

DILLENIA INDICA L. USES AS A PREVENTION OF DIABETES: A REVIEW**Zufeshan Naznin* and Arun Kumar**

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ABSTRACT

This review paper mainly based on the importance of *Dillenia indica* L. (Elephant Apple) its common name is Chalta belongs to family *Dilleniaceae*. The plant is evergreen and about 15 m tall. *D.indica* contain many bioactive compounds and may have high medicinal value. Its plant part like fruit, leaves, bark, root uses by the tribal people for medicinal purposes. For example: Anti-cancer, Anti-diabetic, diarrhoea, hairfall, wound healing, fever, jaundice, Analgesic, anti-inflammatory, anti-microbial, anti-oxidant, etc. This review emphasises the use of *D. indica* plant parts as a control of diabetes.

KEYWORDS: *Dillenia indica* L., Anti-cancer, Anti-diabetic, jaundice, diabetes.**INTRODUCTION**

Engler classified plant as following (Metcalf & Chalk, 1983)

Kingdom : Plantae
Division : Phanerogamae
Subdivision : Angiosperm
Class : Dicotyledonae
Subclass : Polypetalae
Order : Dilleniales
Family : Dilleniaceae
Genus : *Dillenia*
Species : *indica* L.^[1]

An ethnomedicinally important plant *D.indica* is used for various diseases.^[2] When blood glucose level is higher than normal level, this elevated glucose in blood is called diabetes. Insulin deficiency can lead to chronic hyperglycaemia due to beta-cell dysfunction. Increase level of glucose affecting various tissues and organs like eyes, heart, blood vessels, kidneys, and nerves. These conditions may affect health and quality of life. To maintain normal blood glucose level in blood is very important and avoid risks of preventing damage of organs.^[3]

Herbal plants are the source of various drugs and contain various phytochemical constituent like primary and secondary metabolite. Some phytochemical constituents are beneficial for in treating various diseases in human and animals.^[4] One of the beneficial herbs known as *Dillenia indica* has been used by the tribes since ancient time. It is found in wild forest. Plant derived crude drugs gives extreme benefits with negligible side effect as compared to synthetic drugs. Present review highlight

the beneficiary properties of *D.indica* and may contribute in the treatment of diabetes.^[5] Diabetes mellitus (DM) is a chronic metabolic disease. If diabetes is not treated on time then it can lead to death. Due to DM electron transport chain not function properly causes formation of reactive oxygen species (ROS), and ultimately oxidative stress, which causes damage to the cells.^[6]

Types of diabetes

There are mainly two types of diabetes

Type 1 diabetes & Type 2 diabetes.

Type 1 diabetes: In type 1, the pancreas does not make insulin, because the body's immune system mistakenly attacks and destroy the beta cell of pancreas that make insulin^[7] What is the reason behind this autoimmune attacking and destroying of beta cell is not clear. There may be genetic and environmental reason both.

Type 2 diabetes: In type 2, the beta cell of pancreas makes less insulin than used to, and body get resistant to insulin.^[8]

Symptoms of diabetes

- Excessive thirst
- Frequent urination
- Cardiovascular disorder
- Blurry vision
- Kidney damage
- Stroke
- Liver dysfunction
- Slow healing wounds.^[9]

Phytochemical properties

D.indica plant have good therapeutic properties. The leaf, bark and fruit of this plant is used traditionally as medicine.^[10] Crude extract of *D. indica* leaves possess triterpenoid and flavonoids. Insite of these, plant also contain Glycosides, Steroids, Flavonoids, Saponins, phenolic and reducing sugar.^[11] Methanolic extract of fruit possesses higher phenolic and flavonoid content. Vitamin c is also found in fruit of *D.indica*. Fruits are effective against hyperglycaemia and hyperlipidaemia and oxidative stress. So, the fruits have high therapeutic values and can be used in the treatment of diabetes. By the use of methanolic extract of fruit, enhance the level of antioxidant enzyme and protecting the cell and organs from damage, through providing beneficial effect against diabetes.^[12]

CONCLUSION

We all know that herbal plant contains many bioactive compounds. This compound uses as a medicine without any side effect. Herbal medicine uses as an alternative to conventional diabetes treatment. *D.indica* lowers the blood glucose level and can help to understand its therapeutic potentials.

Further studies are needed, so that more and more people can get benefit from the use of this plant. It is important to note that herbal medicine is useful but it should be use on the advice of medical practitioner.

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