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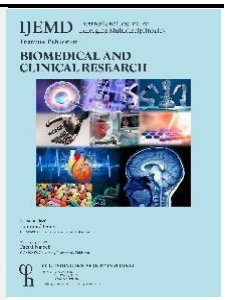

Acute and Subchronic Toxicity Evaluation of methanol leaf Extracts of *Bombaxbuonopozense* in Rats

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Abstract

Background

Natural products serve as the foundation for conventional medicine and are significant sources of lead compounds for medication research. West African populations use the majority of its parts for nutritional and therapeutic purposes. The research was aimed at evaluation of the Acute and subchronic oral toxicity of *Bombaxbuonopozense* leaves extract in rats.

Methods

In the acute toxicity study, female rats received oral doses of 2000 mg/kg of *Bombaxbuonopozense* extract (n = 5/group). Abnormal behavior, toxic symptoms, weight changes, and mortality were monitored for 14 consecutive days to evaluate acute toxicity. For the sub-chronic toxicity study, the extract was orally administered to Wistar rats at doses of 800 and 1600 mg/kg (n = 5/group) daily for 28 days. Daily observations were made on the general behavior and body weight of the rats. Biochemical and hematological analyses were performed at the end of the treatment period.

Results

Following acute oral administration, the LD_{50} of *Bombaxbuonopozens* leaves extract was found to be greater than 2000 mg/kg in the evaluation of acute oral toxicity. Administration of *Bombaxbuonopozense*

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extract to rats did showed significantly increase in platelets in the treated group (362.00±23.67*) when compared to the control group (451.67±30.77) at (p>0.05). The liver enzymes, An increase (P>0.05) was seen in ALP concentration on the treated group (216.59±44.29*). In subchronic oral toxicity assessment, no significant changes were observed in food consumption, body weight gain, organ weights, and biochemical parameters. Treatment of rats with *Bombaxbuonopozense* extract showed a significant increase in ALP on the group treated with 1600 mg/kg (216.59±44.29*) compared to the control (98.70±13.32) and significant increase in LDL for the treated groups 800 mg/kg (70.76±8.19*) and 1600 mg/kg (71.40±13.17*) were observed when compared to the control

Conclusion

This research demonstrates that administration of *Bombaxbuonopozense* extract orally for 28 days, at doses of up to 1600 mg/kg, did not cause any toxic effects. Based on the acute toxicity study, the estimated median lethal dose (LD_{50}) of the extract was more than 2000 mg/kg.

Keywords: Diabetes, Acute toxicity, Sub-chronic toxicity, Bombaxbuonopozense.

Background

The World Health Organization define traditional medicine as the entirety of knowledge, skills, and practices based on theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement, or treatment of physical and mental illness. Plants are still the most natural primary source of active pharmaceuticals and are used extensively in ethnomedical medicine to treat a wide range of illnesses. In general, medicinal plants include a variety of phytochemicals, some of which are in charge of their biological effects [10] . The World Health Organization (WHO) estimates that up to 80% of people on the planet use medicinal plants for health purposes. This would depend on a number of factors, including cost, availability, effectiveness, and side effect minimization. Studies on medicinal plants are practical search methods for finding new medications, and they can be highly helpful in the drug-discovery process [11] . Toxicology is the study of the detrimental consequences that different chemicals, substances, and environmental elements have on humans, animals, and the environment. Toxicology is often called the "Discipline of Safety" because it has evolved from a science focused on poisons and the harmful effects of chemical exposure to one focused on safety. The study of chemical characteristics and how they impact the body is known as toxicology. The main objective is to determine the detrimental effects that chemicals have on

living organisms that come into touch with them. Decision-makers, regulatory agencies, and others can use the crucial knowledge and expertise it offers to develop programs and policies that restrict human exposure to harmful chemicals, preventing or lowering the risk of disease or other detrimental health impacts. [12] . The perennial red silk cotton plant (*Bombax buonopozense*), also called Gold Coast Bombax and a member of the Bombacaceae family. According to [9] , they are primarily found in rain forest regions of West African nations like Sierra Leone, East Gabon, and a portion of Nigeria. *Bombax buonopozense* is a deciduous tree with a narrow crown that typically reaches heights of 35 to 40 meters but can reach 60 meters on rare occasions. The bole is cylindrical and straight, with tiny, rounded buttresses. It has a circumference of 60 to 120 cm and can be free of branches for 18 to 24 meters. Strong conical spines adorn the bole and younger branches of trees, particularly the younger ones. One can extract a fiber from the seedpods. In Cameroon, the tree has been planted experimentally as a crop for fiber; it is also occasionally grown as an ornamental [7] Younger trees have spine-covered bark, but as the tree ages, it loses some of its spine. Large, deep pink tored flowers appear while the tree is leafless. This plant is used for traditional and therapeutic reasons in many places. The plant contained alkaloids, carbohydrates, phenols, flavonoids, saponins, tannins, protein, terpenoids, and oxalates. The massive tropical tree *Bombaxbuonopozense* may grow up to 40 meters tall and has massive buttress roots that can reach up to 6 meters. The plant is used in many ways, including food, building materials, medicine, textile fiber, dye, and cotton wool manufacture. The fruits are eaten by water chevrotain and other animals [4]. Root decoction possesses antimicrobial properties. Tannins in the bark are utilized to create dye. The fibers surrounding the seeds resemble cotton and work well as a cotton substitute. The tender fruit and blooms can be eaten by humans. According to earlier research, it possesses antibacterial, antidiarrheic, and antipyretic properties (Tilaoui *et al.,* 2021).In southwest Nigeria, people have long utilized the leaves of *Bombax buonopozense* (Bombacaceae) to treat arthritis

