Chapter 7
Summary
and
Conclusion
7. SUMMARY AND CONCLUSION

- Pharmacognostical and phytochemical analysis of *Inula cappa* confirmed authenticity of the plant as per previous reports.
- The results of extractive value in different fractions revealed that water extract of *Inula cappa* gives highest extractive value followed by methanolic extract.
- *Inula cappa* roots were found to contain phenolics as the main constituents. Other constituents include terpenoids and coumarins.
- Extract A of *Inula cappa* showed an antioxidant activity in four *in-vitro* and *ex-vivo* experimental models.
- Extract A also possessed a significant anti-inflammatory activity in both the acute and chronic inflammations. This anti-inflammatory activity of the extract may be mainly due to its ability to inhibit the synthesis of prostaglandins like most of the NSAIDS. In addition to that the free radical scavenging activity of the extract may also contribute to the anti-inflammatory activity of the roots of *Inula cappa*.
- Extract A also showed some immunomodulatory activity. It was not very effective in producing stimulatory effects on the immune system but was potent enough to bring back the immune response to normal.
- Extract A2 was also active in the various experimental models tried for the antioxidant and anti-inflammatory activity. It was found to be more active as an anti-oxidant but the activity was less as an anti-inflammatory agent. Extract A2 did not exhibit immunomodulatory activity.
- Extract A1 and A3 were inactive in all the models tried for the antioxidant and anti-inflammatory activity but they showed some evidence of the immunomodulatory activity.
- TLC fingerprint profile of Extract A, showed presence of 3 to 7 quenched bands under UV light at 254 nm, 4 to 10 bands under UV light at 366 nm and 4 to 11 bands after derivatization with anisaldehyde-sulphuric acid reagent in the six solvent systems tried ranging from non polar to polar.
- Six marker compounds viz., β-sitosterol, lupeol, α-amyrin, thymol isobutyrate and chlorogenic acid were identified and quantified in the roots of *Inula cappa*. 
Two compounds were isolated from the Extract A which may be responsible for the anti-inflammatory, antioxidant and immunomodulator activity of the roots. They were identified as germacrenolide and isoalantolactone with the help of UV, IR, EIMS and NMR spectra.

TLC densitometric quantification methods were developed for the estimation of both the compounds in the roots of *Inula cappa*.

It can be concluded that *Inula cappa* can be looked upon as a potential anti-inflammatory agent.

Further investigations are required for the active principles responsible for this particular activity.

The water soluble fractions should also be investigated for its immunomodulatory activity in detail.