of leaf, stem and root were analyzed against five clinically significant organisms viz. *staphylococcus aureus*, *escherichia coli*, *klebsiella pneumonia*, *pseudomonas aeruginosa* and *bacillus cereus* using disc diffusion method. The standard positive control showed inhibition diameter ranging from 26-28 mm (Gentamicin 10 μg) against the tested organisms. Leaf extracts (1000, 2000, 3000 μg/well concentration) were found to be effective in inhibiting the growth of *pseudomonas aeruginosa* compared with other bacteria. Stem extracts (250, 500, 750 μg/well concentration) were found to be effective in inhibiting the growth of staphylococcus aureus compared with other bacteria. Root

extracts (1000, 2000, 3000 μg/well concentration) were not found to be effective in inhibiting the growth of any bacteria. Compared to leaf and root, stem shows more inhibition against bacterial growth.

Antifungal activities of ethanolic extracts of leaf, stem and root tubers were analyzed against five clinically significant organisms viz. *fusarium solani, aspergillus fumigates, aspergillus terreus, rhizopus oryzae, candida albicans* using disc diffusion method. The standard positive control showed inhibition diameter ranging from 12-22 mm (Ketoconazole 10 μg) against the tested organisms. The test with different concentrations (1000, 2000 and 3000μg/well) of leaf extracts showed only the inhibition of *candida albicans* (21.67±0.58, 26.67±0.58, 30.00±0.58%) The test with stem extracts of different concentrations (1000, 2000 and 3000 μg/well) showed inhibition of *fusarium solani* and *candida albicans*. The test with different concentrations (1000, 2000 and 3000μg/well) of root extracts test shows inhibition of *candida albicans*, *aspergillus terreus* and *rhizopus oryzae*. Compared to leaf, stem and root tubers show more inhibition of fungal growth.

Among the three samples, leaf extract shows more antioxidant activity (DPPH and ABTS) than stem and root extracts. Comparing leaf, stem and root tubers extracts, the leaf extracts showed better reducing power than stem and root extracts. The reducing power of the extracts may be due to the biologically active compounds in the extract which possess potent donating abilities. From the present investigations, it is understood that the leaf extracts showed better antioxidant activity due to presence of various phytoconstituents and it could be a source of new compounds.

The IC_{50} values of in vitro proteinase inhibiting activity and protein denaturation activity are comparable with the standard aspirin. The IC_{50} values indicate that Ethanolic leaf extract show better anti inflammatory activity than the extracts of stem and root tubers.

Antidiabetic activity of *in vitro* α-amylase inhibiting activity (IC_{50} values) of leaf, stem and root tubers are comparable with that of the acarbose. *In vitro* α-glucosidase inhibition assay (IC_{50} values) of leaf, stem and root tubers is comparable with that of standard acarbose. Above two methods of antidiabetic activity (IC_{50} values) indicate that ethanolic extracts of leaf shows more *in vitro* antidiabetic activity then the stem and root tubers.

Total ash value is useful in determining authenticity and purity of a drug and also these values are important quantitative standards. Total ash value of plant material indicates the amount of minerals, and earthy materials present in the plant material. Analytical results showed the total ash higher value was 3.30% w/w in ethanolic root tuber extract of *alocasia sanderiana*. Percent weight loss on drying or moisture content of ethanolic leaf, stem and root tubers extracts is 63.69%, 73.35% and 75.63%. The less value of moisture content could prevent bacterial, fungal or yeast growth. Leaf ethanolic extracts have less value compared to stem and root tuber extracts. Ethanolic leaf extracts shows more antimicrobial activity. The higher amount of acid-insoluble siliceous matter are present in the tuber extracts *of A.Sanderiana* (0.95 w/w%). The water-soluble extractive value indicated the presence of sugar, acids, and inorganic compounds. The ethanolic root tuber extract has higher value of water soluble extractive values.

The compound ASL1 melting point is 164°C and showed positive response to Liebermann – Burchard's test and Salkowski's test. The most downfield signals at δ140 were assigned for sp^2 (olefinic) carbon at C-5 and the next downfield signal at δ138 ppm and 128 ppm to C-22 and C-23. The downfield signal at δ 121 is due to C-6. The oxygenated carbon at C-3 gave a downfield signal at δ78 ppm. The next downfield signal at δ56 ppm was due to C-17. Other carbon atoms of the steroidal skeleton except that in the side chain appeared in the range δ 45- δ 30 ppm. The angular methyl groups and the side chain methyl carbons gave signals in the region δ19- δ21 ppm. The compound ASL1 based on above date concluded that it's a Stigmasterol compound.

SUGGESTIONS FOR FUTURE RESEARCH

The outcome of the present study has opened the way for addressing several other research problems in the current scenario. There is a need for further investigation of this plant in following parameters using different solvents and *in vivo* methods.

- Antimicrobial activity
- Antioxidant activity
- Anti-inflammatory activity
- Antidiabetic activity
- Isolation of new compounds and its structure elucidation from stem and root tubers