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PHYTOCHEMICAL SCREENING AND ANTI HYPERLIPIDEMIC ACTIVITY OF METHANOLIC EXTRACT OF ARGYREIA NERVOSA IN ALBINO RATS

Shilpa Reddy. K , Dr. P . Polireddy, Dr. Vivek V. Byahatti
Swami Ramanandatirtha Institute of Pharmaceutical Sciences,Nalgonda.

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Abstract:
Argyreia speciosa (Linn. f.) (Family: Convolvulaceae, Synonyms: Argyreia nervosa) is used in the traditional Ayurvedic systems of medicine as well as in local health folklore. It is commonly known as Vidhaara in Hindi and Hawaiian Baby Woodrose and Elephant creeper in English. It is the large climber and seen throughout India up to an altitude of 500 m. A. speciosa possess various pharmacological activity such as anti-aging, gastroprotective, analgesic & anti-inflammatory, aphrodisiac, antiviral, antidiabetic, anticonvulsion, antioxidant, antidiarrheal, antiulcer, central nervous system depressant, nematocides, nootropic, anticancer and many more. Apart from this numerous phytoconstituents have been isolated from A. speciosa.In present study evaluated phytochemical screening and anti-hyperlipidaemic activity. Phytochemical testing of the remove reveals the visibility of chemical components like Alkaloids, steroids, fixed oils, cardio tonic aglycones, flavonoids, saponins, carbohydrates, healthy proteins, resins. Severe OECD guide line no. 423, ED50 value was discovered to be 200mg/kg and also 400mg/kg.Anti Hyperlipidaemic activity was done by regimen caused technique. In today plasma HDL-cholesterol with a concomitant percent decrease from various other lipid was observed. It can be wrapped up from the here and now data that the levels of overall product cholesterol, triglyceride and also MDA which are really elevated in high fat diet regimen, can be lowered substantially with Argyreia nervosa and also antioxidant parameters SOD, GSH, Catalase which are actually can be increased significantly with Argyreia nervosa. Atherogenic index which in fact raised in atherogenic diet can be decreased considerably with Argyreia nervosa and also a very good % defense was seen with Argyreia nervosa and also basic medicineFrom this we can wrap up that the essence (Argyreia nervosa) Showed the anti-Hyperlipidaemic activity.

KEYWORDS: *Argyreia nervosa, Methanolic extract, Phytochemical screening, Anti- Hyperlipidemic Activity*

Corresponding author:
Shilpa Reddy Kandimalla
M.Pharmacy,
Department of Pharmacology
SRTIPS, Ramananda Nagar, Nalgonda-508004
Telangana, India
Phone no: 8522984686, E-mail: kandimalla26@gmail.com

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INTRODUCTION:

Argyreia speciosa (Convolvulaceae), commonly known as elephant creeper is a woody climber distributed mainly in the tropical and subtropical regions, up to an attitude of 300m [1]. A lipid ester and a disubstituted tetrahydrofuran were isolated from the roots and characterized as tetradecanyl palmitate and 5, 8- oxidotetracosan-10-one [2]. Diabetes mellitus (DM) is a chronic disease caused by inherited and/or acquired deficiency in the production of insulin by pancreas, or by ineffectiveness in the production of insulin. Such a deficiency results in increased concentration of glucose in blood which, in turn damages many body systems and in particular the blood vessels and nerves [3]. Diabetes mellitus is one of the most prevalent chronic diseases in the world. Chronic liver disease and diabetes mellitus can co-exist in a single individual, and the liver is a frequent site of unrecognized injury in diabetes mellitus patients [4]. The mortality rate in diabetes mellitus patients is generally not due to classical diabetes-related complications (micro and/or macro vascular complications), but rather to an increased risk of hepatocellular failure [5]. Antidiabetic medicinal plants are in general known to exert their beneficial effect (s) on diabetes via various modes and mechanisms depending on the phytochemicals and bioactive agents endowed in such plants or a collection of plants [6]. Whereas, the previous reports had postulated the role of Argyreia spesioca as antifungal , antiinflammatory [7], immunomodulatory [8], hepatoprotective and antioxidant effects [9].

Our study was conducted to assess the influence of the methanolic extract of A. speciosa as anti hyperlipidemic activity and phyto chemical screening.

MATERIALS AND METHODS:

Collection, identification and Authentication of plants:

Argyreia nervosa utilized for the present examinations was gathered from Chitoor locale of Andhra pradesh. The plant was recognized, conformed and verified by Survey of restorative plants and gathering unit, Department of Botany, Sri Venkateswara University, Tirupathi by Field Botanist Dr. Madhavshetty.

Extraction procedure:

Freshly collected plant materials was dried under shade and the dried material was milled to obtain a coarse powder. To the coarse powder was packed in a soxhlet apparatus and subjected to extraction with methanol. The liquid extracts was collected and evaporated under reduced pressure until a soft mass obtained. The mass obtained was weighed in each case. The extracts were thoroughly air dried to remove all traces of the solvent. The percentage hield of extraction is shown in Table 1

Preliminary Phytochemical Screening

The condensed extracts were used for preliminary screening of phytochemicals such as cholesterol, alkaloid, flavanoids, saponin, cardiac glycosides and terpenoids [10-11]. The phytochemical screening shown in table 2.

Screening Procedure

Test for flavanoids

Add a few drops of concentrated HCL and Mg turning to 1 ml of ethanol extract. Appearance of pink or magenta-red colour indicates the presence of flavanoids.

