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Antidiabetic and Antioxidant Potential of Aqueous Extract of Jasminum humile Leaves in Nicotinamide/Streptozotocin induced Type-2 Diabetes Mellitus (T2DM) Rat

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Abstract : Jasminum humile commonly known as yellow Jasmine or Pili chameli, is a medicinal plant used in Ayurveda for treating various diseases, one of which is diabetes mellitus. The current study aimed to establish the antidiabetic and antioxidant properties of aqueous extract of Jasminum humile leaves (AEJHL) in nicotinamide/streptozotocin induced type 2 diabetic rats. Phytochemical screening, HPLC analysis, and acute toxicity study of AEJHL were carried out. Male albino wistar rats (n=42) were divided into seven equal groups. Rats with moderate diabetes having hyperglycemia (blood glucose 250-400 mg/dl) were taken for the experiment. Various concentrations of aqueous extract of Jasminum humile leaves (50, 100, 200 and 300 mg/kg, p.o.), and glibenclamide (1mg/kg, p.o.) were orally administered to diabetic rats for 45 days. The effect of AEJHL on blood glucose, plasma insulin and biochemical parameters such as hemoglobin, total protein, serum creatinine, serum urea, alkaline phosphate, Glutamic-oxalacetic transaminase (SGOT) and glutamic-pyruvic transaminase (SGPT), as well as total cholesterol, triglycerides, and high-density lipoprotein (HDL) were also studied. The antioxidant effect of AEJHL was determined by analyzing hepatic and renal antioxidant markers, like superoxide dismutase (SOD), catalase (CAT), reduced Glutathione (GSH), Glutathione peroxidase (GPx), and lipid peroxidation (LPO) in diabetic rats. After 45-days oral administration of aqueous extract of Jasminum humile leaves significantly ($p<0.05$) reduced blood sugar and increase plasma insulin level and also reverse all above biochemical parameters and antioxidant enzyme level at dose dependent manner. These findings provide in vivo evidence that the aqueous extract of Jasminum humile leaves possess significant antidiabetic and antioxidant potential in nicotinamide/streptozotocin-induced type-2 diabetes mellitus in rats.

Keywords : antidiabetic, antioxidant, jasminum humile, nicotinamide/streptozotocin,type-2 diabetic
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