Abstract

Pulverised bark material of *A. nilotica (Leguminoseae), P. roxhburghi (Pinaceae), Z. Jujuba (Rhamnaceae), A. modesta (Mimosaceae), M. elengi (Saptaceae)* were extracted with methanol. The crude extracts were then subjected to different assays such as: total phenolic content (TP), total flavonoid (TF), DPPH$^{\bullet}$ scavenging activity in addition to this enzyme inhibitory potential of crude extract against acetylcholinesterase was also carried out. Results showed that maximum DPPH inhibition and total phenolic contents were shown by *A.nilotica* with inhibition 95% and IC_{50} = 6.±1 µg and 715 mg gallic acid equivalent /g of extracts respectively. A strong correlation was observed in DPPH$^{\bullet}$ scavenging activity and total phenolic content. Total flavonoid content was calculated as catechin equivalent, *P. roxhburghi (Pinaceae)* showed minimum TF content i.e 682 mg CE /g. *M. elengi (Saptaceae)* was the plant which showed maximum inhibition against AChE with a value of 85% IC_{50}= 12 ± 1 µg. In addition to the above said activities the crude extracts were also subjected to acid hydrolysis. Three fractions of each plant were collected in different solvents such as: *n*-butanol, ethyl acetate and methanol. All these fractions were subjected to HPLC analysis using a RP C-18 column using an isocratic elution. Results showed the presence of rutin at retention time (4.053 min.), catechin (2.499 min.), quercetin (10.908 min.), vanillin (6.011 min.) and caffeic acid (4.053 min.)

Second part of the thesis is concerned with the synthesis of hyoscine derivatives. Hyoscine which is commonly known as scopolamine was isolated from *D.innoxia* (*solananceae*). Dried and pulverized aerial parts of the plant were extracted with methanol and the scopolamine was then isolated from crude extract by column chromatography. Five different structural alterations of this compound have been synthesized and identified by GCMS technique. Enzyme inhibition activity of all the synthesized derivatives was conducted against AChE. The results showed that all the structural analogues of scopolamine were potent enzyme inhibitors. The maximum activity was shown by scopolamine *N*-oxide with % inhibition = 89.9 ± 1.2 IC_{50} 37.4 ± 1.1 µM. The only derivative which was a hydrolyzed product showed a decreased activity with 37.3 ± 0.7 % inhibition.