Test for cholesterol

To 2 ml of the extract 2 ml of the chloroform was added in a dry test tube. Then 10 drop of acetic anhydride and 2 to 3 drops of con. H2SO4 was added. A red colour changed to blue green colour.

Test for Alkaloids

To the extract added 1% HCl and 6 drops of Mayer's reagent and Dragendorff reagent. Any organic precipitate indicated the presence of alkaloids in the sample.

Test for terpenoids

5ml of each extract was added to 2ml of chloroform and 3ml of con.H2SO4 to form a monolayer of reddish-brown coloration of the interface was showed to form positive result for the terpenoids.

Test for cardiac glycoside

5mlof each extract was treated with 2ml of glacial acetic acid containing one drop of ferric chloride solution. This was underplayed with 1ml of con.H2SO4. A brown ring of the interface indicated a deoxysugar characteristic of cardenolides. A violet ring might appear below the brown ring whereas acid layer, a greenish ring might form just gradually throughout thin Layer.

Test for steroids

2 ml of acetic anhydride was added to 0.5 g of ethanolic extract of each sample with 2ml of H2SO4. The colour change from violet to blue or green indicated the presence of steroids

Test for Saponins

The extract with 20 ml of distilled water was agitated in a graduated cylinder for 15 minutes. The formation of 1cm layer of foam indicated the presence of saponins.

Pharmacological studies

Wistar albino adult male rats considering 200-250g were obtained from the pet residence. The pet were organized and also housed in polyacrylic cages (38x 23x 10 centimeters) with not more than 5 pets per cage and maintained under common research laboratory under basic research laboratory conditions (temperature level 25 +2 ºC) with dark and light cycle (14/10 hour). They were permitted open door to basic dry pellet diet plan (Hindustan Lever, Kolkata, India) and also water ad libitum. The mice were seasoned to lab condition for 10 days before start of experiment.

The speculative procedure was approved by Institutional Animal Ethical Board (IAEC) comprised under CPCSEA

Intense Poisoning Studies

The acute dental toxicity research study of by utilizing wistar rats of either sex evaluating between 150-200 g according to revised OECD (Organisation for Economic Cooperation and Advancement) Standards whole airborne part from Argyria nervosa was provided by mouth to overnight fasted pets at the dosage of 250 mg/kg, 500 mg/kg, 3000 mg/kg of body weight. After management of the essences, the animals were observed constantly for the first 2 hours, for any toxic indication. Thereafter, monitorings were made at regular periods for 48 h. Even more the animals were under examination up to a period of 2 week for death and also general behavior.

EXPERIMENTAL PROCEDURE

Induction of Hyperlipidemia by High Fat Diet Regimen.

The pets were divided right into five teams. Each group includes six pets.

Organizing is as adheres to:.

Team 1: Regular Team (Tween 80).

Group 2: Control Group (HFD).

Group 3: Standard-Atorvastatin + HFD (10 mg/kg).

Group 4: Extract II- Argyreia nervosa + HFD (400 mg/kg).

Group 5: Essence I- Argyreia nervosa + HFD(200 mg/kg).

The research Duration is 14 days.

Collection of blood.

On the 14thday, blood was collected by retro orbital sinus slit, under light ether anaesthesia. The collected examples were centrifuged for 10 minutes. Then serum samples were accumulated as well as utilized for numerous biochemical experiments. The pets were then given up and also the liver accumulated.

Biochemical analysis.

The serum and also liver essence were assayed for complete cholesterol, triglycerides, phospholipids, high-density lipoprotein (HDL), low-density lipoprotein (LDL), extremely low-density lipoprotein (VLDL) utilizing typical method techniques.

The results is shown in deferent figures

RESULTS:

Percentage yield of extraction

Table no 1: Percentage yield

S.No	Type of extraction	Percentage yield
1.	Methanol	18.52%

Quantitative phytochemical analysis of extracts

Table no 2: Quantitative phytochemical analysis

S.No	Test	Ethanol extract
1.	Carbohydrates	+
2.	Glycosides	+
3.	Protins & Amino acids	+
4.	Fixed oils & Fats	+
5.	Alkaloids	+
6.	Steroids	+
7.	Flavanoides	+
8.	Triterpinoids	-
9.	Saponins	+
10.	Resins	+

+ indicates presence

- indicates absence

Pharmacological activity

Acute Toxicity Researches:

Table no 3: Analysis LD50 value of the Argyreia nervosa dc. draw out based on OECD guide line no. 423:

GROUP NUMBER	NO. OF ANIMALS PER GROUP	DOSE IN mg/kg	REPORT
1	3	5 mg/kg	NO DEATH
2	3	50 mg/kg	NO DEATH
3	3	100 mg/kg	NO DEATH
4	3	300 mg/kg	NO DEATH
5	3	500 mg/kg	NO DEATH
6	3	1000 mg/kg	NO DEATH
7	3	2000 mg/kg	NO DEATH

According linesno.423 toxicity the computer mice as much as the dosage degrees of 2000 mg/kg, no fatality of the Rats observed. So the LD50 was located to be 2000mg/kg. ED50 was 1/10th of LD50 worth.
So, ED50 = 2000/10 = 200 mg/kg and 2000/5= 400 mg/k

