

## News &amp; Comments

## ***P. curatellifolia*: A Potential Remedy for Insulin-Resistant Type 2 Diabetes**

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The long-term microvascular (neuropathy, retinopathy, and nephropathy) and macrovascular (coronary artery disease and cerebrovascular disease) effects of prolonged hyperglycemia are the hallmarks of type 2 diabetes mellitus, a chronic metabolic condition of insulin production or insensitivity. Diabetes is the leading cause of blindness, heart attacks, kidney failure, stroke, and lower limb amputation, and its incidence has increased alarmingly from 108 million in 1980 to 422 million in 2014. *Parinari curatellifolia*, *Momordica charantia*, and *Eugenia jambolana* are three examples of such plants with medicinal benefits, some of which include blood glucose and low-density lipoprotein reducing activities, anticancer anti-Snake venom, and anti-hypertensive qualities.

The objective of this investigation is to assess the anti-diabetic and antioxidant properties of *Parinari curatellifolia* stem bark extract (SBEPC) on sucrose-induced Type 2 diabetes in *D. melanogaster* (fruit-fly).

The Drosophila Laboratory and the Molecular Biology Laboratory of the University of Jos at Nigeria's Africa Centre of Excellence in Phytomedicine Research and Development (ACEPRD) conducted this work. The Department of Pharmacognosy at the Faculty of Pharmaceutical Sciences developed a herbarium specimen, which was then deposited there. *Parinari curatellifolia* fresh stem bark was air-dried at room temperature until completely dry, then it was ground into a coarse powder. Young flies of two to three days old were removed from stock vials under a light cold anaesthetic and divided into five groups of fifty flies (both gender). The diet contained concentrated *P. curatellifolia*, which was given to the flies. One-way ANOVA and multiple t-tests of GraphPad Prism version 7 were used to statistically evaluate the data.

The climbing method was used to evaluate the flies' locomotor function. The capacity to ascend toward the light and other activities was shown to be impaired in diabetic flies (negative geotaxis). The total thiol content (a measure of oxidative stress) of the diabetic flies was dramatically reduced ( $p < 0.05$ ) by the *P. curatellifolia* extract when compared to the control. The early appearance of L3 and adult flies in the treated groups indicates that the diabetic group's life cycle from egg to adult flies was longer than that of the treated group. The longevity of *D. melanogaster* was affected by doses of 0.5, 1, 2, and 4 mg of the *P. curatellifolia* extract, and all of these concentrations resulted in survival rates of more than 80%. The significance of this study is to support the use of *P. curatellifolia* stem bark extract by practitioners of complementary and alternative medicine. This study also demonstrated the extract's



safety and its potential to treat various Type 2 diabetic consequences, including deficiencies in neuromuscular function and fecundity.

The use of *P. curatellifolia* in the treatment of Type 2 diabetes by practitioners of traditional medicine is supported by science and is one of the applications of this study. We conclude that the ethanolic extract of *Parinari curatellifolia* stem bark prevented the development of type 2 diabetes in *Drosophila melanogaster* and reversed the neuromuscular abnormalities. Additionally, type 2 diabetic fly growth and development were significantly improved by *P. curatellifolia* extracts. Overall, *P. curatellifolia* extract has been shown to have antioxidant and anti-diabetic effects on type 2 diabetes in *D. melanogaster* (fruit- fly).

#### **JOURNAL REFERENCE**

Omale, S., J.C. Aguiyi, O.G. Adekunle, T.O. Johnson, S.O. Ochala, M.A. Etuh and M.C. Eze, 2021. Evaluation of the antidiabetic effects of the stem bark extract of *Parinari curatellifolia* (Planch. ex Benth.) in *Drosophila melanogaster*. *J. Pharmacol. Toxicol.*, 16: 9-21.

#### **KEYWORDS**

*Parinari curatellifolia*, insulin-resistant, type 2 diabetes, *Drosophila melanogaster*, glucose oxidase, antioxidants, acetylcholinesterase