Methods

Collection and Identification of Plant Materials

The *Bombax buonopozense* leaf was collected in Karmo, Abuja. At the National Institute for Pharmaceutical Research and Development (NIPRD) in Herbarium, Abuja, The sample was identified and given an accession Number of NIPRD/H/73471.

Preparation of Plant Extract

The leaves and stem bark of *Bombax bounopozense* were air dried for 28 days at room temperature in a cool dry room. The dried parts of *Bombaxbounopozense* were further processed, by pulverizing the plant parts. The dry leaf using wooden mortar and pestle were grounded into fine powder. The powdered samples were stored in a polyethylene bag for further work. 1.4 kg) of *bombaxbouneponzense* leaf was macerated separately in 12 L of methanol (75%) for 72 h, 4 times consecutively. The extract was filtered using muslin cloth and concentrated at 78°C using a rotary evaporator and the percentage yield was calculated using the method described by Benchaachoua *et al*. (2018). The stock extracts was preserved by storing in an airtight glass container and kept inside the refrigerator at 4°C [1].

Acute toxicity study

Healthy male and female Wistar rats were used according to the instructions of the Organization for Economic Cooperation and Development (OECD) for acute oral toxicity test(s). All animals were fasted overnight, but with free access to water and weighed before administration of the extract. The animals were randomly divided into two groups according to their sex (n = 10; 5 males and 5 females per group). **Group 1** (Control) received distilled water orally; **Group 2** (Acute toxicity) received a limit dose of the *bombaxbouneponzense* extract of 2000g/kg. The animals are then observed for mortality, signs of acute toxicity and behavioral changes (aggression, unusual vocalization, agitation, sedation and somnolence, convulsions, tremors, ataxia, catatonia, paralysis, fasciculation, prostration and unusual locomotion and asphyxia) for the first thirty minutes and the first hour, then every hour for 5 h and finally periodically up to 48 h. All experimental animals were individually observed daily for general behaviour and body weight changes, dangerous symptoms and mortality for 14 days after treatment. The LD_{50} should be greater than 5 g/kg if three or more rats survived. At the end of the experimental period, all animals were weighed and sacrificed by cervical dislocation, and the organs were removed for necropsy [3].

Sub chronic toxicity

The experiment was conducted according to the protocols described by [13] Guideline 407.A total of 30 rats of both sexes were used in this study. The rats were divided into three groups of 10 (n = 10; 5 males and 5 females per group) and their weights were recorded. Prior to treatment, rats were handled individually and carefully examined for abnormal behaviour and appearance. The BB extract dissolved in distilled water, was administered orally once a day for 28 consecutive days. **Group1** (Control rats)

received distilled water; **Group 2** (*bombaxbouneponzens* 800 mg/kg) received extract at a dose of 800 mg/kg; **Group 3** (*bombaxbouneponzens*600 mg/kg) received the extract at a dose of 1600 mg/kg. The animals were observed daily during the experimental period for mortality or morbidity, changes in posture, changes in the fur of the skin, eyes, mucous membranes and behaviours. At the end of the 28 days of administration, the animals were fasted overnight, but had free access to the water. On 29th day, they were anesthetized with ether and blood samples were taken by retro-orbital puncture using capillary tubes for haematological and biochemical studies. After blood collection, the rats were sacrificed, Organs such as liver, kidneys, sex organs (testes, seminal vesicles and epididymis in male rats, ovaries and uterus for female rats), brain, spleen, lungs and heart were removed and weighed and the relative weight of the organs was calculated[6].

Ethical approval

The study was approved by the ethical committee of National institute for pharmaceutical research and development (NIPRD/05.03.05-31)

Blood sampling and serum preparation

Following the observation period, the rats were fasted 2–3 hours prior to sacrifice. They were anesthetized with ketamine–xylazine (100 mg/kg:10 mg/kg) by intraperitoneal injection prior to blood sampling. The blood sample (1 mL) was collected by cardiac puncture using a 26 G, ½″ needle (Terumo®, Belgium, Europe) into nonheparinized and ethylene diamine tetraacetic acid-containing tubes for biochemical and hematological analyses, respectively. The blood collected in the nonheparinized tube was then centrifuged at 10,000× *g* for 10 minutes to obtain serum.

