Open Access Research Article

ISSN: 2349-9818
May - June 2025, Vol. 12 (3), 42-58

Tropical Journal of Pharmaceutical and Life Sciences
(An International Peer Reviewed Journal)
Journal homepage: http://informativejournals.com/journal/index.php/tjpls

Phytochemical Screening and Antidiabetic Activity of Aerial Part of *Justicia Gendarussa*

Jayshree Aate* and Rakesh Kumar Jat

Institute of Pharmacy, Shri Jagdishprasad Jhabarmal Tibrewala University (SJJTU), Rajasthan, India

ARTICLE INFO:

Received: 11th May 2025; **Received** in revised form: 22nd May 2025; **Accepted:** 14th June 2025; **Available online:** 27th June 2025.

Abstract

The Justicia gendarussa is found in china in folklore medicines and native to china but it is found in India thoughout the country.The plant aerial part and leaves are utilized as antibacterial, Anthelmintic, anti-inflammatory, anti-arthritic activity, analgesic, female contraceptives and in constipation. The current study is done on treatment of diabetes mellitus with various herbal plants of Maharashtra region. First of all, their acute toxicity studies are performed and the diabetes in induced in rats with alloxan and streptozotocin in laboratory. Alloxan induced diabetes is similar to type I diabetes due to deficiency of insulin in the body because of no release of insulin and type II diabetes is studied on the basis of hyperglycemia or obesity or over eating of the patients. These are treated with different plant extracts and comparison is done with standard antidiabetic drug. Diabetes is very dangerous disease at time because this is very powerful at the time of old age for digestion of food and other material that are essential for life. The gas can be completed by finding ayurved herbal medicine as well as allopathic medicines and their benefits and side effects.

Keywords: *Justicia gendarussa*, Antidiabetic Activity, Toxicity,

Introduction

Medicinal plants are major a part of traditional medicinal system in developing countries for infectious diseases are known to be treated with herb alkaloids are one among the foremost divorcees groups of secondary metabolites found in living organisms and have an array of structure type, biosynthetic pathway and pharmacological activities, bioactive constituents and diverse pharmacological activities.

Novel techniques and methods are used for extraction and isolation of active constituents. Newer methods like microwave ovens are used for heating purposes which are fast and less time consuming gas compared to other old and traditional method. The reaction should be monitored through thin layer chromatography for isolation of active constituents. There are lots of medicines that are directly obtained from the plant for treatment of hypertension, diabetes, obesity, heart failure, anxiety, seizures, schizophrenia, parkinsonism and other diseases. Diseases like pectoris, cardiac arrhythmia, hypertension, diabetes mellitus, hyperlipidaemia are life threatening disease that can damage heart and blood vessels and also have effect on kidney and liver functions. These

***Corresponding Author:**
Jayshree Aate
DOI: https://doi.org/10.61280/tjpls.v12i3.182

ailments are prevented and cured with allopathic medicines like nitroglycerine, streptokinase, digoxin, quanidine, atenolol, glimipride, glibenclamide, rosiglitazone, simvastatin and fenofibrate

Objectives

- To Identification of phytochemical composition of roots and aerial part of Justicia gendarussa
- To Establishing pharmacognostic and physicochemical parameters of Isolation of major chemical compounds of Justicia gendarussa
- To evaluate in vivo Antidiabetic activity.

Plan of Work

- Collection, Drying and grinding of leaves.
- Authentification of the plant.
- Determination of physiochemical parameter.
- Extraction of leaves with different solvents.
- Procurement of animals and their diet.
- Evaluation of extracts in animals for their Antidiabetic activity
- Interpretation of result by statistical analysis.

Material and methods

Materials

List of Chemicals & Solvents

Acetone: Merck Specialties (MS) Pvt. Ltd., Mumbai
Chloral hydrate: MS Pvt. Ltd., Mumbai
Chloroform: Rankem, New Delhi
Ethyl acetate: Rankem, New Delhi
Ethyl alcohol: SD fine chem. Ltd., Mumbai
Sodium carbonate: Qualigens Fine Chemicals, Mumbai
Sodium cromoglycate: Ipca Ltd., Goa. India
Sodium hydroxide: MS Pvt. Ltd., Mumbai
Potassium hydroxide: MS Pvt. Ltd., Mumbai
Sulphuric acid: Qualigens Fine Chemicals, Mumbai
Histamine diphosphate: Sigma Aldrich, USA.
Hydrogen peroxide: MS Pvt. Ltd., Mumbai
Methanol (HPLC Grade): MS Pvt. Ltd., Mumbai
Millon's reagent: CDH Pvt. Ltd., New Delhi

List of Equipments

Ashless filter paper: Qualigens Fine chemicals, Mumbai
Autoclave: Hi-con, New Delhi
B.O.D. Incubator:
Scope Burette stand:
Dolphin Burette stand:
Dolphin Butter paper:
ASGI® Camera:
Sony Centrifuge: REMI
Centrifuge machine: Remi, Mumbai Clavengers apparatus: Borosil Colorimeter: Equiptronics
Compound microscope: Getner Kywo, Ambala Condenser: ASGI®
Crucible: Borosil
Deep Freezer: Remi, India Desiccator: Tarson

Digital Balance (1mg Sensitivity): Contech
Digital Elevated plus Maze: Dolphin Drying Oven: CINTEX
Electric Water Bath: Hi-con, New Delhi
Haemocytometer: Marinfeld, Germeny
Heating mantle: ASGI®
Metabolic cages: Dolphin
Micro pipette:Biosystem
Micropipette: Vertex Pvt. Ltd.
Soxhlet apparatus: Borosil Soxhlet extractor:
ASGI® Spatula:
ASGI® Stirrer/glass rod: ASGI®
Ultrafast Liquid Chromatography: Schimadzu UV Cabinet: Biotechnics
UV Chamber: Hi-con, New Delhi
UV –Vis spectrophotometer: Schimadzu Vernier calipers: Coslab, Mumbai Watch glass: ASGI®
Water bath: Hi-con, New Delhi

Plant Profile

The aerial part of plant Justicia gendarussa is utiliaze in contraception and constipation. The laxative action is due to bowl movement of intestine and gastrointestinal tract.

Figure 1: Aerial part of *Justicia gendarussa*

Plant Description

Name - *Justicia gendarussa*
Family - Acanthaceae
Genus - Justicia
Synonyms - Gendarussa vulgaris
Common name - Ganda rusa
Chemical constituents: - 2-amino benzyl Alcohol, Urosolic acid, beta sitosterol lupeol, and stimosterol
Distribution - It is native to china and it is widely grow throughout in India.
Uses - It is used as a herbal medicine, roots and leaves contain bitter alkaloid (justicine), It is used as inflammation, pain, fever, bronchitis, vaginal discharges, chronic rheumatism.
Biological name : *Justticia gendarusa*
Family : *Acanthaeceae*
Hindi name : Nilie narrgandi
Kannada : aduthodagida, karalakigidde
Bengal : jagatmadan

Tamil : karunochhi, vadaikkuti
Telugu : adasaramu, gandhrasamu
Marathi : tevv, bakass
Sanskrit : bhuttakeshi, gandharasae

The Justicia gendarussa is found in china in folklore medicines and native to china but it is found in India thoughout the country.

