ABSTRACT

The aim of the present study was to investigate the biological properties and to isolate and characterize biologically active compounds from leaves of *Drypetes sepiaria* and leaves, bark of *Mimusops elengi*. These plants were selected based on its traditional uses. A total of fourteen phytoconstituents were identified throughout the course of this work by HPTLC, GCMS and Column chromatographic studies. The work has been divided into four chapters.

The first chapter deals with the introduction and history of Phytochemistry followed by the back ground of the plants and the available literature on the selected plants. The second chapter deals with the materials and methods followed by extraction procedure of crude extracts such as petroleum ether, ethyl acetate, methanol, aqueous extracts.

The third chapter deals with the biological and chemical investigation of crude extracts of *Drypetes sepiaria*. The crude extracts were checked for its biological properties such as anti-oxidant assays (DPPH and ABTS radical scavenging assay, lipid peroxidation assay, β-carotene bleaching assay), anti - inflammatory assay (*in vitro, in vivo*), cytotoxic assay, quantification of caspase-3, anti-helminthic activity, acaricidal and insecticidal activity. From the results of above study we have concluded that methanolic extract has higher activity compared to all the tested extracts. Thus, methanolic extract was further screened for bio active chemical compounds. The comprehensive investigation of methanolic extract reveals the presence of two biologically important flavonoid compounds (Quercetin, Kaempferol) by HPTLC analysis. The GCMS studies resulted in the identification of terpenoids (di, tri) and cyclitols, along with acid esters. The methanolic extract on column chromatographic separation yielded five single compounds. These compounds were characterized by FT-IR, $^1$H, $^{13}$C, 2D NMR, Mass and single crystal XRD studies and identified as Quebrachitol, Stigmasterol, β-amyrin, Quercetin and Pinitol. All the compounds were identified as the novel compounds from this plant species.
The fourth chapter deals with the biological and chemical investigation of crude extracts of *Mimusops elengi*. Even though this plant is termed for its anti-inflammatory activity, there is less scientific investigation on anti-inflammatory and cytotoxic activities. Thus we have taken the leaves and bark extracts for the study. Initial studies proved that the methanolic extract of bark is more active when compared to other tested extracts. Thus methanolic extract on column separation ended up with two active molecules. These compounds were characterized by FT-IR, $^1$H, $^{13}$C, 2D NMR, Mass and single crystal XRD studies and identified as epi-quercitol and lupeol. The various bioactivities of the isolated compounds are discussed in the respective chapters.

These findings suggest that the traditional use of these plants is mostly justified. The activity of the methanolic extracts could be attributed to the presence of high content of phenolics, flavonoid and terpenoids content. The overall summary and conclusions of the thesis was constructed to be chapter-5.