CHAPTER 6

CONCLUSIONS

The thrust in the area of development of new benefits and alternative treatment for PUD is day by day increasing due to the several existing unavoidable side effects and limitations of currently available drugs. It can only be fulfilled by accepting the herbal approach. Nature always gave us a safe and better solution. Taking into consideration of this fact, an ethnobotanical survey was done among the tribal families in and around Agartala.

After through the study of filled format of the questionnaires and group discussion with the tribal people and medicine men, we came to know about a total of six such plants which were used since long by the Northeast tribes as food and as medicine. We mainly targeted those plants which are having therapeutic effect as gastroprotective or as anti ulcer. The plant *Paederia foetida* L. was chosen for the current study to evaluate the antiulcer potential on the basis of the outcomes of the ethnobotanical survey report. After the selection of the plant, the aerial part of the plant was collected from the tribal market of Agartala.

After the collection, authentication and extraction of leaf material by methanol, an effort was made to investigate the phytochemical profile of the extract. Qualitative chemical reaction revealed the presence of glycoside, alkaloid, steroids, volatile oils, tannins and terpenoids. The presence of the different metabolites supports its wide therapeutic use. Qualitative HPTLC analysis revealed the presence of β-sitosterol as one the constituent. GC-MS analysis followed by library search of non polar extract of the leaf and stem and hydrodistilled oil of the leaf revealed the presence of 57 compounds. Out of 57 compounds, 54 were identified for the first time and reported as volatile compounds of *P. foetida* by our study.

Qualitative standardization of the extract was carried out with respect to the two iridoids *viz.* asperuloside and paederoside. HPTLC technique for simultaneous estimation of these two iridoids (asperuloside and paederoside) was reported for the first time. The $R_f$ value of asperuloside and paederoside
was found to be 0.56 and 0.65 respectively. It was obtained as 0.12%\textit{w/w} asperuloside and 0.097\textit{w/w} of paederoside in the extract. The developed method was validated as per the guidelines of ICH, and it was found that the developed method is accurate, precise, linear, rugged, specific, simple and rapid. The method could be used for routine quality control of any polyherbal formulations that contain paederia as one of the ingredients. The method is very simple, easy and cost effective as compared to GC and HPLC.

Our standardized extract was further subjected to evaluate the anti ulcer potential. The anti ulcer activity of the plant extract was evaluated by \textit{in vitro} and \textit{in vivo} assay. The antioxidant potential of the fresh and dried leaf extract was evaluated by DPPH\textsuperscript* radial scavenging activity. The IC\textsubscript{50} value of methanol extract of fresh and dried leaf sample was found to be 40 µg/ml and 43µg/ml respectively. The extract also gave promising results for \textit{in vitro} \textit{H. pylori} activity against metronidazole sensitive and resistant strains.

The extract was screened for \textit{in vivo} anti ulcer activity by using four different animal models. In all the models the extract showed significant (**\textsuperscript{*}*p<0.001) protective effect. At last but not least the mechanism involved in ulcer protective action was confirmed by Western blotting of pylorus ligatures stomach tissue on the basis of \textit{in vitro} antioxidant activity. Western blot analysis revealed that the activity obtained due to the expression of antioxidant gene.

The result of anti ulcer activity was found promising and first time report on leaf which was found potential as compared to earlier report on stem. The study also provided scientific validation of traditional concepts of tribal of North East.