Hematological and biochemical analyses

Hematological parameters were analysed using an automated hematology analyzer (Sysmex-XT-1800, Norderstedt, Germany). The parameters measured were red blood cells, hemoglobin concentration, hematocrit, mean corpuscular volume, mean corpuscular hemoglobin concentration, white blood cells, and platelet count. Biochemical analysis was performed using a chemical analyzer (Selectra-XL, Huizen, the Netherlands). For hepatic function, the levels of serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), gamma glutamyltranspeptidase, alkaline phosphatase (ALP), conjugated bilirubin, total bilirubin, total protein, and albumin were evaluated. For renal function, the levels of blood urea nitrogen and serum creatinine were determined [8].

Statistical Analysis

The statistical analysis was carried out with Graph Pad Prism version 8.0 for Windows. Values were expressed as the mean ± SD, and the difference between groups was assessed by one-way analysis of variance (ANOVA

Results

Acute toxicity

Oral administration of *bombax bouneponzense* extract at a dose of 2000 mg/kg showed no mortality or clinical symptoms of acute toxicity for both a brief 48-hour period and a longer 14-day period. By the end of the observation period, all ten rats were still alive. Throughout the 14-day period, the body weight remained constant as shown in table 1. Administration of *Bombax bouneponzense* extract to rats showed significant increase in platelate in the treated group (362.00±23.67*) when compared to the control group (451.67±30.77) at ($p>0.05$) as shown in table5.The serum levels of albumin,,protein, ALT,ALPwere comparable to control levels after the *Bomb axbouneponzense*extract administration of and this resulted in no discernible variation in the measured liv er function tests (table 3).The concentrations of renal markers including urea, creatinine and electrolytes (Table 3) were not affected by the treatment with *Bombax bouneponzense* as they didn't show any notetable difference when compared with the control. The lipid profile markers (cholesterol, triglycerides, and lipoproteins) showed no significant difference compared to the control (Tabl 4)

Table 1: Acute Toxicity (14 day) Study of *bombaxbouneponzens* Methanol Leaf Extract on weight change

	Control	**Treated (5000 mg/kg)**
Before treatment	122.33±7.22	126.67±4.81
7days after treatment	137.67±3.84	142.00±1.53
14days after treatment	141.33±4.06	144.33±0.88

Values are represented as mean value ± standard error of mean (SEM) n= 5; Multiple t-Test was used for differences in mean and Holm-Sidak test for multiple comparisons. Not significantly different from each other

Table 2: Acute Toxicity (14 day) Study of *bombaxbouneponzens* **Methanol Leaf Extract on liver profile**

	T-Protein	**Albumin**	**Globulin**	**ALP**	**ALT**
Control	6.64±0.27	6.07±0.56	0.64±0.27	182.47±20.12	21.47±6.15
Treated (2000 mg/kg)	6.19±0.22	5.25±0.20	0.94±0.13	151.19±30.57	15.07±1.84

Values are represented as mean value ± standard error of mean (SEM) n= 5; Multiple t-Test was used for differences in mean and Holm-Sidak test for multiple comparisons. Not significantly different from each other

Table 3: Acute Toxicity (14 day) Study of *B bouneponzense* Methanol Leaf Extract on kidney profile

	Urea	Creatinine	Sodium	Potassium	Chloride	Calcium	Phosphate	Bicarbonate
Control	92.04 ± 9.99	0.74 ± 0.12	163.27 ± 9.08	10.94 ± 0.57	81.74 ± 2.86	2.15 ± 0.20	19.81 ± 0.99	54.87 ± 0.61
Treated (2000 mg/kg)	89.65 ± 8.78	0.77 ± 0.12	136.73 ± 14.51	9.30 ± 0.73	75.16 ± 0.74	2.17 ± 0.08	20.00 ± 0.66	39.09 ± 2.19

Values are represented as mean value ± standard error of mean (SEM) n= 5; Multiple t-Test was used for differences in mean and Holm-Sidak test for multiple comparisons. Not significantly different from each other

Table 4: Acute Toxicity (14 day) Study of *B bouneponzense*Methanol Leaf Extract on lipid profile

	T-Cholesterol	Triglyceride	HDL-C	LDL-C
Control	55.80±14.15	90.28±11.81	61.29±11.94	11.45±1.77
Treated (2000 mg/kg)	40.74±8.85	67.76±4.93	50.37±1.45	11.82±8.01

Values are represented as mean value ± standard error of mean (SEM) n= 5; Multiple t-Test was used for differences in mean and Holm-Sidak test for multiple comparisons. Not significantly different from each other

