6. CONCLUSION

Medicinal plants are used in rural India to treat diabetes due to their traditional acceptability and availability. The plants are used as a crude extracts or as mixtures to treat diabetes. Plant extracts have their own importance and now being studied extensively due to having little or no side effects. Protein glycation takes place when elevated levels of reduced sugars react with amino groups in proteins, reaction known as Maillard reaction. If this process continues, it will lead to the formation of complex, often unstable, irreversible and reactive compounds “AGEs”, a process that may take weeks or even months to accomplish.

The present study demonstrates that presence of AGEs-induced IgG damage in type 1 and type 2 diabetes and hyperlipidemia. The study further purposes that in addition to IgG in serum concentration the quality of IgG molecule may not only be a crucial feature affecting its immunologic effects but also a risk factor as AGES damage in diabetic and hyperlipidemia patients. The present study also provided evidence to suggest that the glycation of isolated IgG from diabetes and hyperlipidemic patients lead to alteration in the conformational as well as the biological properties of IgG.

Further In present study Eulophia campestris and Eulophia nuda was selected and used to check the Maillard reaction inhibitory activity. Different combinations of glucose, protein and Eulophia campestris and Eulophia nuda extracts were made under in vitro conditions and their activity was monitored with trichloro acetic acid treatment method at 350 nm. Maillard reaction products/ AGESwere more with high glucose and high protein concentration and these were decreased by highest concentration of Eulophia campestris and Eulophia nuda extract i.e. 30 mg/mL or 300 μL. Lower concentrations of plant extract produced either no or least response against Maillard reaction.
Based on the above studies, the following conclusion can be drawn:

1. Glycation of immunoglobulin G (IgG) causes formation of advanced glycated end products (AGEs) via AGE intermediates leading to alteration in IgG structure.

2. Florescence studies showed AGEs directly damaged the tryptophan residues of IgG.

3. Ketoamines and carbonyl contents estimations confirmed the AGEs induced modification of IgG.

4. AGEs induced damage IgG showed the formation of thermodynamically more stable, high molecular weight aggregated products.

5. Total serum proteins and purified IgG from type 1 diabetes, type 2 diabetes and hyperlipidemia patients were found to be glycated as evident by the significant increase in carbonyl contents.

6. The aqueous extracts of *Eulophia campestris* and *Eulophia nuda* have potential role in management of type 1 diabetes, type 2 diabetes and hyperlipidemic patients.

In conclusion, India is a developing country with a large portion of people suffering from Diabetes Mellitus and its complications. A large portion of the population lives in rural sectors with poor health infrastructures. The high costs for therapeutic treatment has compelled physicians to look for alternative cost-effective methods to minimize complications associated with type 1 diabetes, type 2 diabetes and hyperlipidemic patients. Therefore, medicinal plants and their products are more convenient for the treatment of type 1 diabetes, type 2 diabetes and hyperlipidemic patients due to their easy availability, low cost, minimum side effects and greater acceptance amongst the users. This study indicated use of aqueous extracts of *Eulophia campestris* and *Eulophia nuda* exhibited anti-diabetic as well as hypolipidaemic effects in type 1 diabetes, type 2 diabetes and hyperlipidemic patients.