



Research Highlight

Pongamia pinnata; A Medicinal Plant to Treat Diabetes Mellitus

Abhay Subhash Morajhar

Department of Zoology, KET'S V.G. Vaze College,
University of Mumbai, Mulund, 400081,
Mumbai, India

Diabetes Mellitus (DM) is an emerging alarming threat that deteriorates human health globally. It has been reported that diabetes mellitus is a devastating disease that is responsible for many disorders and it could escalate into the global pandemic by 2030¹.

A chronic disease DM is caused by inherited or acquired shortage in insulin secretion as well as by reduced response of the organs to secreted insulin². It can significantly affect vital organs of the body including the heart and liver.

The liver plays a crucial role in the regulation of carbohydrate metabolism because it utilizes glucose as a fuel. This major function of the liver makes it susceptible to diseases in subjects with metabolic disorders, chiefly diabetes³.

A variety of oral hypoglycemic agents are available in the market to treat diabetes mellitus, but unfortunately, there is no complete treatment available for this until now. Moreover, due to the side effects of synthetic drugs on human health, demand for anti-diabetic natural products is amplifying these days⁴. Over 1000 different

plants have been reported for the traditional treatment of diabetes. Furthermore, these plants possess potent medicinal properties plus these are easily accessible and pocket-friendly as compared to conventional drugs⁵.

Pongamia pinnata is a potent option in this regard. It is a species of tree in the pea family and possesses well-known free radical scavenging characteristics. To date, few data are available regarding the effect of *Pongamia pinnata* on lipid metabolism as well as hepatic enzymes that get severely altered in Diabetes.

Accordingly, new research was conducted to study the hepatoprotective effect of *Pongamia pinnata* stem aqueous as well as an alcoholic extract by employing different biochemical parameters from serum and liver histopathology as compared to standard drug metformin⁶. For this purpose, scientists selected 100 rats as on batch containing 36 Swiss Wistar albino male rats as experimental animals and divided them into six groups. Diabetes was induced in rats by injecting intraperitoneally alloxan monohydrate at a dose of 150 mg kg⁻¹. Afterward, diabetic

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rats received aqueous as well as alcoholic extracts of *P. pinnata* stem at a dose of 28 mg kg⁻¹ b.wt. orally, daily for 3 months.

During this experiment, in diabetic rats, the serum glucose, Serum Glutamate Pyruvate Transaminase (SGPT) as well as Serum Glutamate Oxaloacetate Transaminase (SGOT) and bilirubin levels were found to be considerably amplified while total protein and albumin levels got reduced as compared to the control group. Moreover, much recovery was noticed in all the parameters with aqueous and alcoholic extract of *Pongamia pinnata*. However, alcoholic extract proved to be more effective in comparison with aqueous extract.

At the end of this experiment, it was concluded that the treatment of diabetic rats with *Pongamia pinnata* exerts a significant hypoglycemic effect along with hepatoprotective effect. Additionally, these findings suggest that *Pongamia pinnata* protects and enhances liver function in diabetic rats.

In a nutshell, this experiment proved that *Pongamia pinnata* is a very good medicinal plant that has a therapeutic potential to treat diabetes mellitus.

REFERENCES

1. Hossain, P., B. Kowar and M. El Nahas, 2007. Obesity and diabetes in the developing world-A growing challenge. New Eng. J. Med., 356: 213-215.
2. Matsui, T., T. Tanaka, S. Tamura, A. Toshima and K. Tamaya *et al.*, 2007. α -Glucosidase inhibitory profile of catechins and theaflavins. J. Agric. Food Chem., 55: 99-105.
3. Rigobelo, E.C., 2011. Diabetes-Damages and Treatments. Croatia, USA.
4. Zhou, J.Y., S.W. Zhou, S.Y. Zeng, J.Y. Zhou, M.J. Jiang and Y. He, 2012. Hypoglycemic and hypolipidemic effects of ethanolic extract of *Mirabilis jalapa* L. root on normal and diabetic mice. Evid.-Based Complementary Altern. Med., Vol. 2012. 10.1155/2012/257374
5. Marles, R.J. and N.R. Fransworth, 1994. Plants as sources of antidiabetic agents. Econ. Med. Plant Res., 6: 149-187.
6. Morajhar, A.S., B. Hardikar and B. Sharma, 2015. Hepatoprotective effects of crude extracts of *Pongamia pinnata* in alloxan induced diabetic albino wistar rats. Int. J. Zool. Res., 11: 37-47.