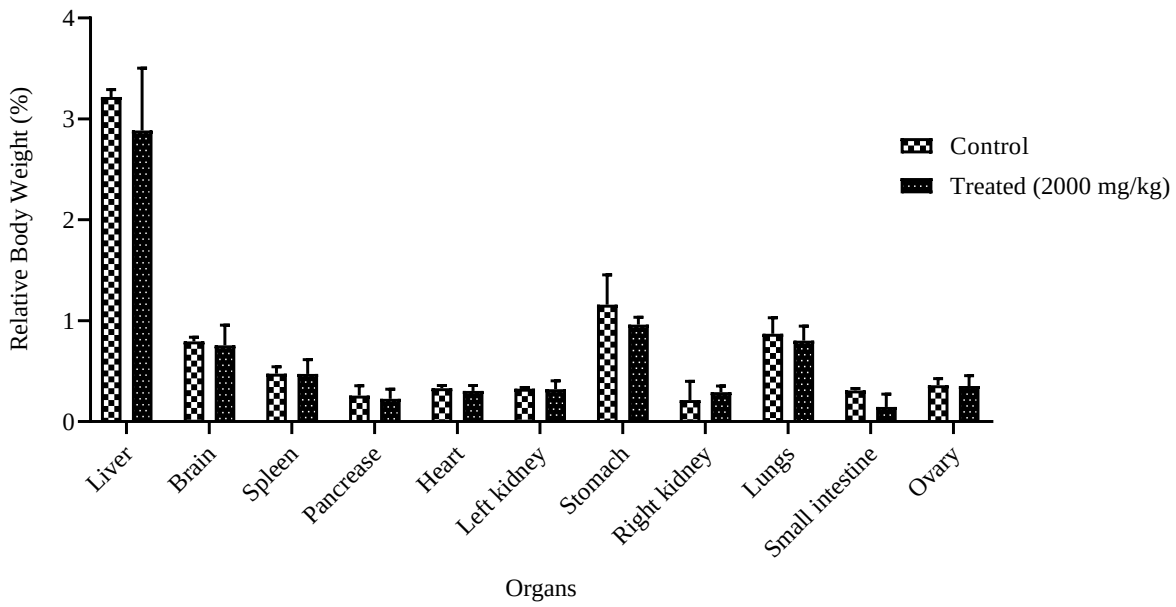

Figure 1: Acute Toxicity (14 day) Study of *B bouneponzense*Methanol Leaf Extract On Relative Organ-to-Body Weight

Subchronic study

Treatment of rats with *Bombax bouneponzense* extract showed a significant increase in ALP on the group treated with 1600 mg/kg (216.59±44.29*) compared to the control(98.70±13.32) as shown in Table 7 significant increase in LDL for the treated groups 800 mg/kg (70.76±8.19*) and 1600 mg/kg (71.40±13.17*) were observed when compared with the control group(59.21±4.96) as shown in table 8. The relative organ weight of the *Bombax bouneponzense* treated rat showed no significant difference when compared to the Normal control as shown in Table 10. After the 28 day study, there was no significant change in the urine output of the untreated female rats. The treatment groups for 800 mg/kg and 1600 mg/kg of *Bombaxbouneponzense* showed no significant difference compared to the untreated groups as shown in figure 6.The result of the feaces, feed,water consumption and urine output showed no significant difference between the untreated and the treated group within twenty-eight days as shown in figure3,4,5,6 respectively

Table 6: Sub Chronic Toxicity (28 day) Study of *B bouneponzense*Methanol Leaf Extract on kidney profile

	Urea	Creatinine	Sodium	Potassium	Chloride	Calcium	Phosphate	Bicarbonate
Normal	54.57±2.25	0.95±0.06	184.40±9.84	9.46±1.11	139.77±6.74	3.35±0.17	1.12±0.06	36.42±1.20
800 mg/kg	58.02±1.41	1.21±0.07	181.81±4.92	9.37±0.67	100.59±3.05*	2.24±0.07	0.75±0.02	35.41±0.82
1600 mg/kg	59.35±2.94	1.69±0.11	175.38±6.23	8.33±0.49	103.36±2.65*	1.91±0.26	0.64±0.09	35.70±1.11

Values are represented as mean value ± standard error of mean (SEM) n= 5; *Extract* treated groups (800 mg and 1600 mg/kg). Two way ANOVA was used for differences in mean followed by Dunnett's test for multiple comparison *$p<0.05$ significantly different from Normal

Table 7: Sub Chronic Toxicity (28 day) Study of *B bouneponzense*Methanol Leaf Extract on liver profile

	T-Protein	Albumin	Globulin	ALP	ALT	AST	GGT	LDH
Normal	9.33±0.47	3.07±0.18	6.26±0.33	98.70±13.32	47.09±2.35	14.34±0.90	5.46±1.82	198.29±15.45
800 mg/kg	9.24±0.36	2.60±0.26	6.64±0.23	166.78±10.39	46.20±3.34	13.06±0.84	6.12±1.35	254.69±4.57
1600 mg/kg	9.06±0.49	2.90±0.20	6.16±0.41	216.59±44.29*	50.12±3.19	13.81±0.81	6.45±2.11	204.58±20.77

