

Antidiabetic Activity of *Vincarosea* Extracts in Alloxan-Induced Diabetic Rats

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Abstract

The present study was carried out to evaluate the antidiabetic activity of Vincaroseamethanolic whole plant extracts in alloxan induced diabetic rats for 14 days. The methanolic whole plant extract at high dose (500mg/kg) exhibited significant anti-hyperglycemic activity than whole plant extract at low dose (300mg/kg) in diabetic rats. The methanolic extracts also showed improvement in parameters like body weight and lipid profile as well as regeneration of β -cells of pancreas in diabetic rats. Histopathological studies reinforce the healing of pancreas, by methanolic Vincarosea extracts, as a possible mechanism of their antidiabetic activity:

Introduction:

Diabetes mellitus is one in every of the common metabolic disorders with micro-and macrovascular complications that ends up in vital morbidity and mortality. it's thought-about on of the five leading causes of death at intervals the world .In modern medication no satisfactory effective medical aid remains offered to cure DM . there's increasing demand by patients to use natural merchandise with medicinal drug activity due to due to related to the utilization of secretion and oral hypoglycemic agents .There are varied ancient healthful plants reportable to possess hypoglycemic properties like garlic (Garlic), tree (Neem), periwinkle (Nayantara), genus Trigonellafoenum (Fenugreek), gourd (Bitter ground), asterid dicot genus santum (Tulsi). many of those are less effective in lowering aldose levels in severe polygenic disease. (Apocynaceae) could even be a herba-ceous subshrub in addition mentioned as periwinkle,periwinkle , or Lchnerarosea worldwide. it's cultivated within the main for its alkaloids, that ar having tumor activities. The 2 classes of active compounds in genus ar alkaloids and tannins. Periwinkle produces quite 100 monoterpenoids indole alkaloids (TIA) in different organs. The leaves and stems ar the sources of dimeric alkaloids, vinacristine and periwinkle plant spinoff that ar indispensable cancer drugs, whereas roots have drugs, ajmalicine and curving .

Used traditionally in various regions of the planet along with Asian country, archipelago in addition as country to manage polygenic disease .The leaves ar acknowledged to contain 100 and fifty vitalanti hyperglycemic and hypotensive activity of the leaf extracts (hydroalcoholic or dichloromethane-methanol) are reportable in laboratory animals .Fresh leaf juice of C. roseus has been reportable to chop back aldohexose in ancient and alloxan diabetic rabbits.

Leaves and twigs of periwinkle ar reportable to possess symptom activity in streptozotocin elicited diabetic rats throughout this study the prolonged effect (up to 14 day) of the methanolic extracts of

whole plant of periwinkle in abstinence aldohexose (FBG) and chemical science parameters like bodily fluid total alcohol (TC), LDL, HDL, creatinine, urea, and alkaline protein were studied. Therefore on the upper than truth no study has been administered on methanolic extracts of whole plant of periwinkle in alloxan elicited diabetic rats.

Thus this study could be a trial to work out the medicinal drug activity of whole plant of the periwinkle the essential material of periwinkle Linn whole plant used for the investigation was get from Mount Opera Garden, near to Ramoji Film city, Nalgonda Dist, state , India. The plant are usually notable honest-to-god by department of botany analysis analysis (Botanist) Anwar-ul-loom faculty of Pharmacy, Hyderabad. the full plants were collected and shadow dried.The shade-dried whole plants were subjected to pulverization to urge coarse powder. The coarsely powder whole plant (1 kg) of periwinkle Linn was used for extraction with fuel in soxlate instrumentation. The extract was vaporish to waterlessness beneath vacuum and dried in vacuum desiccator (15.5% w/w). Animals. Wistar mortal rats (8–10 weeks) of every sexes were obtained from the animal house of Nizam Institute Of Pharmacy, Deshmukhi, Ramoji Film city, Hyderabad.Before and via the experiment, rats were fed with traditional diet (Gold Moher, Lipton Asian country Ltd).

