Chapter VI

Summary and Conclusion
The current study was aimed at evaluating the circulating levels of elastase, its inhibitors – $\alpha_1$-AT, $\alpha_2$-MG and NE in complex with $\alpha_1$-AT in infectious and non-infectious diseases. The data obtained indicated that all the diseases studied had significantly higher elastase activity which was almost two fold in comparison to controls. In dengue and preeclampsia, the levels of NE was associated with severity of the diseases. The findings highlights its importance in the progression of inflammation. This study also support the protective role of $\alpha_1$-AT as decreased levels were associated with complications of disease conditions. One of the salient features of this study was significantly decreased levels of $\alpha_1$-AT in diabetic retinopathy patients. This observation implicates that $\alpha_1$-AT could be a predictive marker of diabetic retinopathy. The other noteworthy observation is $\alpha_1$-AT reduction in viral infection in comparison to bacterial infection. The study has to be extrapolated to other viral infections to confirm the finding whether it is a feature in viral infections or otherwise.

The plasma concentrations of $\alpha_2$-MG showed different picture in different conditions with significantly high values observed in severe preeclampsia, stroke and pneumonia. In diabetes and dengue, levels were considerably decreased. Thus an associated decreased $\alpha_1$-AT in viral infection and increased $\alpha_2$-MG in bacterial infection could be add on parameters of differential diagnostic significance. The significantly elevated $\alpha_2$-MG levels in severe preeclampsia and stroke, both hypertension-associated diseases, suggest the possible involvement of this inhibitor in the complications associated these disorders for its implied role in coagulation. The data on NE - $\alpha_1$-AT complex was also diverse; diabetes with and without complications patients had significantly reduced levels and pneumonia and stroke patients had significantly elevated plasma concentration. Hence, data on the NE - $\alpha_1$-AT complex did not contribute much for drawing any conclusion or association.
The correlation studies indicated that the measurement of NE and α2-MG in pneumonia and NE and α1-AT in dengue could be of some relevance. Similarly the measurements of the levels of NE and α1-AT in diabetic patients particularly in retinopathy patients and NE and α2-MG in PE and stroke would be of relevance in diagnosis and prognosis in combination with other tests and clinical signs.

The first chapter provided background for extension of this study to assess the effect of glucose and homocysteine on elastase release from neutrophils in in vitro conditions. The results obtained clearly indicated that high glucose and homocysteine increased the release of elastase. The findings demonstrate that risk factors of diabetes and stroke activates neutrophils to release elastase and could bring in damaging effects leading to progressive disease conditions.