Chapter-5

Summary & Conclusion

The present study was aimed to investigate biological properties of the selected medicinal plants viz. *D. sepiaria* and *M. elengi* and chemical profiling of the selected extracts. In the Introduction, the historical traditional uses of both the selected medicinal plants were discussed. Furthermore, the Phytochemistry and pharmacological activities of *D. sepiaria* and *M. elengi* were presented and summarized. Our primary objective was to obtain a complete biological and phytochemical screening of *D. sepiaria*, because the plant is not yet explored, even though it has traditional values. The *M. elengi* is widely used as anti-inflammatory agents, but there is fewer reports found on its activity, and no reports were found on its cytotoxic activity. Thus we aimed to study the anti-inflammatory and cytotoxic activity of leaf and bark extracts of *M. elengi* to further understand its potential use.

In Summary, the plants were extracted by soxhlet extraction technique in increasing polarity of the solvents. The crude extracts of *D. sepiaria* were screened for antioxidant, anti-inflammatory, cytotoxic, antihelmintic, antimicrobial and larvicidal activities, where in all the tested pharmacological activities the methanolic extract has shown activity several folds higher than other extracts. The extracts were also quantified for their total phenolic and flavonoid contents. Due to its promising nature, the methanolic extract was preceded for isolation of active metabolites using column chromatography. We have isolated and characterized five compounds from the methanolic crude extract of *D. sepiaria* leaves. By further characterization, we have concluded the isolated compounds were terpenoids and cyclitol: Quebrachitol, Beta amyrin, Stigmasterol, Quercetin, Pinitol. Furthermore, we have detected the presence of Quercetin, kaempferol, phytol, phthalic acid, palmitic acid by HPTLC & GC-MS analysis. The bioactivities of the isolated compounds were discussed. Further, the Quebrachitol was processed for *in silico* anti-inflammatory studies, which showed good docking score for COX-1 and COX-2, thus this compound can be further studied for *in vitro* and *in vivo* analysis. In addition we have reported for the first time, the biological activities and phytochemicals present in *D. sepiaria*
The *M. elengi* crude extracts of leaf and bark were screened for antioxidant activity, *In vitro* anti-inflammatory activity. Methanolic extracts has shown good activity and higher quantities of phenolics and flavonoids. Further the methanolic extracts of *M. elengi* leaf and bark were tested for their *in vivo* anti-inflammatory by carrageenan induced rat paw edema method, where the methanol extracts showed a dose dependent inhibition. Furthermore, the methanolic extracts were tested for its cytotoxic activity on cervical cancer cell lines, SiHa which showed promising results. We also performed the quantification of Caspase-3, which further proved that the cell death is due to apoptosis. Due to its promising nature, the methanolic extract of bark was preceded for isolation of active metabolites using column chromatography. We have isolated and characterized two compounds from the methanolic crude extract of *M. elengi* bark. By further characterization, we have concluded the isolated compounds were Lupeol, Epi-Quercitol. These compounds have been isolated using ethanolic extract of heart wood from this plant. Bioactivities of the isolated compounds were discussed.

In conclusion, the activities observed for *D. sepiaria* and *M. elengi* may be ascribable to the active compounds isolated. The present study could provide important preliminary data in order to help one to choose appropriate and significant biological and chemical investigations of plant extracts or isolated compounds with potential applications. Furthermore, a detailed study needs to be carried out to establish a novel drug formulation with least or no side effects.