The plant aerial part and leaves are utilized as antibacterial, Anthelmintic, anti-inflammatory, anti-arthritic activity, analgesic, female contraceptives and in constipation.

Methods

Drying and Size Reduction of Justicia Gendarussa Leaves:

The leaves *of justicia gendarussa* were dried in shed and powered to ≠22 mesh size, stored in the airtight container till further use. The aerial part and roots are also collected and dried in air and sunlight. After that pulverized in pulverzer and size reduction is done with the size reduction mills.

Extraction of Justicia Gendarussa leaves

The shade dried and powered leaves of *justicia gendarussa* leaves, were subjected to successive extraction in a soxhlet apparatus with petroleum ether (60-80º), chloroform, methanol and finally macerated with water so as to get respective extract. All extracts were individual filtered, through Whatsman filter paper ± 42 and evaporated to dryness at 50ºC in oven. The extracts were then stored in desiccators till further use.[72]

Extraction process

Soxhlet apparatus was used for continuous extraction of the powdered crud drug. The material was packed in the apparatus and allowed to get extracted with hot solvent that continuously percolates from top to bottom. Condensed fresh solvent percolates every time through the powder and is the major advantage with this technique. The powder was extracted using solvents petroleum ether (60-80º), chloroform and methanol respectively for 24 hrs. The ratio of powder to solvent was 10:100.

Petroleum ether (60-80º) extraction

Dried powder was charged in soxhlet apparatus and first extracted with petroleum ether to remove fatty material. After the extraction process, solvent was distilled off and the extract was dried at 50ºC. Dried extract was stored in desiccators till further use.

Chloroform extraction

Mark obtained from petroleum ether extraction was air dried and extracted with Chloroform. After the extraction process, solvent was distilled off and the extract was dried at 50ºC. Dried extract was stored in desiccators till further use.

Methanol extraction

Mark obtained from Chloroform extraction was air dried and extracted with Methanol. After the extraction process, solvent was distilled off and the extract was dried at 50ºC. Dried extract was stored in desiccators till further use.

Water extraction

Mark obtained from Methanol extraction was air dried and extracted with macerated at room temperature. The extract was dried at 50ºC. Dried extract was stored in desiccators till further use.

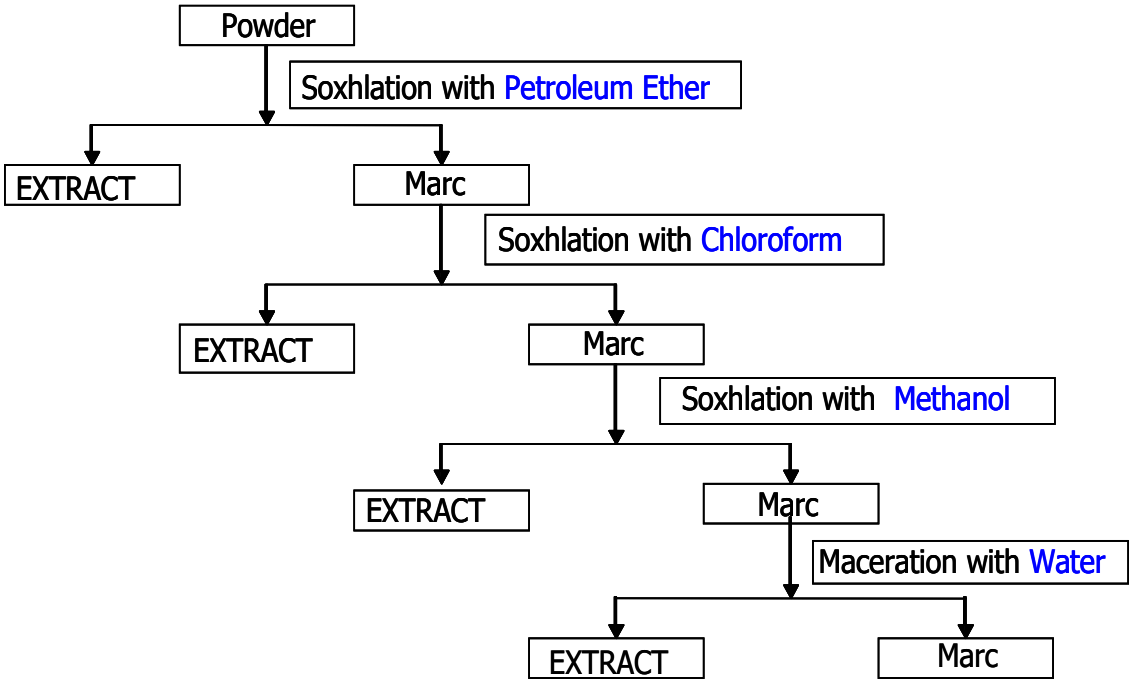


Figure 2: Flow chart showing extraction process of *Justicia gendarussa* leaves

Table 1: Extractive valves of *Justicia gendarussa* leaves extracts.

Sr. No.	Solvent	Extraction Process	% Yield
1	Petroleum ether(60-80º) (PEE)	Soxhlation	8.2%
2	Chloroform (CLE)	Soxhlation	6.5%
3	Methanol (MEE)	Soxhlation	12.3%
4	Water (WAT)	Maceration	18%

Acute Oral Toxicity Test in Rat: Fixed Dose Procedure According to OECD 420 Guidelines

Aim and objective of the test

The aim of the test is to obtain using a minimum no of animals, sufficient information on the acute toxicity after single administration, by oral rout in the rat, of a test substance, for its classification.

Test substance administered to a group of experiment animals by oral route at one defined dose (5 mg/kg, 50 mg/kg, 300 mg/kg, and 2000 mg/kg) according to the available information on test substance. The liquid preparation was given less than 1 ml/100 gm body wt. of animals Animal were observed after one hour at least, after administration to detect signs of toxicity.

Extraction of Justicia gendaruss

This collected material was washed two times and then dried over night. This is then crushed and powdered and passed from sieve no 22 for unique particle size. This was then packed in column with n-hexane to remove fatty material and collected after 48 hours. Then it was packed in soxlet apparatus with methyl alcohol solvent to extract the active constituent from the material and the extract was washed to remove the methanol solvent and dried to make powder and for application. The clear solution was collected in siphon tube for further use.

Quality control and Screening of constituents

This process was performed again and again till it gives fixed weight. Total ash % was determined by consideration with weight of initialpowder of plant material. Can be calculated as Total ash (% w/w) = (Wt. of

ash/ sample Wt.) × 100 Acidinsoluble ash 2 gm of dried powder was added in pre weighed crucible of silica and burned at high temp lessthan 4500C until free from carbon. It was determined by cooling the silica dish in desiccator and weighted. The same process was repeated till constant weight was obtained. The ash obtained was mixed in 25 milliliter 2MHCl and boiled upto 7 min. Then not soluble content had been added in a silica crucibles. Again hot water addedand filtered, then burned and cooled in a desiccator, weight was taken. The percentage was determined by considering initial weight of plant material. Can be calculated as Wt. of AIA Acid insoluble ash (% w/w) = ---------- X 100 Sample Wt

To evaluate antidiabetic activities of plant alcoholic extract of Justicia gendarussa six groups had been prepared. Each group contains six albino rat for evaluation of biological activities. All animals of group were feded by alloxan to induce higher sugar level or streptozocin injections for diabetic conditions. Then the rats were treated with standard glibenclamide antidiabetic medicine of standard groups. The other two groups of albino rats were treated with the alcoholic extracts of *Justicia gendarussa*.