Values are represented as mean value ± standard error of mean (SEM) n= 5; *Extract* treated groups (800 mg and 1600 mg/kg). Two way ANOVA was used for differences in mean followed by Dunnett's test for multiple comparison *$p<0.05$ significantly different from Normal

Table 8: Sub Chronic Toxicity (28 day) Study of *B bouneponzense* Methanol Leaf Extract on lipid profile

	T-Chol	Trig	HDL-C	LDL-C
Normal	89.24±3.65	145.02±5.87	61.11±3.09	59.21±4.96
800 mg/kg	106.76±2.81	93.45±3.72	33.25±1.19	70.76±8.19*
1600 mg/kg	115.21±10.35	94.95±3.70	39.71±2.83	71.40±13.17*

Values are represented as mean value ± standard error of mean (SEM) n= 5; *Extract* treated groups (800 mg and 1600 mg/kg). Two way ANOVA was used for differences in mean followed by Dunnett's test for multiple comparison *p<0.05 significantly different from Normal

	RBC	**MCV**	**RDW**	**RDWA**	**HCT**	**PLT**	**MPV**	**PCT**	**LPCR**	**WBC**	**HBG**
Normal Control	6.22±0.16	54.72±1.21	17.83±0.51	42.50±2.08	34.07±1.18	288.33±33.23	5.62±0.09	0.16±0.02	2.82±0.37	15.95±2.22	13.38±0.31
800 mg/kg	6.56±0.10	51.80±0.82	18.04±0.54	39.60±0.94	34.00±0.51	335.40±42.48	5.30±0.07	0.17±0.02	1.04±0.20	8.88±0.74	13.70±0.08
1600 mg/kg	6.16±0.35	55.12±1.92	17.60±0.38	42.26±2.39	33.92±2.05	287.00±25.36	5.64±0.17	0.16±0.01	3.32±1.52	14.04±1.28	13.40±0.71

Table 9: Sub Chronic Toxicity (28 day) Study of *B bouneponzense*Methanol Leaf Extract on Haematology Parameters

Values are represented as mean value ± standard error of mean (SEM) n= 5; *Extract* treated groups (800 mg and 1600 mg/kg). Two way ANOVA was used for differences in mean followed by Dunnett's test for multiple comparison, No significantly different from Normal.

Table 10: Sub Chronic Toxicity (28 day) Study of *B bouneponzense*Methanol Leaf Extract on Relative Organ Weight

	Liver	Brain	Spleen	Heart	Left kidney	Right kidney	Stomach	Pancrease	Lungs	Small intestine	Testes
Group 1	4.95±1.14	1.11±0.23	0.54±0.12	0.57±0.14	0.44±0.09	0.49±0.10	2.47±0.61	0.32±0.10	0.91±0.23	0.24±0.07	3.20±0.64
Group 2	6.30±0.25	1.30±0.09	0.73±0.08	0.58±0.03	0.57±0.03	0.58±0.03	3.78±0.26	0.53±0.08	1.46±0.06	0.30±0.06	2.59±0.60
Group 3	5.10±0.82	1.39±0.13	0.69±0.10	0.72±0.03	0.54±0.03	0.57±0.04	2.42±0.22	0.58±0.07	1.40±0.07	0.23±0.01	2.90±0.34

Values are represented as mean value ± standard error of mean (SEM) n= 5; *Extract* treated groups (800 mg and 1600 mg/kg). Two way ANOVA was used for differences in mean followed by Dunnett's test for multiple comparison, No significantly different from Normal.