Table no 4: HFD diet induced model

HFD diet	NORMAL	CONTROL	STANDARD	T1	T2
B.w B.T	228.83±0.8	228±1.07	227.83±1	227.5±0.71	226.16±0.91
B.w A.T	262.5±0.77	311.83±1.6***	281.33±0.9***	293.83±1.27***	290±1.19***
HDL	27.00±0.81	22.7±0.71**	31.55±0.54**	31.04±0.85**	37.98±0.76***
LDL	25.20±0.82	61.88±0.95***	35.60±0.78***	41.31±1.11***	24.81±1.09
VLDL	11.32±0.68	16.11±0.85***	12.31±0.58	14.32±0.39***	12.37±0.58
GLUCOSE	73.51±0.90	146.4±0.85***	104.2±0.91***	121.2±0.7***	106.2±0.72***
TC	65.03±0.97	106.0±0.63***	84.7±0.80***	83.49±1.17***	67.36±0.57
TG	54.08±1.35	94.04±0.68***	63.94±1.16***	73.41±1.31***	54.91±0.93
AI	1.41±0.574	3.67±0.529***	1.66±0.619	1.69±0.46	0.77±0.98***
CRR	2.41±0.574	4.67±0.529***	2.68±0.528	2.69±0.46	1.77±0.98***

ANTI OXIDANT	NORMAL	CONTROL	STANDARD	T1	T2
LPO	0.13±1.59	0.31±1.51***	0.23±0.52***	0.20±0.46***	0.13±1.27
GSH	1.31±0.20	0.62±0.20***	1.09±0.68***	0.82±0.90***	1.05±0.96***
SOD	0.05 ±1.94	0.08±2.38**	0.04±2.89	0.05±2.18	0.05±1.94
CAT	0.36±2.28	0.02±1.38***	0.14±2.14***	0.15±2.50***	0.17±1.40***

HIGH FAT DIET MODEL:

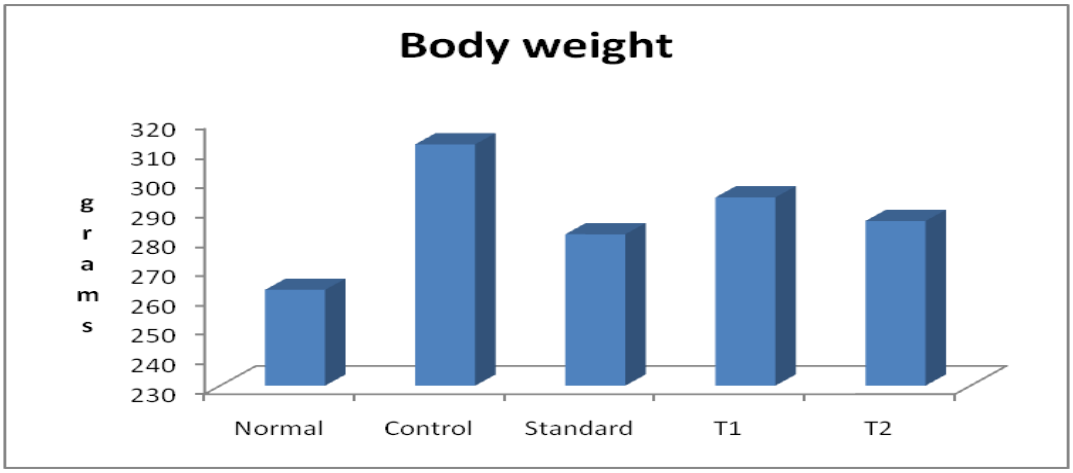

Figure no 1: Histogram showing the Intial Body weight of animals

N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

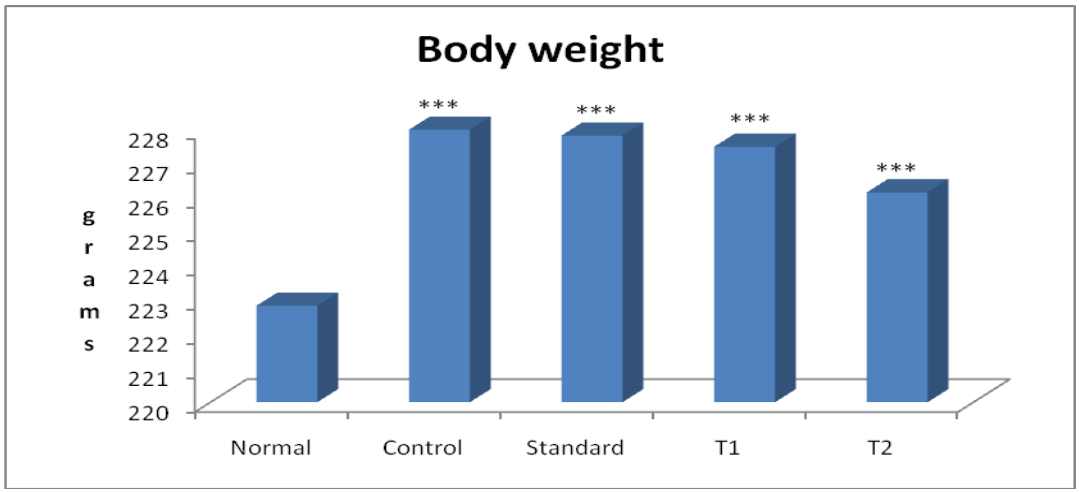

Figure no 2: Histogramshowing the effect of Argyreia nervosa on Final Body weight of animals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