Glucose take-up by rodent hemi-stomach

Studied methods portrayed somewhere else explicit adjustments. For each Petroleum ether Ethyl acidic corrosive inference Ethanol in addition to water isolates taken, four sets of graduated test tubes containing six amounts were used (n=6). Gathering I filled control contained 2 mL Tyrode plan through 2% glucose, Gathering II contained 2 mL Tyrode game-plan with 2% glucose and standard insulin 0.62 mL of 0.4 units each mL methodology. Gathering III contained 2 mL Tyrode game-plan with 2% glucose and 1.38 mL of plant Oil ether separate the Gathering IV contained 2 mL Tyrode game system through 2% glucose in addition to conventional insulin 0.62 mL of 0.4 units per ml strategy +1.38 mL Ethyl acidic destructive enlistment eliminate Social event IV contained 2 mL Tyrode plan through 2% glucose and standard insulin strategy and 1.38 mL Ethanolic take Get-together V contained 2 mL Tyrode plan with 2% glucose and common insulin units per ml game-plan and 1.38 mL not permanently set up as the separation between the principal and last glucose content in the delivered medium.

Animals

Wistar pale cleaned individual rodents (150-200 grams) and mice of the two sexes procured School of Veterinary and Creature Science, Mannuthy, Thrissur-Kerala, India. Before the test, six rodents were kept in spotless confines for seven days at a standard temperature of 25-30 °C and a relative humidity of 55% dark/light cycle for 12 hours. The tests were carried out with the approval of the Organizational Animal Ethics Committee. The creatures went on a 16-hour fast, were starved, and had free access to water. Before assessment in any case permitted free authorization water. They maintained restrictive cutoff points throughout this time, which led to coprophagy and cannibolism. The rodents were given either the appropriate vehicle cytoprotective concentrate, such as coordinated intragastrically 30 minutes before being given 1 milliliter of complete ethanol. Controls were strengthened by untreated animals. Following one hour relationship of ethanol animals euthanized stomachs are dispensed with cut along the more crucial curve carefully flushed under spout water tolerates an associated piece foam focus tie mucosal site up. The patches seen under intensifying instrument. Following social gatherings were segregated Pack I Control Gathering, actuated bundle Pack II Positive control ranitidine Treated animals Bundle III affected PG Pet. PG Pet was sparked by Ether 200 Bunch VI. Ether 400 Bunch V caused PG Ethyl acetate 400 Bunch VI caused PG Ethyl acetate. 200 Bunch VII caused PG Ethanolic extract 400 Bunch: VIII incited PG Ethanolic extract 200 bundles, IX incited PG Water 400 bundles, and X incited PG Water 200. Histopathological study Stomach taken scarified creatures fixed formalin embedded arrangement advertisement implanted through examinations completed as depicted antihyperlipidemic effects rodents dealt through orally 7 days through these dosages later the end specified time of medication treatment all creatures famished for 20hour blood tests collected cut of retro-orbital Biochemical Analysis of Serum Tests Serum tests were examined using a standard enzymatic assessment unit to examine hard and fast cholesterol, thickness lipoproteins, thickness lipoproteins, and primarily low thickness lipoproteins. Standard for the

Superoxide Radical Scavenging Activity The test uses a limit of prescription upset that is decreasing by 5.9. 5.9.1 Acute toxicity study of plant extracts' in vivo activity in a focus on controlled organic framework cooperations between distinct varieties of Pisonia grandis. In most case needed and valuable yet many effects profitable. Acute, subacute, and ongoing poisoning were evaluated by the makers of another drug. Half of the animals in the experiment died as a result of acute harm, which was caused by assessing the deadly portion. genuinely inferred oral ration substance anticipated as a result of passing in terms of the percentage of animals fed through the oral route. The value is shown in relation to the weight of the test substance per unit weight.

Survey extreme destructiveness audit finished wistar pale cleaned individual rodents. The approach followed by employing the acute poisonous class method. The rodents declined for the time being preceding dosing. Over the previous 24 hours, the three portion levels controlled assistance with oral care needle. Food may have served as an additional incentive for locating the appropriate review permit choice for the initial portion of the primary study following the administration of medications. The test substabce coordinated singular animal progressive way following legitimate piece levels of 5 50 300 in the midst of 2000mg/kg. Range between dosing each level directed mortality/onset, duration and severisty destructive surrenders the hour of 24 h uncommon thought given during beginning 4 hours. After four hours drug organization give food water 14 days consistently saw not many limits for instance admission mortality beginning span through reality noxious signs. The animal weight recorded step by step once. In vivo antidiabetic activity of Pisonia grandis extract in streptozocin-induced diabetic wistar albino rats

Both male and female Wistar albino rats weighing between 150 and 200 grams were obtained from the College of Veterinary and Animal Science in Mannuthy, Thrissur, Kerala, India. Before the investigation rodents housed immaculate polypropylene limits (6 rodents/limits) time 7 days under standard temperature (25 – 30^{O} c) required similar wetness and dull/splendid cycle.

Chemicals:

Loba chemie streptozocin. Standard glibenclamide (daonil) aventis pharma. Ethanol (shrewd grade) in the midst of dextrose course of action Glucose evaluation super sensor acceptance diabetes animals single streptozocin monohydrate weakened in sodium citrate cushion utilized for the determination diabetes rodents later momentary fasting. Later streptozocin monohydrate association animals received dealing through holder day beat early stage in addition to libitum dextrose and prearranged feedstuff. Experimental design with animals for a week Five groups of rodents, six per group, and a 14-day treatment plan.

Bundle I Ordinary control common saline 10 ml/kg

Bundle II Streptozocin treated control100 mg/kg,

Pack III Streptozocin +Standard drug

Pack IV Streptozocin + Pisonia grandis (PG) Pet. Bunch V Streptozocin + PG Pet is extracted by ether. Ether extract 200 Bunch VI Streptozocin + PG Ethyl acetate 400 Bunch VII Streptozocin + PG Ethyl acetate 200 Bunch VIII - Streptozocin + PG Ethanolic 400 Bunch IX Streptozocin + PG Ethanolic 200 Bunch X Streptozocin + PG Water 400 Bunch XI Streptozocin + PG Water 200 Plant In addition to 14 consecutive days of Excerpts, received standard medication at 5 mg/kg.

A variety of blood tests are taken from retro orbital cut rodents every week for a period of seven to fourteen days up until the end of the review.

Assessment of biochemical boundaries Blood glucose levels in the serum Following a one-, seven-, and fourteen-day fast, serum was isolated and examined for glucose.

Serum blood glucose

The serum blood glucose test assesses extent glucose blood test from faunae. The usual test shows elevated blood glucose levels, which are a sign of diabetes and insulin obstruction.

