Detailed report on the Ph.D thesis entitled “Studies on the hypoglycemic, hypolipidemic and antioxidant properties of *Pithocellobium dulce Benth* fruit extract studied in streptozotocin induced diabetic rats”

I have carefully gone through the Ph.D thesis entitled “ Studies on the hypoglycemic, hypolipidemic and antioxidant properties of *Pithocellobium dulce Benth* fruit extract studied in streptozotocin induced diabetic rats” submitted by Mrs.S.Pradeepa, a Ph.D student of Dr.V.Kaviyarasan, Associate Professor , CAS in Botany, University of Madras, Guindy Campus, Chennai-25 and wish to submit my adjudication report as follows.

Research Scholar chosen a socially relevant topic for her research program. Diabetes is a multifactorial, multisystemic endocrine disorder and its incidence is alarmingly increasing worldwide. Though drugs are plenty for the treatment of diabetes, none is found to be ideal, due to undesirable side effects after prolonged use. Hence search for novel drugs especially from the medicinal plants continue for the successful treatment of diabetes.

*Pithocellobium dulce Benth* is a versatile medicinal plant widely used in the traditional system for the treatment of various ailments. The succulent fruits are rich in phytochemicals and used for the treatment of diabetes. The candidate has scientifically validated the beneficial as well as therapeutic effects of *Pithocellobium dulce Benth* fruits for the treatment of both primary and secondary complications of experimental diabetes in rats.

The qualitative phytochemical screening and HPLC analysis of the fruit extract revealed the presence of biological important secondary metabolites such as Quercetin, Rutin, Myricetin, Luteolin, Apigenin and Kaemferol which readily account for its pharmacological activities. The candidate has systematically evaluated the antidiabetic properties of the fruit extract by determining the fasting blood glucose, glycosylated hemoglobin, plasma insulin and C-peptide levels. Likewise, the hypo-lipidemic efficacy of the fruit extract was assessed by its ability to alter the individual components of lipid profile such as TC, HDL, LDL, VLDL and TG levels.

The role of hyperglycemia induced oxidative stress in diabetes is well studied and the candidate has presented and the effect of oral administration of fruit extract to STZ induced diabetic rats by estimating the levels of oxidative stress markers as well as the levels of both enzymatic and non-enzymatic antioxidants. The determination of antibacterial and antifungal activities using common pathogenic bacteria and fungi in terms of MIC and MBC revealed the antimicrobial activity of the fruit extract. Assay of pathophysiological enzymes such as AST, ALT and ALP and the histological observations made on the vital organs indicate the non-toxic as well as tissue protective nature of the fruit extract.

In conclusion, the studies are well planned and executed with modern techniques literature survey is adequate and the thesis is well written. The results are clearly presented in the form of tables, figures and graphs. The statistical analysis has been carried out to present the significance. The results obtained are adequate and the data obtained are discussed in the light of relevant available literature.

I wish to congratulate the student and the research supervisor for the excellent research work carried out.

Signature of the Examiner