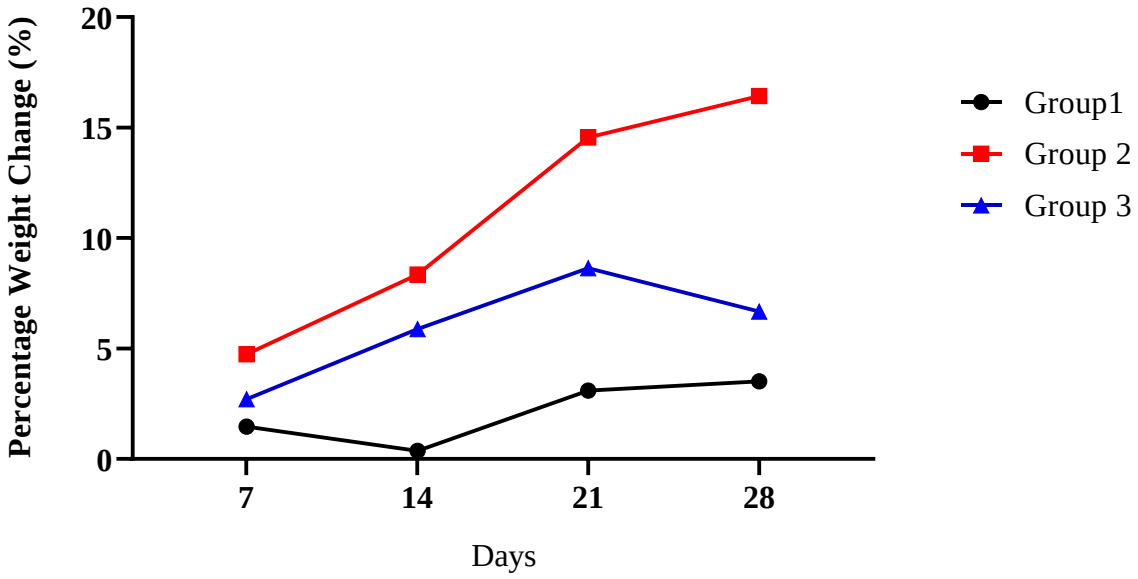

Figure 2: Subchronic Toxicity of *Bombax bouneponzense* Methanol Leaf Extract On Body Weight

Values are represented as mean value ± standard error of mean (SEM) n= 5; Multiple t-Test was used for differences in mean and Holm-Sidak test for multiple comparisons. Not significantly different from each other