Cholesterol sodium cholate 0.5 sucrose 30 casein 10 spread 5 in addition to the standard chow diet for seven days was used in the Swiss pale skinned person rodents (weighing between 220 and 256 grams). The creatures were divided into three groups to control, test, and treat standard medication-treated animals. The investigation

was divided into two stages: the first stage consisted of determining the viable hypolipedemic dosages test and standard medications. At the second stage, the impact of standard medications was considered. The lipid profile consolidates hard and fast cholesterol LDL HDL VLDL greasy substances remained thought about. After 6, 24, and 48 hours of medication organization, blood tests were taken.

Bunch I-Control was separated by subsequent gatherings: Received dissolvable Bunch II-Positive control (1 ml/100g mouse): Gotten standard medicine (Fenofibrate 3mg/kg body)

Pack III-diet PG Pet Ether400

Pack VI - PG Pet Ether 200

Pack V - diet PG Ethyl acetic acid derivation 400

Bundle VI - diet PG Ethyl acetic acid derivation 200

Bundle VII - diet PG Ethanolic400

Bundle: VIII: PG Ethanolic 200 Bunch; IX: PG Water 400 Bunch; X: PG Water 200 Bunch 5.9 8. Triton-Induced Hyperlipidemic Rats After being starved for 18 hours, the above-mentioned antihyperlipidemic effects were evaluated in triton-induced hyperlipidemic rats. After being divided into 10 groups of six animals each, the rodents were infused with Triton according to the required body weight. The rodents in the normal vehicle-treated group were given 200 and 400 mg/kg of ethanolic fluid concentrates each day, respectively, following the Triton infusion organization. Lipid profiles are evaluated by blood tests taken after the critical hour of Triton infusion.

Bundle I-Control: Received dissolvable Bunch II-Positive control (1 ml/100g mouse): Bunch III: triton PG Pet Ether400; Bunch VI: triton PG Pet Ether200; Bunch VII: triton PG Ethanolic400; Bunch III: triton PG Pet Ether400; Bunch VI: triton PG Pet Ether200; Bunch VII: triton PG Ethanolic400 Triton PG Ethanolic 200 Bunch VIII Triton PG Water400 Bunch X Triton PG Water200 5.9.9 Effects on Normocholesteremic Rats The hypolipidemic effects of the concentrates were evaluated in ten groups of normocholesteremic rats. These rats were given the medication orally for seven days and took blood tests every 20 hours to collect a slice of the retro-orbital plexus and look at blood lipid profiles. The results were compared

Glucose take-up by bound rat hemi-stomach

Glucose take-up by rat hemi-diagpharm evaluated procedures portrayed elsewhere f certain adjustments. Group I contained Tyrone arrangement with glucose, while Group II contained Tyrone arrangement with glucose and standard insulin arrangement in graduated test tubes (n=6) for ages 1 to 8. The obligatory yrode arrangement with glucose compd was present in Bunch III. part Group IV contained 1.38 mL of v division and 2 mL of Tyrode arrangement containing glucose and standard insulin at mL units per ml arrangement. determined as the difference in the brooded medium's underlying and final glucose levels**.**

Assay for Alpha-glycosidase Reticence.

Alpha-glycosidase examine carried out technique depicted disparate fixations 150 g/ml - 1000 g/ml weakened phosphate bufer added protein porcine pancreatic strategy 96-well plate. After 10 minutes at 37 degrees Celsius, the reaction began by adding 20 milliliters of starch, making things even more difficult. The reaction was previously stopped by adding 10 1M of HCl to each of the iodine reagents inside and out. A distinct concentrate with phosphate buffer pH 6.9 and a positive control of acarbose, 7.4 g/ml, prepared. No compound control in addition to no starch control remained joined each test

Acute toxicity

All treatment groups of rodents in an acute toxicity study showed typical motor neuronal capacities and mortality in every controlled concentrate. The treatment of OS contrasted control group did not alter the observing skin hide eyes personal conduct standard, such as walk and pose autonomic focal sensory system exercises, in rodents. showed that Pet ether ethanolic ethyl acetic acid derivation water removes more prominently than the oral LD50.

Throughout the review period, the weight treatment group of rodents of both genders did not show any genuinely significant ($p > 0.05$) changes in comparison to the control. The effects of a single oral organization weight portion on pet ether, ethanolic, and ethyl acetic acid derivation water hematological boundaries rodents of both genders are demonstrated. The feed water utilization example rodents standard is predictable throughout the trial time frame. There were no statistically significant ($p > 0.05$) differences between individual benchmark groups found within the examined boundaries.

The effects of a single oral administration of 5000 mg/kg of body weight of pet ether, ethanolic, and ethyl acetic acid derivative along with water biochemical boundaries orodents of both sexes are shown. The deliberate boundaries recorded changes that were truly irrelevant ($p > 0.05$) when compared to specific benchmark groups. The substance tried usingstepwise technique each step consuming six creatures a solitary sex (usually females).

Making use of OECD 423 rules, a three-hour abstained animal provided an excellent perspective for a 24-hour observation of prepping, sniffing, and raising qualities in all groups, but other characteristics were missing (mortality, abundance, balding, seizures, and movement).

For one in ten (200 mg/Kg), one in five (100 mg/Kg), and one in five (400 mg/Kg) of the dosages used for specific animal models, the perception 15-day death rate was zero (Alive rate - 100).

When compared to standard clinical creature information overhead boundary validated given delicacies that prompt diabetes mellitus and pancreas brokenness-related illnesses, diurnal by day perception food admission was common for every gatherings creature for 15 days.

In contrast to typical logical creature information boundary, water admission was common for every group of mice for 15 days. This suggests that the medication contributed to the diabetes mellitus pancreas brokenness and other GIT-related infections.

When compared to a logical standard information mouse, each mouse's perception of daily body weight was a progression. Pet ether ethanolic ethyl acetic acid derivation and water did not cause obesity or raise cholesterol levels, as demonstrated by the body loads of mice in the previous section.

As a result of subsequent treatments, no baldness was observed, and each mouse in the various groups communicated promptly to malignant growth and immunological issues.

Treats cause issues related to the urinary system because of the abundance of gathering creatures that have been observed in boundaries.

According to standard data, pet ether, ethanolic, ethyl acetate, and water induce GIT disturbance in animals.

The normal locomotion of animals indicates that pet ether, ethanolic, and ethyl acetate water cause disorders and diseases of the central nervous system.

Due to the characteristics of pet ether, ethanolic ethyl acetate water, which induce convulsions while rearing, grooming, and sniffing, cookies persuaded or inhibited CNS ANS PNS neurotransmitters.

One animal passed away on day three, possibly due to environmental factors or physical damage, size, or age, but the administration of pet ether, ethanolic ethyl acetate, or water prevented the animal's death for the purpose of observing dissected animals' clinical symptoms.