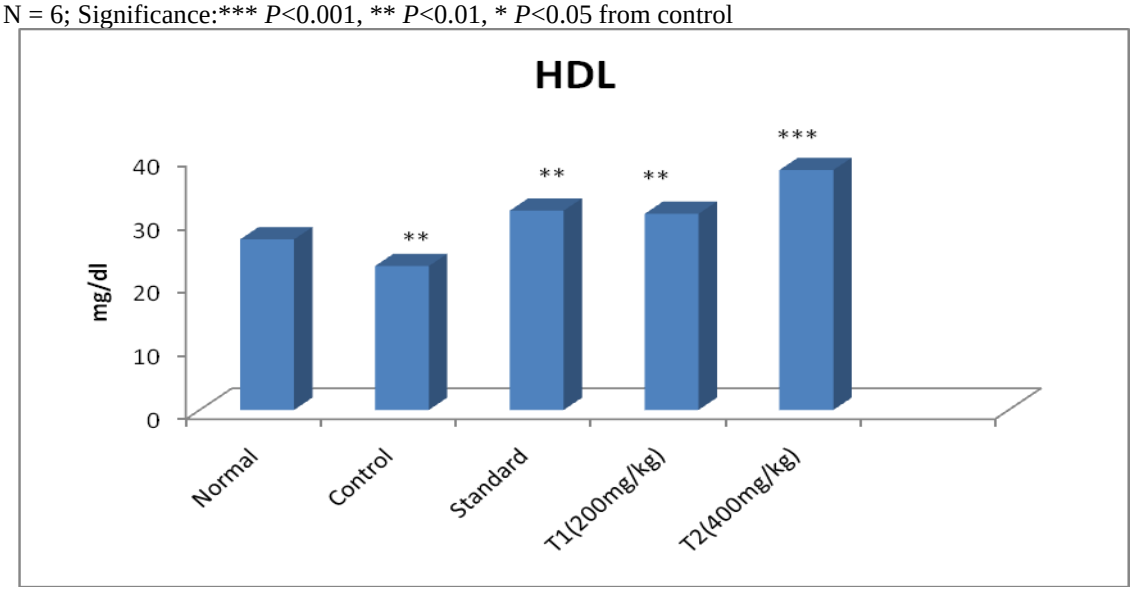

Figure no 3: Histogram showing the effect of Argyreia nervosa on HDL of animals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

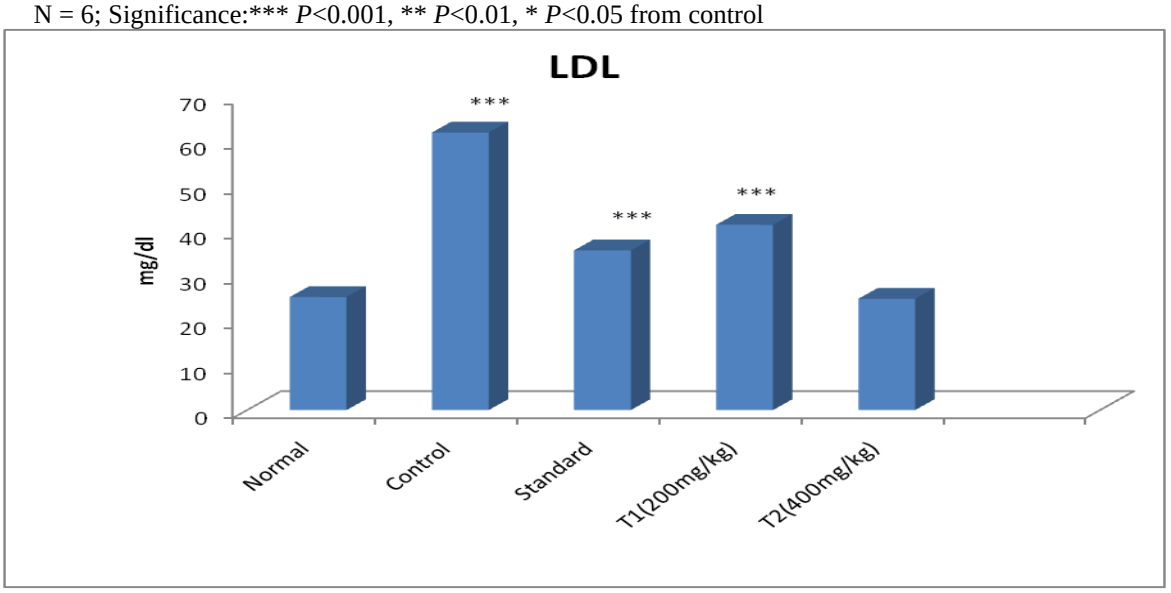

Figure no 4: Histogram showing the effect of Argyreia nervosa on LDL ofanimals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

