

A Clinical Study on the Anti-Diabetic Effect of an Indian Fruit *D. Indica*

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Abstract: Non-communicable diseases have been rising steadily in India and are second only to communicable disease in terms of their contribution to the disease burden. Amongst the NCDs, the prevalence of Diabetes mellitus has been rising at an alarming rate. Diabetes mellitus is a clinical syndrome characterized by hyperglycemia due to absolute or relative deficiency of insulin. People with diabetes have an increased risk of developing many serious health problems. Consistently high blood glucose levels can lead to serious diseases affecting the heart and blood vessels, eyes, kidneys, nerves and teeth. In addition, people with diabetes also have a higher risk of developing infections. Despite tremendous progress made into the understanding of the etiopathogenesis, diagnosis and management of diabetes mellitus an efficient, cost effective drug for long term management of diabetes remains elusive. Because of the limitations in the presently available oral hypoglycemic agents the use of alternative therapies that can manage diabetes efficiently and safely is now encouraged amongst the scientific community. Open non-comparative trial was done with powder of the trial drug *D. indica* to explore and study its efficacy in the management of diabetes. The effect of the drug *D. indica* on the Fasting Blood Sugar (FBS) is found to be statistically highly significant in each follow up ($P < 0.001$). In case of Post Prandial Blood Sugar (PPBS) with the mean difference had increased gradually from 180 ± 5.6 to 168.45 ± 12.1 and 155.9 ± 16.7 at 8, 16 and 24 weeks of treatment, respectively. The results of the therapeutic trial showed that the trial drug *D. indica* was very effective in controlling the blood glucose level. The result of the RCT proves that use of plant based anti-diabetic agents can be very valuable to manage diabetes mellitus and its complications

Description: Diabetes mellitus (DM) is a chronic metabolic complication related with the incidents of glucose intolerance and hyperglycemia. Chronic hyperglycemia effects in reduced insulin deficiency and flaws in the action of insulin with a increasing loss of beta-cell function or both and it is concomitant with long-term harm and impairment in the function of various tissues and organs like the eyes, heart, blood vessels, kidneys, and nerves. DM is related with pancreas and insulin secretion, it may disturb when the pancreas does not produce (type 1 diabetes) enough amount of insulin (a hormone, which controls the blood sugar level) or when the body does not use (type 2 diabetes) enough quantity of insulin produced by the pancreas. Diabetes is a chronic and complex disease connecting multiple morbidities that needs the attention of various health care providers or facilities. It is one of the world's main health difficulties and expected that it would be the top seven leading cause of death in the next ten years. A total of 422 million adults have been reported worldwide with diabetes in 2014 and there is a huge difference compared to 108 million in 1980. The prevalence of diabetes in the adult population has developed closely double since 1980, increasing from 4.7% to 8.5%. In 2012, 1.5 million expiries were reported from diabetes. The numbers of diabetic cases and its prevalence have been growing extensively from the earlier few years. Elevated blood glucose levels caused an additional 2.2 million death by

increasing the risk of cardiovascular disease and related complications. Diabetes and its related complications increase the overall risk of a fatal death. The possible difficulties include kidney failure, liver dysfunction, heart attack, stroke, vision loss, and nerve damage. Thus, diabetes care is complex and needs several issues, beyond glycemic control, to be addressed. Diabetes and its associated complications bring about extensive financial forfeiture to people with diabetes and their relations, and to health systems and national economies through direct medical costs and loss of work and pays. Although there are numerous drugs which can switch high blood glucose level in diabetes, none of them are fit to reduce organ damage associated with diabetes. Again, some of the drugs show severe hypoglycemia and cause additional difficulties. Therefore, there is an crucial need to look for an alternate therapy, particularly natural products which could be a useful for the very early stage of diabetes, like prediabetes and attenuate the disease progression and its pathophysiology.

Herbal plants are the richest foundation of drugs in India from prehistoric times. Herbal drugs are useful for mankind in treating various diseases. Plants play a very significant role in the life of several animals and humans and act as the backbone of all forms of life on Earth. There are approximately 800 medicinal plants that have been stated worldwide for their antidiabetic action and used as herbal home medicines or as the remedy of grandmother. Though extra than 400 species with hypoglycemic action were reported before, investigation of new antidiabetic drugs from natural plants is still outstanding. Newly, discovered several medicinal plants surround various substances with unique beneficial properties on diabetes and its related difficulties. Most of the plants contain various active constituents like alkaloids, terpenoids, flavonoids, glycosides, and polyphenols, which often composed have an antidiabetic effect. Additional, investigation and authentication of traditional knowledge should be fortified for finding a better therapy to treatment for diabetes. Now, in the present appraisal, we are successful to converse the use of *Dillenia indica*, an Indian traditional plant, in diabetes and its possible for antidiabetic therapy in the future.

***Dillenia indica*: Its Traditional Use**

Dillenia indica is most commonly known as elephant apple. This plant has some other names as signified. This plant is classified systematically in various subclasses, division, and family giving to the botanical scheme it goes to the family *Dilleniaceae*. It is the most auspicious herb of the Assamese cuisine. The pulp of the fruit is useful on the scalp to cure dandruff and hair fall, and the sepals of this plant have been recycled from ancient times to treat stomach disorders. It is one of the herbs that was extensively used in the tribal areas of Northeast India with Assam. The plant can also be initiate in other countries like Bhutan, China, Sri Lanka, Indonesia, Malaysia, Myanmar, Nepal, the Philippines, Thailand, and Vietnam. Medicinal usages of this plant were defined in dissimilar ancient texts like Yajurveda, Charka Samhita, Sushruta Samhita, Rajanighantu, Matsya Purana, Agni Purana, and Flora of China.