In the toxicity studies, the specified percentage of mortality was 6.6%, and the alive percentage was 96.7%, according to the report. On the 15th isolated liver histopathological report, the higher dose of 2000 mg/kg treated group perforation found severe liver damage but no excessive bleeding when compared to the normal animal. The higher dose of 2000 mg/kg treated group stomach region mucosal damage perforation blood streaks no toxicity in stomach When compared to a normal animal, no toxicological changes were found in the heart. From Unit 0-5, the contraption, which consisted of ten activities, was used to assess the patient's level of self-care after surgery. Each day's exercise received an absolute score between 0 and 100, and each action received a sub-score between 0 and 15. The level of the patient's ability to perform ADLs and self-care activities was categorized using the following categories: 0 to 19-Totally Dependent on Activities of Daily Living (ADLs) between 20 and 39-Very Dependent on ADLs between 40 and 59-Partially Dependent on ADLs

between 60 and 79-Minimally Dependent on ADLs between 80 and 100-Independent on ADLs This segment managed the patient's level of comfort following a medical procedure and adapted to the careful pressure. There were the following sections: An element: The Comfort Checklist This device helped determine the patient's level of comfort during the post-useable phase. Comfort was a state of physical and mental well-being. The patient's level of comfort following a medical procedure was the focus of the comfort agenda. Ten items from the Self-Organized Solace Agenda were used to measure a patient's level of comfort on the first, third, and fifth days after a medical procedure, respectively. For each assertion, the score was "1" for "Yes" and "0" for "No." After adding up the individual scores, the total score for the afternoon, which ranged from one to ten, was calculated. Before and after a medical procedure, this device was designed to assess a patient's ability to adjust to the pressure. The patient's post-employment solace level was categorized as follows: 1 to 3, Inadequate; From 4 to 7, Very Good; 8 to 10, Very Good It was broken up into two parts: The Pre-Operative Surgical Stress Coping Scale was developed with the intention of determining the extent to which a patient is adapting ahead of a surgical procedure. The development of the Post-Operative Surgical Stress Coping Scale was aimed at determining a patient's degree of adaptation following surgery. The Advancement of Surgical Stress Coping Scale was used to measure the patient's capacity to endure the emotional or mental strain that comes with having surgery, both before and after the procedure. The self-organized Pre-Operative Surgical Stress Coping Scale was created with the intention of determining a patient's adaptability and capacity in advance of a medical procedure. The self-organized Post-Operative Surgical Stress Coping Scale was created with the intention of determining a patient's capacity and degree of adaptation after a medical procedure. Nine items made up the self-organized Pre-Operative Surgical Stress Coping Scale. Everything received the portrayal of five stars on the Scale: Agree, Uncertain, Disagree, and Strongly Disagree, with scores ranging from 1 to 5. Individual scores were added together to obtain the total score, which ranged from one to forty-five. The patient's response to the severe pressure was as follows: One to two days before the procedure, the adaption that could be used was evaluated. 1 to 15: Poor Surgical Stress Coping; 16 to 30: Average Surgical Stress Coping; 31 to 45: Good Surgical Stress Coping The patient's level of contentment with their experience at the medical clinic was measured using a self-organized Patient Satisfaction Questionnaire. To find out how satisfied the patient was with the assumptions, a survey was taken. Illustration of the Patient Satisfaction Questionnaire The self-organized Patient Satisfaction Questionnaire had 14 questions, and each one had a score between one and five. The patient's level of contentment was reflected in the overall score, which ranged from 1 to 70. groupings include: 1to 14: " Not Satisfied at All"; 15 to 28: " "Partially Content"; 29 to 42: " Satisfied"; 43 to 56: " Very Contented"; 57 to 70: " Extremely Satisfied" The self-organized Post-Operative Event Identification Checklist estimated five post-usable occasions, with a score of "0" for "presence of post-usable occasion" and "1" for "total score." The day-by-day scores were then used to calculate the total score, which ranged from 0 to 6.

Result and Discussion

Antidiabetic activity

Compared to normal standard values, the diabetic control rats' bodies showed a significant decrease. When compared to the diabetic control group, the extract-treated diabetic rat did not influence any significant changes in body weight. In comparison to the diabetic control group, the PG pet ether extract-treated diabetic rat experienced only minor weight changes. In contrast to the diabetic control group, the body weight of the diabetic rat treated with PG ethyl acetate changed only slightly. Rats with diabetes have significantly higher blood glucose levels. When diabetic control rats were compared to the rats treated with PG pet ether and ethyl acetate, a slight decrease in efficacy was observed. In the efficacy studies, diabetic rats treated with Pet ether extract had significantly lower blood glucose levels than the diabetic control group. Ethly acetate-treated diabetic rats also had alarmingly low blood glucose levels, roughly comparable to those of the Glibenclamide (standard)-treated group. These results clearly show that pet ether and ethyl acetate is an effective oral treatment for diabetes management with reduced dose and dosing incidence and patient compliance. A significant

decrease in body weight was observed in diabetic control rats, which were compared to normal control rats. In comparison to the diabetic control group, the pure compound treatment of diabetic rats had no effect on body weight in a significant way. Rats with diabetes have significantly higher blood glucose levels. When compared to diabetic control rats, the effectiveness of canned through pure compound and water extract was slightly lower. In the efficacy studies, diabetic rats treated with ethanolic extract had significantly lower glucose levels than the diabetic group and the standard drug-treated group. These results clearly show that PGextrats is patient-friendly and offers an effective oral treatment for diabetes management with reduced dose incidence.
The oral glucose tolerance, hypoglycemic, and streptozocin-induced diabetes mellitus studies were conducted, and the resulting data are presented in the table below.
According to our concluding report, the ethanolic extract has more anti-diabetic bioactive components than any other extract, making it more effective against diabetes. xact rudimentary equal original Among the factors influencing change, BP direction age associations among communal happenings and stint among measures remained Bundle, interval among dealings remained essentially unique viability pressure fact massage bringing depressed and d BP exploratory group remained essentially unique concerning benchmark group adapting bewildering factors including orientation era then remedy use fifth aim remained figure agreeableness Pressure argument manipulation usage trial group HYPT clients exploratory group clients greater portion obligate extraordinary recognition A significant number of clients reported that they felt significantly improved and satisfied with the Pressure point massage treatment because it did not cause any side effects, adverse effects, or food restrictions. Clinical Condition S.No Disease BP level(MMhg) Systlolic BP 1 Normal Healthy Volunteers120.7 2.73/ 2 Marginally amplified BP glassy through HT 134.6 Exceeding BP glassy conveyed suggestion. Pressure fact massage is unpretentious and has straightforward application. Clients instrument 6.3. Results showed that under 50-60 eons era parties patients remained completely misrepresented. HT 641 42.7 percent showed winning contrastingly corresponding apiece superfluous era besides 40-50 eons era collective gatherings easygoing remained inescapable astonishing eminence. HT 553 36.9 percent stood apart 20-30 54 3.6 eons besides movement made dissimilar to develop social events resembling eons discipline displayed Fg. No: 6.21 In comparison to 20-30 (54 Numbers) and 30-40 (252 Numbers) years, patients in the 50-60 eons era remained unfathomably distorted, with HT 641 showing contrastingly corresponding each additional era. In the 40-50 eons era, patients remained unfazed, with HT 553 showing overwhelming certainty. The information that was gathered from a variety of sources, in addition to the information that was gathered from a variety of questions, revealed that the quality of HT 553 was 36.9% higher, with 20-30 being 3.6% and 30-40 being 252 16.8%, respectively. Tab No.: 6 delayed sexual directions conveyed people remain influenced by additional facts in addition to glassy HT 853 56.9 percent appeared differently relation women 647 43.1 percent remained gotten handle given under HT persistent Femininity dissimilarity S.N. Sex N. Patient % Patient 1 Male 853 56.9 2 Female 647 43.1 Prevalence of HT patient gender details Food Habit HT patients' eating habits have been shown to be influenced by a variety of factors, including lifestyle changes, eating habits, mental unease, and others listed below.