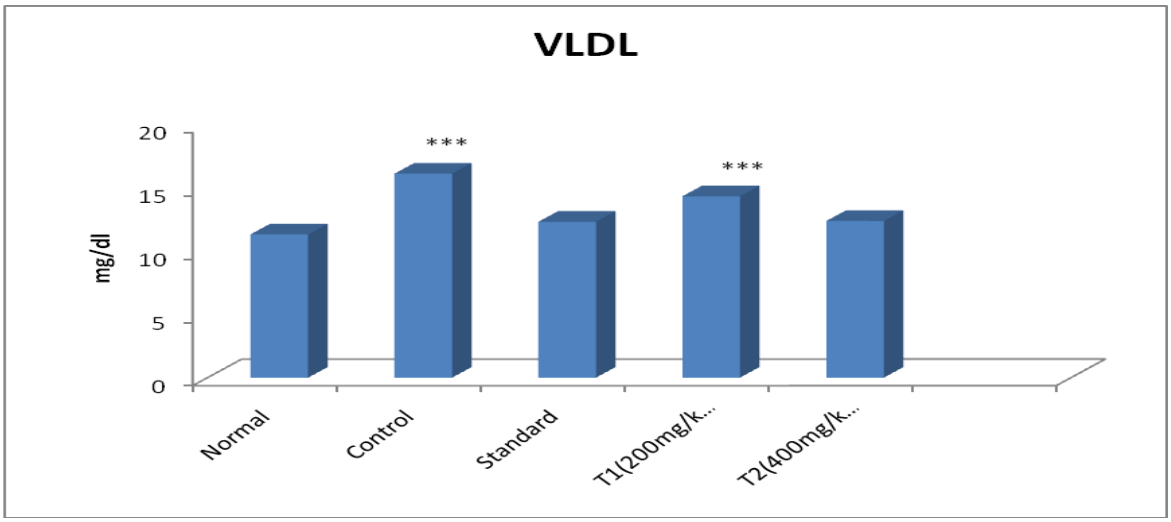

Figure no 5: Histogram showing the effect of Argyreia nervosa on VLDL of animals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

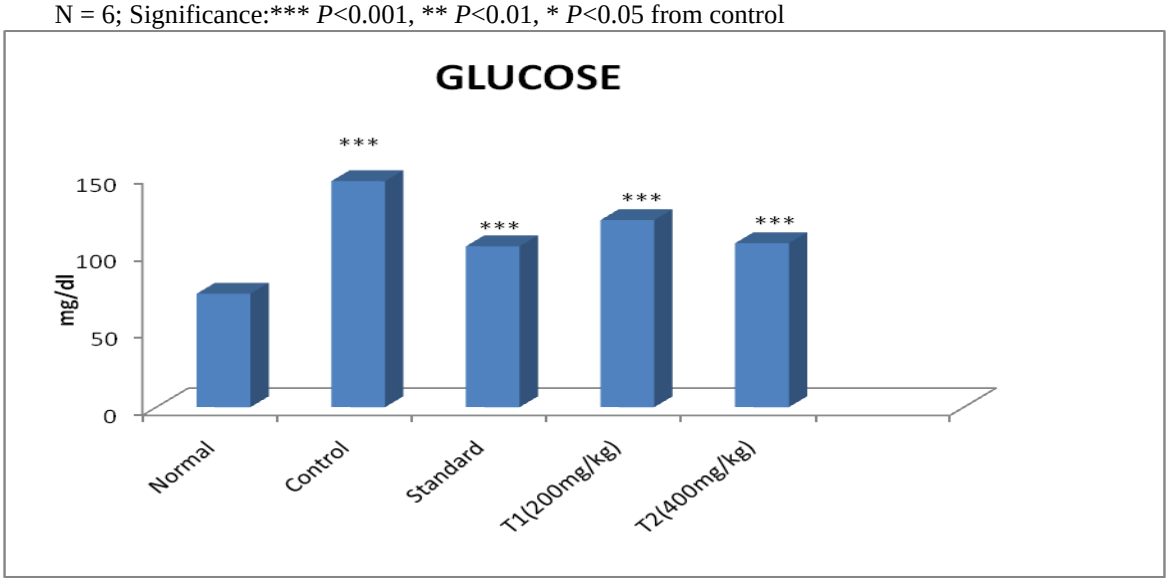

Figure no 6: Histogram showing the effect of Argyreia nervosa on glucose of animals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

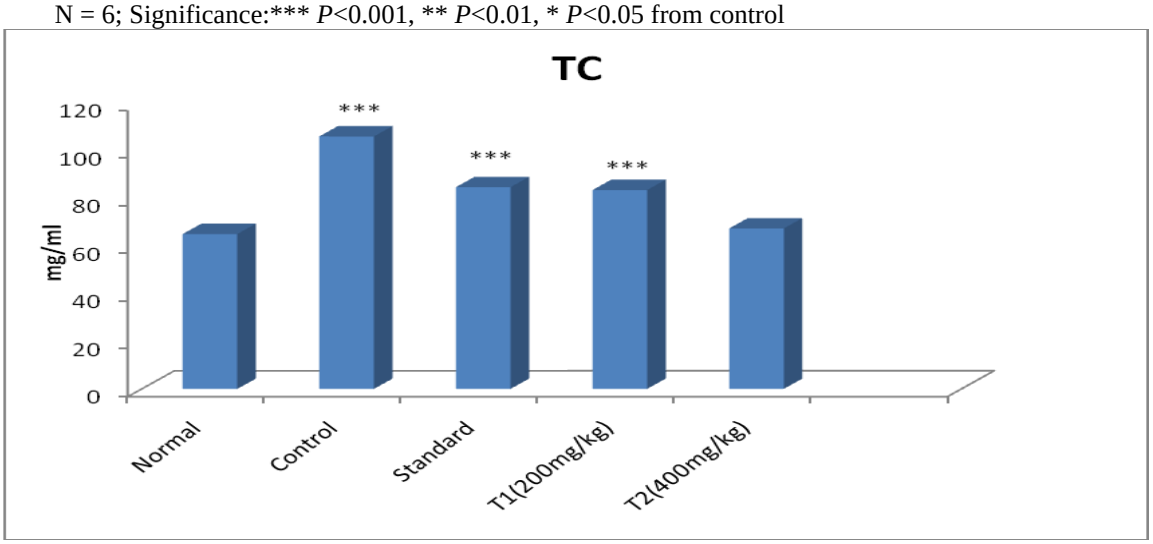

Figure no 7: Histogram showing the effect of Argyreia nervosa on total choleseterol of animals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

