INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Thesis Title: Antidiabetic Evaluation of Medicinal Plants *Dillenia indica*, *Solanum indicum* and *Solanum torvum* from North East Region of India

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SHORT ABSTRACT

We reported for the first time antidiabetic activity of medicinal plants, *Dillenia indica, Solanum indicum* and *Solanum torvum* on normoglycaemic and STZ-induced Wistar rats through the estimation of serum glucose level in the presence of the plant extract and compared with the hypoglycaemic effect of standard oral antidiabetic agent, glibenclamide. Phytochemical analysis of the three plant species were carried out to determine the presence of alkaloids, glycosides, saponins etc and involvement of these phytoconstituents in their pharmacological activities. The acute toxicity studies and *in vitro* cytotoxicity studies were carried out to establish the safety profile of the plant species. Furthermore, the antioxidant activities of the plant species were measured on the basis of the scavenging ability of stable DPPH free radical so as to determine their radical scavenging effects and their relationship of these effects to the pharmacological effects of plant species. Biochemical analyses of the plant extracts were also done to determine their effects on various biomarker enzymes, serum triglycerides and cholesterol level and their involvement in the pharmacological activities of the plant species. Here, we reported for the first time antidiabetic activity of methanolic fruit extract of *Dillenia indica, Solanum indicum* and leaf extract of *Solanum torvum*. The plant species have radical scavenging effects which may be important in the reducing oxidative stress associated with diabetes. The plant species caused significant reduction in the serum triglycerides and low density lipoprotein cholesterol which are the risk factors in the pathology of diabetes. The methanolic fruit extract of *Dillenia indica, Solanum indicum* and leaf extract of *Solanum torvum* have been shown to contain many bioactive constituents including phenolics, flavonoids, alkaloids, glycosides and saponins which have been linked to free radical scavenging and antidiabetic effect of the plant species. The plant species have also been shown to lower the elevated level of hepatic biomarker enzymes such as aspartate aminotransferase and alanine aminotransferase, suggesting their protective role in the hepatic damage caused by the action of STZ.