Table 2: Oral glucose tolerance test at different time intervals

T	Dose	Blood Glucose Level (mg/dl) in hr						
		0	**0.5**	**1**	**1.5**	**2**	**2.5**	**3**
CMC	0.5 %	68.7±0.2	141.8±0.5	169.±0.3	165.±0.4	157.5±0.3	149.7±0.3	136.8±0.3
Gl	0.2	68.3±0.3	103.7±0.3	104±0.3	99.±0.4	96.83±0.4	92.67±0.4	83.7±0.3
EA	400	68.3±0.3	110.0±0.	119.±0.4	113.±0.3	104.7±0.6	99.8±0.4	94.7±0.3
EA	200	68.7±0.2	122.3±0.	129±0.2	127.±0.5	120.8±0.3	1134.7±0.4	106.3±0.3
PE	400	68.3±0.3	104.5±0.3	109.±0.3	109.±0.6	100.33±0.4	93.7±0.5	86.3±0.3
PtE	200	68.7±0.3	11.0±0.2	112.±0.3	109.5±0.2	104.3±0.2	99.3±0.4	96.5±0.3
ET	400	68.0±0.3	100.3±0.3	98.±0.4	95.3±0.4	93.17±0.4	86.3±0.5	81.5±0.4
ET	200	68.7±0.3	101.0±0.1	115 ±0.3	109.5±0.2	104.3±0.2	99.3±0.4	96.5±0.3
Wat	400	68.7±0.2	116.8±0.5	139±0.34	136.2±0.4	136.5±0.3	128.7±0.3	105.8±0.3
Wat	200	68.7±0.2	120.8±0.5	149.±0.3	146.2±0.4	157.5±0.3	139.7±0.3	115.8±0.2

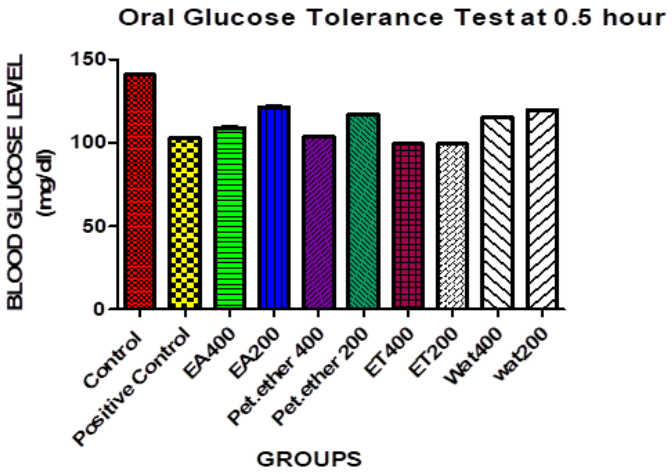


Figure 3

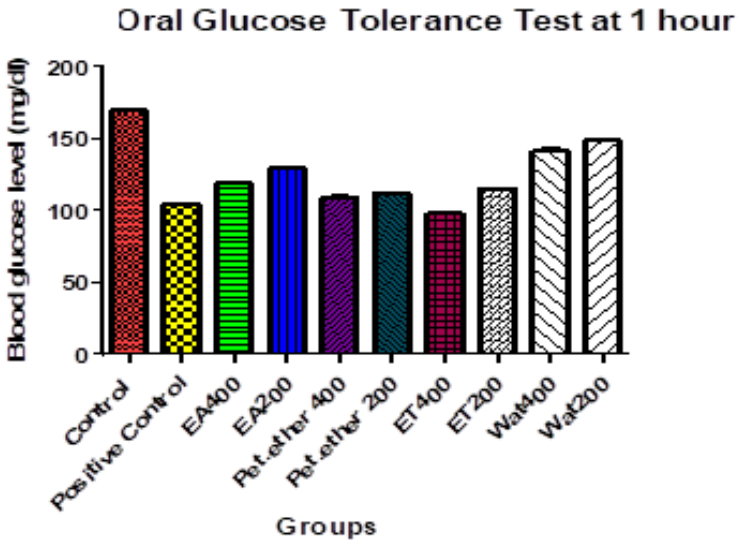


Figure 4

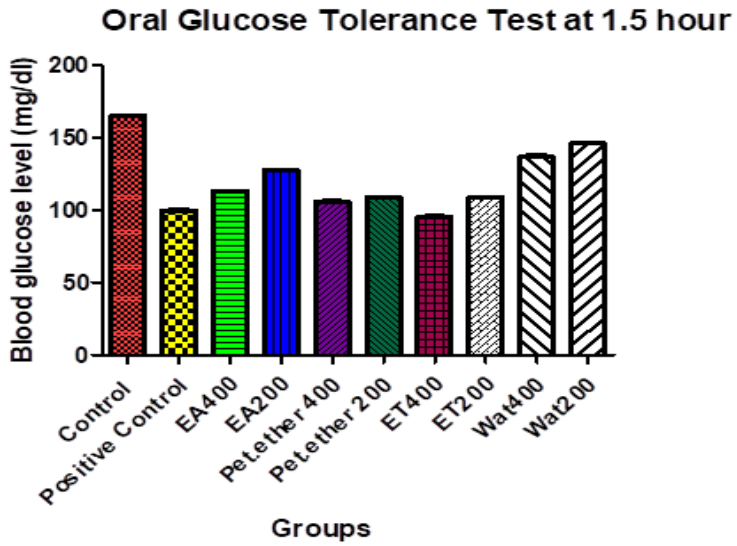


Figure 5

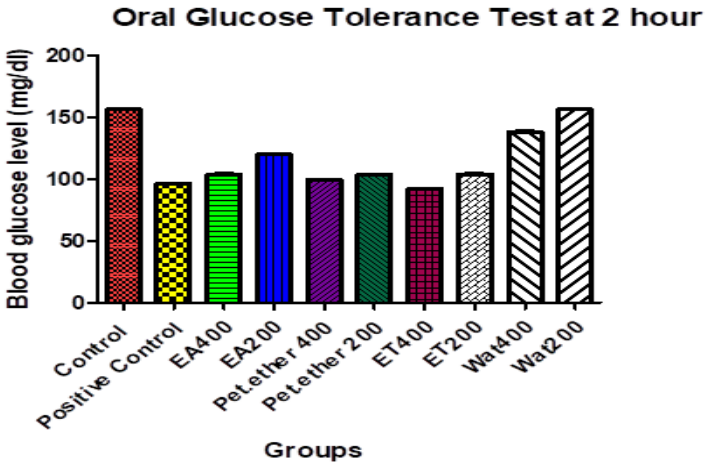
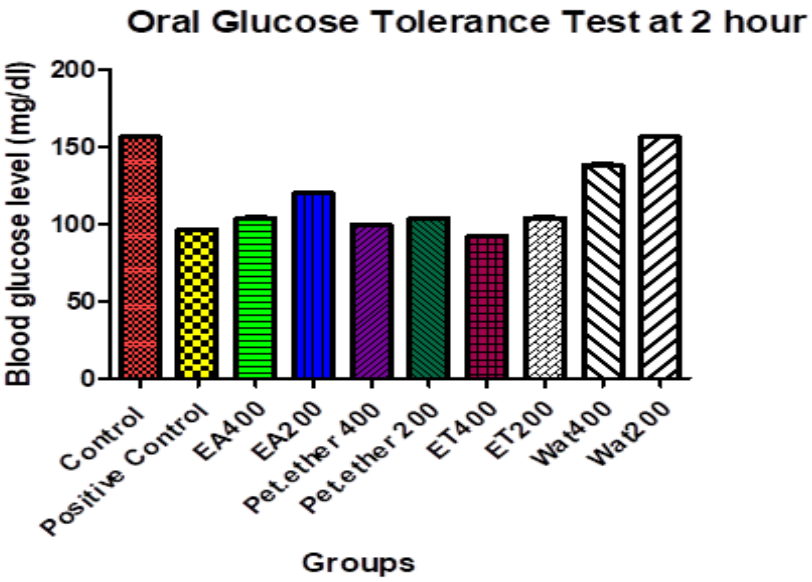