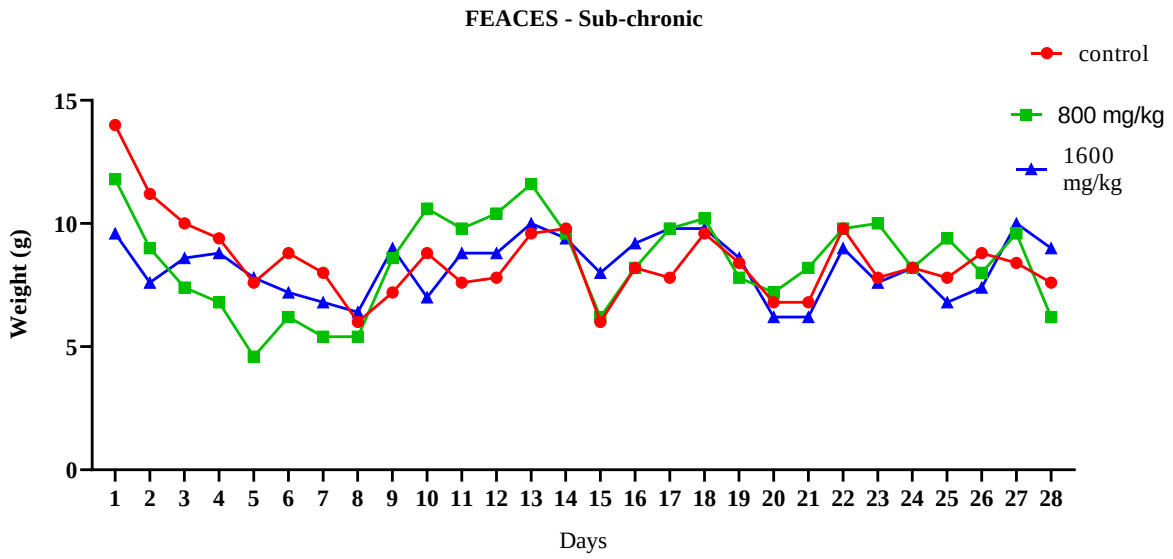

Figure 3 :Subchronic Toxicity of BB Methanol Leaf Extract on feaces

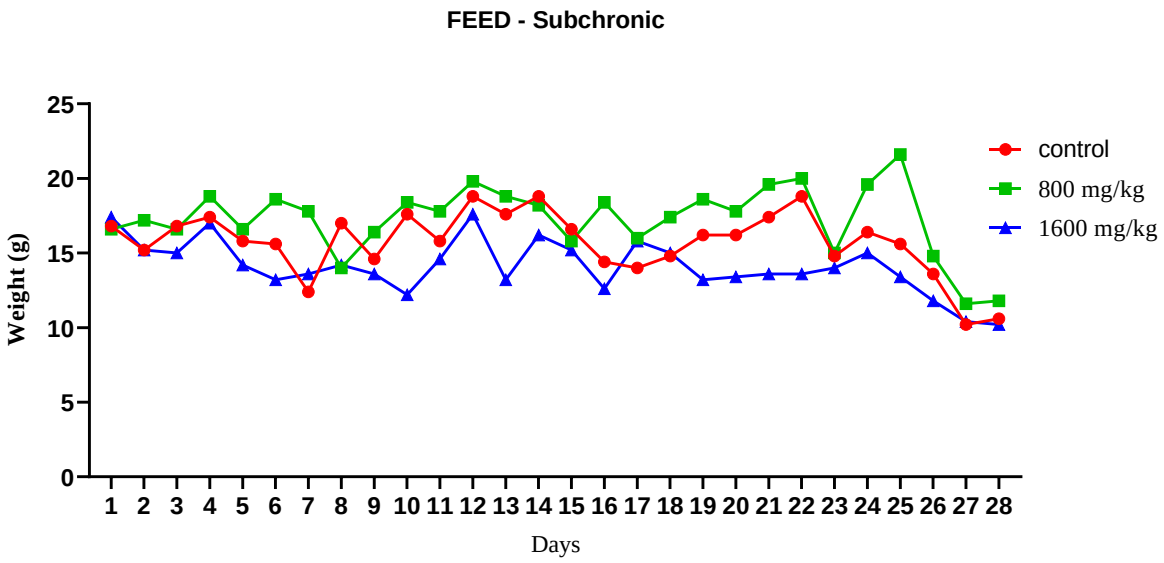

Figure 4 :Sub Chronic Toxicity (28 day) Study of BB Methanol Leaf Extract on feed

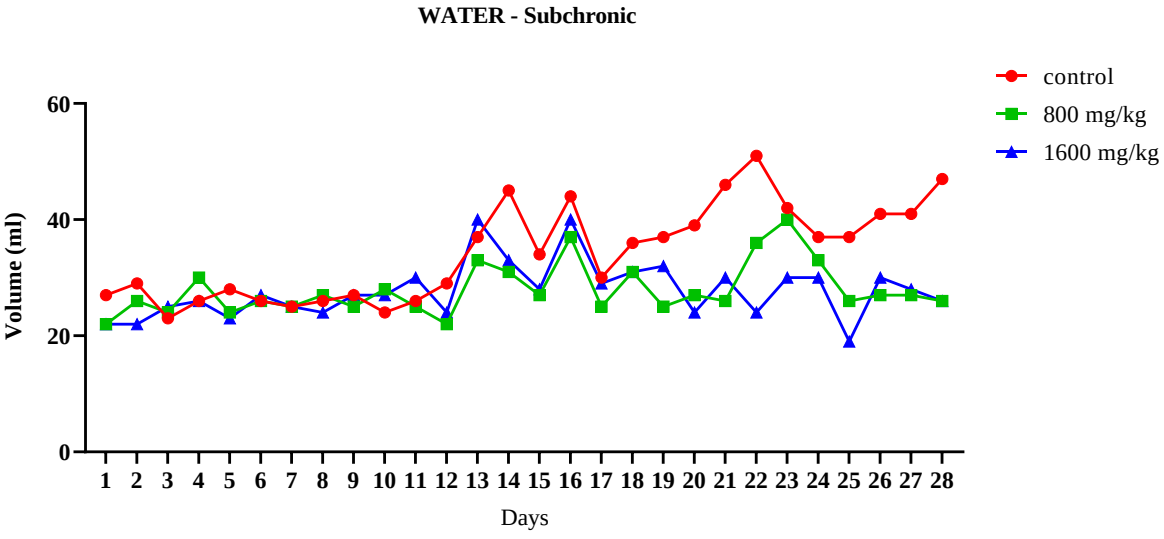

Figure 5:Subchronic Toxicity of BB Methanol Leaf Extract on water intake

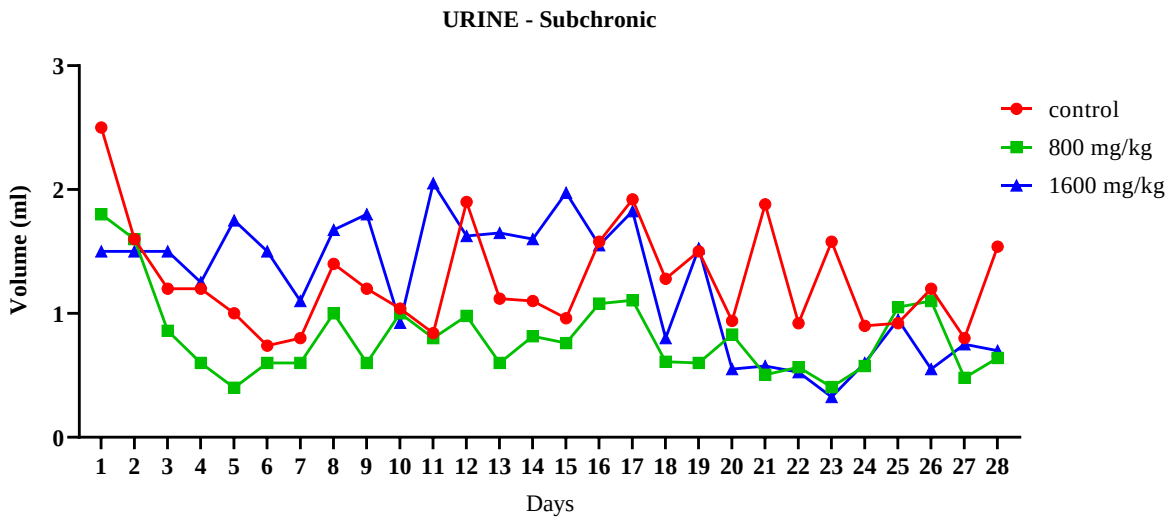

Figure 6: Subhronic Toxicity of BB Methanol Leaf Extract on urine output

Discussion

Herbal medicines are generally considered safe due to their long history of use, which has provided accumulated experiences. Unlike chemical drugs, herbal medicines do not undergo toxicity tests before being clinically applied. It is essential to evaluate the efficacy and safety of herbal medicines due to their growing global usage to guarantee their quality and safety [3].