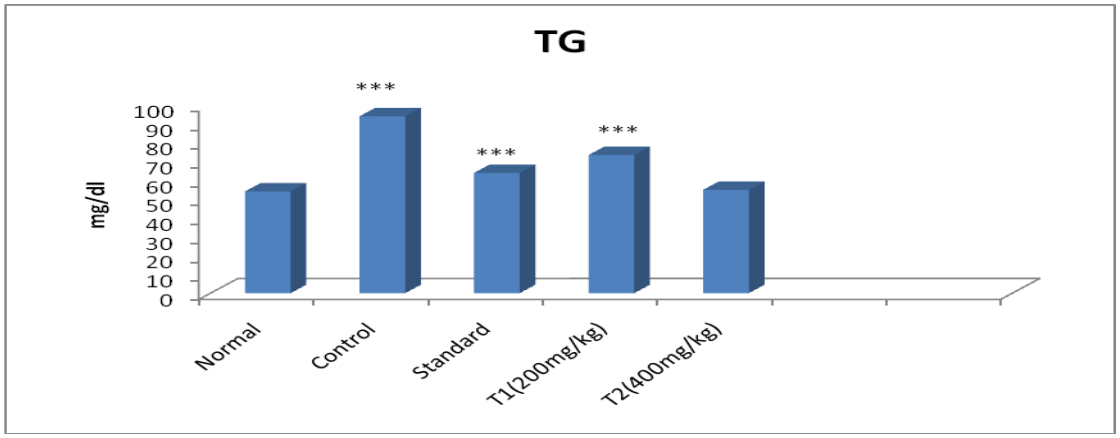

Figure no 8: Histogram showing the effect of Argyreia nervosa on triglycerides of animals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

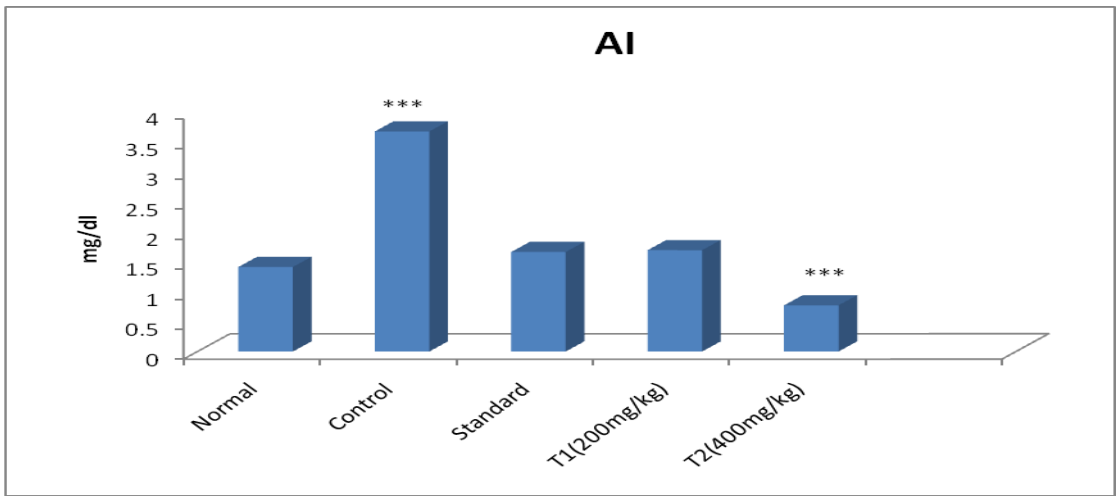

Figure no 9: Histogram showing the effect of Argyreia nervosa on Atherogenic Index of animals