Figure 6



<

Figure 7

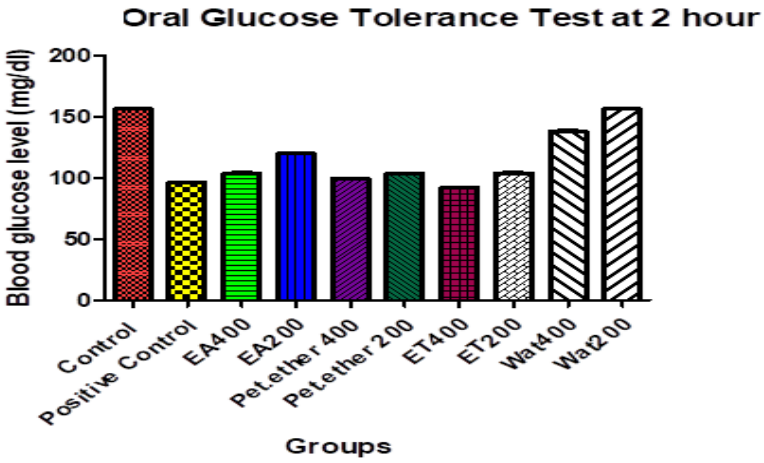


Figure 8

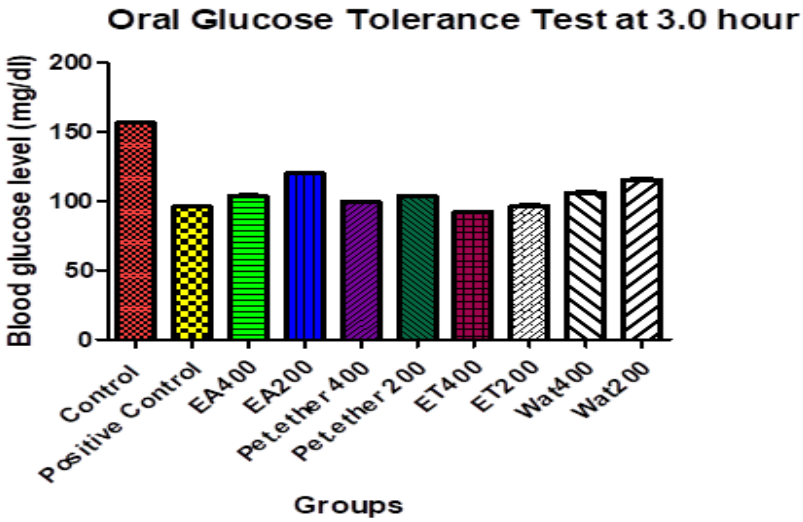


Figure 9

Table 3 : Streptozotocin Induced Diabetes Mellitus

Treatment	Dose mg/kg	Blood glucose level (mg/dl) day				
		0	3	7	14	21
Control CMC)	0.5 %	79.3±0.307	300.±0.3	282.5±0.5	268.2±0.4	298.0±0.3
Glibenclamide	0.2	72.3±0.210	270.±0.2	127.0±0.4	114.2±0.3	118.0±0.2
EA	400	83.7±0.401	290.±0.3	142.3±0.9	128.7±0.4	121.0±0.2
EA	200	86.7±0.477	294.±0.2	233.0±0.6	172.2±0.6	198.7±0.4
Pet.E	400	76.0±0.428	272.±0.5	131.2±0.4	119.3±0.4	112.2±0.7
Pet.E	200	82.3±0.307	286.±0.2	186.2±0.4	159.0±0.6	179.5±0.3
ET	400	69.0±0.428	263.±0.3	126.0±0.3	116.3±0.3	114.2±1.0
ET	200	67.0±0.328	267±0.2	226.0±0.4	216.3±0.4	194.2±1.
Water	400	86.7±0.477	284±0.23	134.0±0.6	174.3±0.6	188.7±0.4
water	200	76.50±0.28	292±0.56	231.2±0.4	211.3±0.4	212.2±0.7