Once organisation into various groups and before initiation of experiment, the rats were acclimatized for a quantity of seven days beneath traditional environmental conditions of temperature, ratio , and dark/light cycle. Animals drawn as abstinence were bereft of food and water for sixteen hours impromptu. Rats were divided into six groups containing six animals in each cluster. Clusteri accustomed be unbroken as vehicle management that received baseball Tween eighty p.o., cluster II received aldose entirely, cluster III received methanolic extract 300 mg/kg, cluster IV received methanolic extract 5 hundred mg/kg and cluster V and VI received entirely extracts (300 mg/kg and 5 hundred mg/kg) entirely throughout a vehicle, severally. The rats of cluster III and IVwere loaded with aldose (3 g/kg, p.o.) unit of your time once drug administration.

Blood samples were collected from punctur-ing the retro orbital sinus merely before drug administration, and 30, 90, 100 and fifty minutes once loading aldose. bodily fluid aldose level was measured right away by victimization aldose estimation kit (Span Diagnostic Pvt.Ltd.periwinkle at the dose vary of 1 hundred mg–2000 mg/kg were administered orally to different cluster of rats comprised of ten rats in each cluster. Acute toxicity determined per the setup of action of Litchfield and Wilcoxon., five groups of rats, six in each received sequent treatment schedule. Whole plant extracts and traditional drug glibenclamide (5 mg/kg) and saline were administered with the assistance of feeding tube. cluster I perform ancient management, that received saline for fourteen days.

cluster II to cluster V ar diabetic management rats.

cluster III to cluster V (which previously received alloxan) are given a tricky and fast dose whole plants extract (300 mg/kg, p.o), (500 mg/kg, p.o) and traditional drug glibenclamide

Rats were created diabetic by one intraperitoneal injection of alloxan hydrate (150 mg/kg).

Alloxan was first weighed separately for every animal per the load then solubilized with zero.2 millilitre saline (154 metric linear measure NaCl) merely before injection.

two days once alloxan injection, rats with plasma aldose levels of >140 mg/dl were basted at intervals the study.

Treatment with plant extracts was started forty eight h once alloxan injection.

Blood samples were drawn from tail tip of rat at weekly intervals till absolutely the upper of study (i.e., 2 weeks).

Fasting blood sugar estimation and weight measurement were done on day 1, 7, and 14 of the study. blood sugar estimation are often done by one touch electronic glucometer using glucose test strips.

On day 14, blood was collected from retro-orbital plexus under mild ether anesthesia from overnight fasted rats and fasting blood glucose was estimated. Serum was separated and analyzed for serum cholesterol, serum triglycerides by enzymatic DHBS colorimetric method, serum HDL serum LDL, serum creatinine, serum urea

and serum alkaline phosphatase hydrolyzed phenol amino antipyrine method was estimated. the entire pancreas from each animal was removed after sacrificing the animal and was collected in 10% formaline solution, and immediately processed by the paraffin technique. Sections of 5 μ thickness were cut and stained by haematoxylin and eosin (H & E) for histological examination.

Statistical Analysis. All the values of weight, fasting blood glucose, and biochemical estimations were expressed as mean \pm standard error of mean (S.E.M.) and analyzed for ANOVA and post hoc ergo propter hoc ergo propter hoc ergo propter hoc ergo propter hoc ergo propter hoc ergo propter hoc Dunnet's t-test. Differences between groups were considered significant at $P < .01$ levels.

Conclusions:

The whole plant extracts didn't show a uniform effect on normal blood glucose levels but it effectively reversed the alloxan-induced changes within the blood glucose level and thus the beta-cell population within the pancreas. It also showed a protective effect when it had been given before alloxan administration. The action of whole plant extracts on the pancreatic beta-cells and absence of acute toxicity may offer a replacement hope to the diabetics in future.

From the above discussion it conclude that alcoholic whole plant extracts of periwinkle at high dose (500 mg/kg) exhibited significant antihyperglycemic activity than whole plant extract at low dose (300 mg/kg) in alloxan-induced diabetic rats. These extracts also showed improvement in parameters like weight and lipid profile also as regeneration of β cells of pancreas then could be useful in diabetes treatment. Further investigation is in necessary to work out the precise phytoconstituents (s) liable for antidiabetic effect.