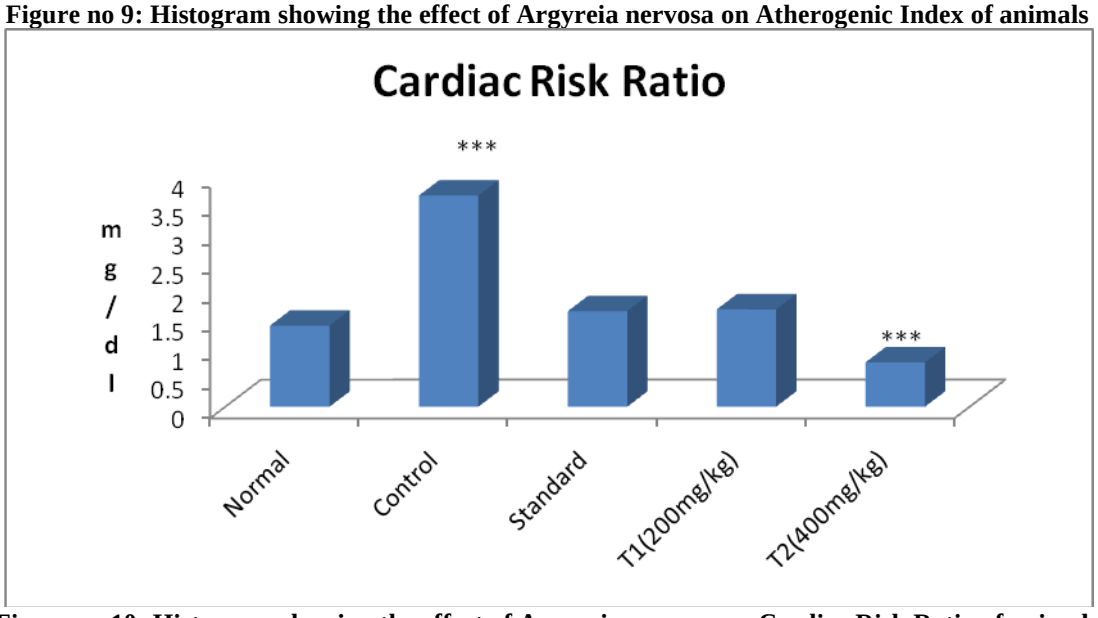

Figure no 10: Histogram showing the effect of Argyreia nervosa on Cardiac Risk Ratio of animals

ANTIOXIDANT PARAMETERS:

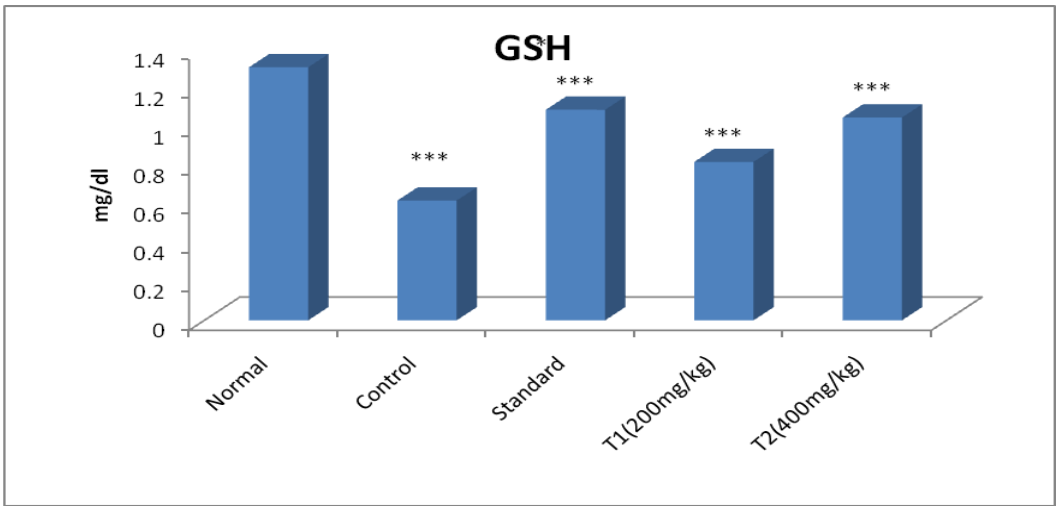

Figure no 11: Histogram showing the effect of Argyreia nervosa on GSH of animals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

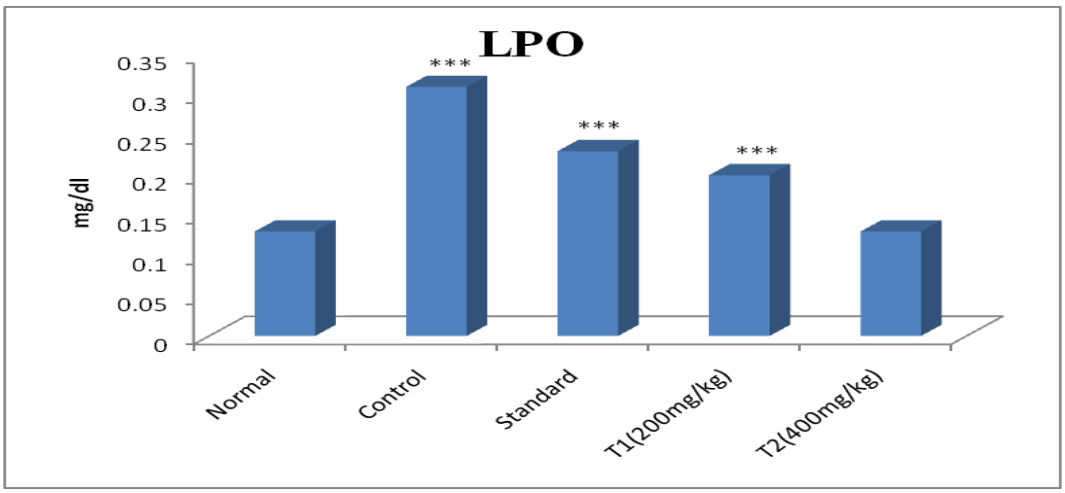

Figure no 12: Histogram showing the effect of Argyreia nervosa on lipid peroxidation of animals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