During the acute toxicity study, rats did not experience any mortality, changes in body weight, or clinical signs after being orally administered *Bombaxbuonopozense* at 2000 mg/kg BW. There was no death and toxicity in the Methanol extract of *Bombaxbuonopozense* rats within the first 24 h and the long term 14 days of observation. Figure 1 displays the relative organ weights of the rats given *Bombaxbuonopozense extract* treatment for 14 days; there was no discernible difference between the treatment group and the control group. Based on the toxicity classification system known as the Globally Harmonized System (GHS), substances with an oral LD50 falling between 2000–5000 mg/kg BW are considered to have relatively low toxicity (UN 2019). The current study has shown that *Bombaxbuonopozense* is categorized as class 5 in the GSH, indicating relatively low acute toxicity. The overall health status of animals can be assessed using hematological and clinical biochemical parameters, which are also useful for studying the toxicity of drugs and chemicals. According to Table5, administration of *Bombaxbuonopozense* extract to rats did showed significantly increase in platelate in the treated group (362.00±23.67*) when compared to the control group (451.67±30.77) at ($p>0.05$). The observed increase in platelete could indicate that the extracts have a thrombopoietin-stimulating effect.

The serum levels of albumin, protein, total bilirubin, and direct bilirubin were comparable to control lev els after the *Bombaxbuonopozense*extract administration of and this resulted in no discernible variation i n the measured liver function tests (table 2) Also, the liver enzymes ALT, AST, GGT, and Lactate dehydrogenase showed no statistical difference from the control groups (Table 2). An increase ($P>0.05$) was seen in ALP concentration on the treated group (216.59±44.29*) compared to the control (166.78±10.39). The concentrations of renal markers including urea, creatinine and electrolytes (Table 3) were not affected by the treatment with *Bombaxbuonopozense* as they didn't show any notetable difference when compared with the control. The lipid profile markers (cholesterol, triglycerides, and lipoproteins) showed no significant difference compared to the control (Table 4). After the 28 day study, there was no significant change in the urine, water, feaces and food intake treated groups when compared with the

control (untreated group). The treatment groups for 800 mg/kg and 1600 mg/kg of *Bombaxbuonopozense* showed no significant difference compared to the untreated groups as shown in Figure 6. During the 28 day study, there was no significant increase in body weight over 28 days, day 7, day 14, and day 28.as shown figure 2. Treatment of rats with *Bombaxbuonopozense* extract showed a significant increase in ALP on the group treated with 1600 mg/kg (216.59±44.29*) compared to the control (98.70±13.32) as shown in Table 7. Significant increase in LDL for the treated groups 800 mg/kg (70.76±8.19*) and 1600 mg/kg (71.40±13.17*) were observed when compared with the control group (59.21±4.96) as shown in table 8. The relative organ weight of the *Bombaxbuonopozense* treated rat showed no significant difference when compared to the Normal control. Organ weight variations are frequently evaluated in toxicological research because they are a key indicator of changes in biological systems brought on by chemicals. Depending on the goals of the investigation, other organs may be of interest. For instance, in long-term investigations of carcinogenicity, the presence of tumours might cause fluctuations in organ weights. Due to their role in metabolism and sensitivity in predicting toxicity, the kidneys and liver are frequently examined closely since they can show physiological abnormalities. Analysis of the relative organ weights in the rats treated with *Bombax bouneponzense*, in this investigation showed no appreciable differences from the control group. This suggests that the constituents of *B bouneponzense*, may not cause notable disruptions in normal physiological processes that could manifest as toxicological effects in internal organs.

Conclusion

The risk/benefit ratio assessed in this study is in favor of using this traditional medicinal plant, so *Bombaxbuonopozense* extract can be used for its proven nephroprotective effects because the therapeutic doses used are far from the LD_{50}. Oral administration of *Bombaxbuonopozense* extract rats for 28 days, at doses of up to 1600 mg/kg, showed no symptoms of toxicity or mortality, suggesting that *Bombaxbuonopozense* extract is well tolerated by these animals. The extract was found to have a median lethal dose (LD_{50}) of over 2000 mg/kg in the acute toxicity study.The current toxicity study indicates the relative safety of *Bombaxbuonopozense* extract, indicating its potential for pharmaceutical development as a natural medical product, more research is necessary to validate its.

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