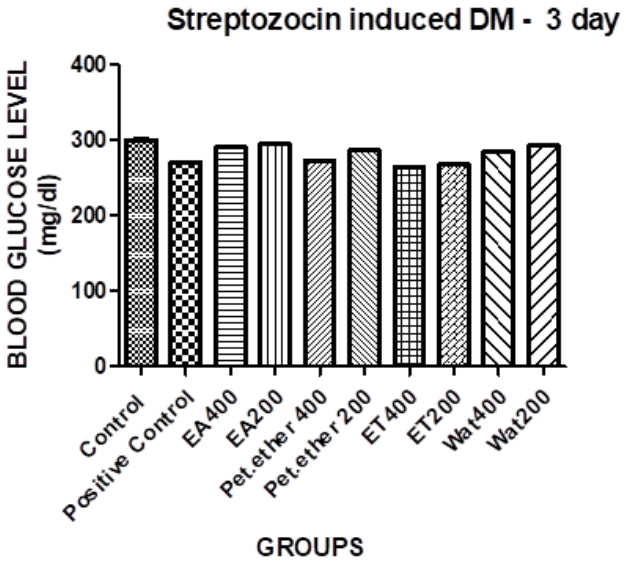


Figure 10

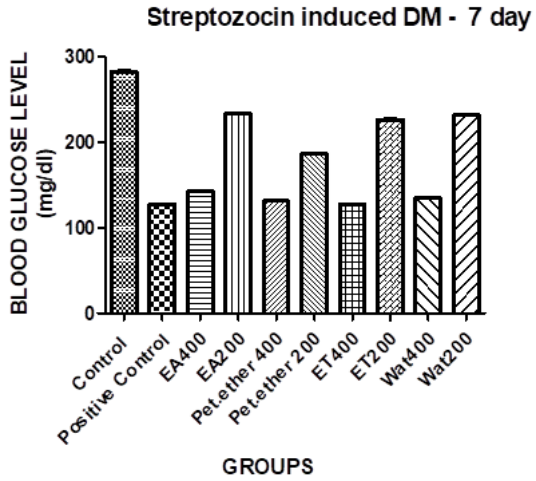


Figure 11

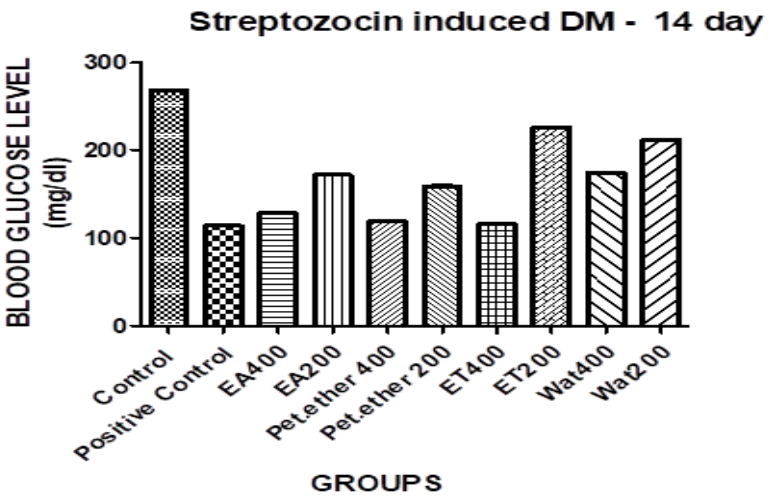


Figure 12

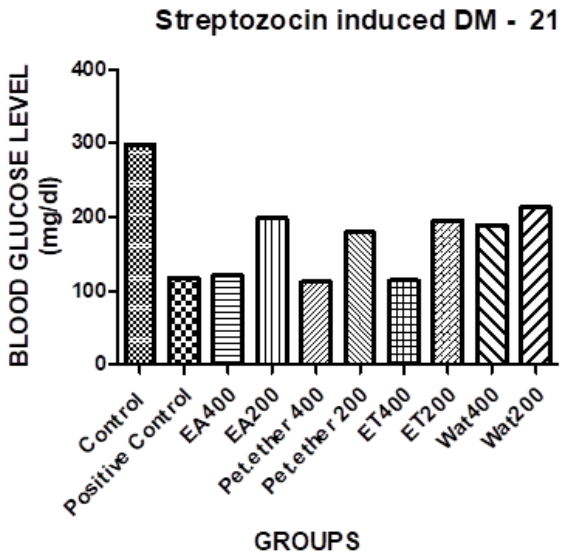


Figure 13

Table 4: Hypoglycemic Test

Treatment	Dose mg/kg	Blood glucose level (mg/dl)		
		0 hr	0.5 hr	1 hr
Control CMC)	0.5 %	68.0±0.223	68.3±0.333	72.3±0.57
Glibenclamide	0.2	68.3±0.333	50.3±0.557	27.0±0.50
EA	400	68.7±0.307	60.7±0.4014	44.0±0.56
EA	200	68.3±0.421	68.7±0.401	55.0±0.48
Pet.E	400	68.0±0.258	54.0±0.365	33.3±0.64
Pet.E	200	67.3±0.307	62.3±0.401	44.0±0.50
ET	400	67.0±0.428	49.0±0.577	26.7±0.73
ET	200	68.1±0.259	54.4±0.365	33.5±0.65
Water	400	68.0±0.225	54.3±0.333	42.3±0.57
Water	200	68.7±0.308	63.7±0.4014	54.1±0.56

Conclusion:

When administered at a dose of 40 mg/kg, streptozotocin raised blood glucose levels by as much as 203.73 percent when compared to normal control rats. When compared to the diabetic control group, the extracts significantly reduced glucose levels by 40.69% and 47.26%, respectively. In glucose-starved diabetic rats, the extracts also significantly reduced blood glucose levels. The plant separates displayed a critical ($P<0.05$) antidiabetic impact in both glucose-stacked and streptozotocin-prompted diabetic models.

The hydro-alcoholic extracts of the plants were fractionated with a variety of solvents for phytochemical analysis and anti-diabetic activity. Qualitative tests revealed the presence of a number of phytoconstituents, including phytosterols, triterpenoids, flavonoids, tannins, saponins, alkaloids, and glycosides. The antidiabetic impacts of these various divisions on glucose take-up were likewise assessed. Notably, Fraction IV of the plant, given at 100 mg/kg, reduced glucose levels by 86.62 percent, which is comparable to the standard medication glibenclamide. These results highlight the significant ability of Fraction IV to lower blood glucose levels in both plants.

Reference

1. Sivasakthi, Vijayalakshmi M, Antibacterial activities of phytochemical extracts from the leaves of *Justicia gendarussa* burm.f. Int j pharm bio sci 2014; 5(2):(b) 433 – 438.
2. Akash Marathakam, Kannappan N, Jasemine S, Santhiagu A, Sreejith M, Ajith MP, Studies on phytochemical and In- Vitro antioxidant potential of *Justicia beddomei (Clarke) Bennett,* Free Rad. Antiox. 2012; 2 (4): 26-31.
3. Nondita Prasad, Balbir Singh, Diksha Puri, Pharmacognostic Screening Studies of Justicia Gendarussa burm. leaves found in Dehradun District of Uttarakhand Asian Journal of Pharmaceutical and Clinical Research Sept 2017, 83-87.
4. Ortiz-Andrade R, Cabañas-Wuan A, Arana-Argáez VE, Alonso-Castro AJ, Zapata Bustos R, Salazar-Olivo LA, Domínguez F, Chávez M, Carranza-Álvarez C,García Carrancá A. Antidiabetic effects of Justicia spicigera Schltdl (Acanthaceae). J. Ethnopharmacol. 2012; 143(2): 455-62.
5. Subramanian N, Jothimanivannan C and Moorthy K Antimi- crobial activity and preliminary phytochemical screening of *Justicia gendarussa* (Burm. F.) against human pathogens. *Asian j pharm clin res,* 2012; 5(3):229-233.
6. R. K. Bachheti, D.P.Pandey, Archana joshi and Vikas Rana, Chemical Analysis of Aerial Parts of *Justicia Gendarussa*, Int.J. ChemTech Res.2011; 3(1): 244-247.
7. Tanya Jain a, Manish Pal Singh a , Harsh Bhardwaj b , Kashmira J. Gohil a., Review on pharmacology activities of Justicia Gendarussa Burm F. Pharmacological Research - Modern Chinese Medicine, (2024); 10 (2): 1-8
8. Zahidah Ayoba, Azman Abd Samada, Siti Pauliena Mohd Boharia, Cytotoxicity activities in local *Justicia gendarussa* crude extracts against Human Cancer Cell Lines, *Jurnal teknologi (Sciences & Engineering),* 2013; 64(2): 45–52.

How to cite this article: Jayshree Aate, and Rakesh Kumar Jat. "Phytochemical Screening and Antidiabetic Activity of Aerial Part of Justicia Gendarussa". *Tropical Journal of Pharmaceutical and Life Sciences*, vol. 12, no. 3, June 2025, pp. 42-58, **DOI:** https://doi.org/10.61280/tjpls.v12i3.182

Published by:
Informative Journals
Jadoun Science Publishing Group India