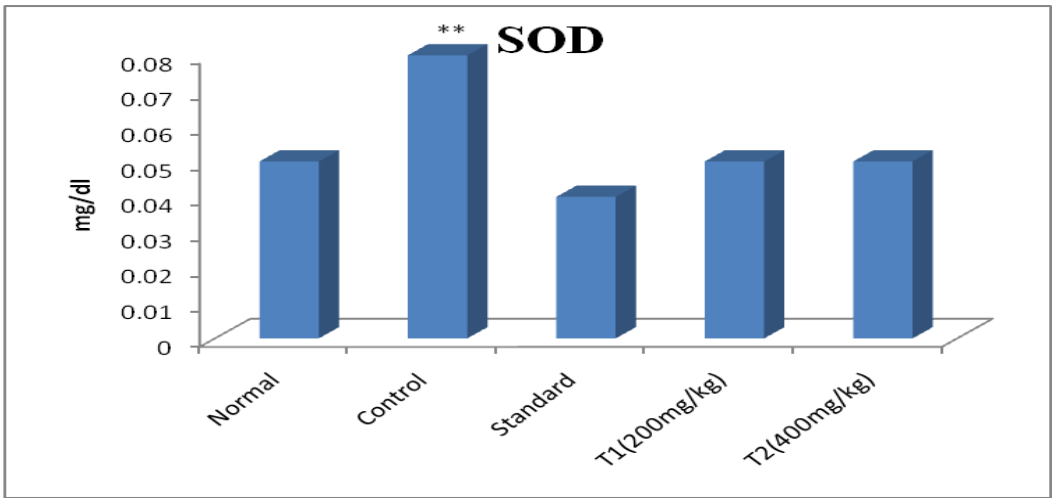

Figure no 13: Histogram showing the effect of Argyreia nervosa on SOD ofanimals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

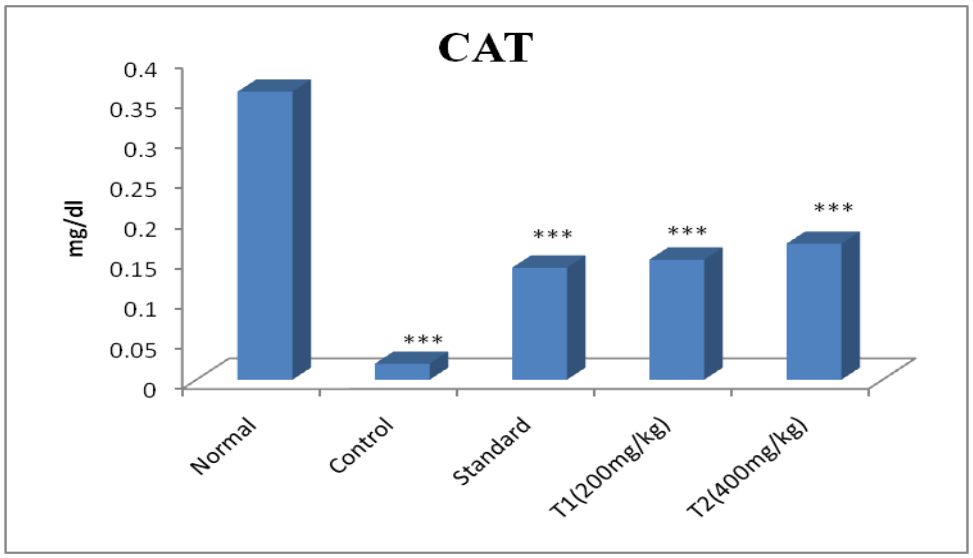

Figure no 14: Histogram showing the effect of Argyreia nervosa on Catalase ofanimals
N = 6; Significance:*** *P*<0.001, ** *P*<0.01, * *P*<0.05 from control

Initial phytochemical screening research studies verifies that the extract Argyreia nervosa DC. Includes the Alkaloids, steroids, dealt with oils, cardio tonic aglycones, flavonoids, saponins, carbohydrates, proteins, materials.

Effect of various removes of Argyreia nervosa on GSH, MDA, TURF AND ALSO CATALASE degrees

The capacity of the Argyreia nervosa to shield against liver antioxidant enzyme exhaustion was also explored. The outcomes revealed a significant ($p < 0.001$) increase in the task of superoxide dismutase (SOD), in MDA levels of the pets on a basic diet. The rise in MDA formation follows monitorings reported. [102] In case of the result of methanol remove on enzymes (GSH, SOD), the extract shows considerably rise degrees of GSH, TURF and catalase in contrast regimen control team ($p<0.001$). Below the optimal reduction was observed for conventional complied with by methanol extract.

SUMMARY AND CONCULSION:

Phytochemical testing of the remove reveals the visibility of chemical components like Alkaloids, steroids, fixed oils, cardio tonic aglycones, flavonoids, saponins, carbohydrates, healthy proteins, resins. Severe OECD guide line no. 423, ED50 value was discovered to be 200mg/kg and also 400mg/kg.

Anti-Hyperlipidaemic activity was done by regimen caused technique. In today plasma HDL-cholesterol with a concomitant percent decrease from various other lipid was observed. It can be wrapped up from the here and now data that the levels of overall product cholesterol, triglyceride and also MDA which are really elevated in high fat diet regimen, can be lowered substantially with Argyreia nervosa and also antioxidant parameters SOD, GSH, Catalase which are actually can be increased significantly with Argyreia nervosa. Atherogenic index which in fact raised in atherogenic diet can be decreased considerably with Argyreia nervosa and also a very good % defense was seen with Argyreia nervosa and also basic medicine

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