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COMPARATIVE EFFICACY OF *NYCTANTHES ARBOR-TRISTIS* AND ALLOPURINOL IN MONOSODIUM URATE-INDUCED GOUT IN WISTAR RATS

[1*]Pirya Chouhan, [2]Swasti Arya, [3]Akansha Tyagi, [4]Priyanshi Bhardwaj, [5]Dr. D.K. Chauhan

*[1,2,3,4]Research Scholar Department of Zoology Immunotoxicology Laboratory, C.C.S. University, Meerut, Uttar Pradesh, India.

[5]Faculty Department of Zoology Immunotoxicology Laboratory, C.C.S. University, Meerut, Uttar Pradesh, India.

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***Corresponding Author**

Pirya Chouhan

Research Scholar Department of Zoology Immunotoxicology Laboratory, C.C.S. University, Meerut, Uttar Pradesh, India.

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ABSTRACT

Monosodium urate (MSU) crystals that accumulate in joints cause gout, a metabolic and inflammatory disease that causes pain, swelling, and changes in the body's biochemistry. A common xanthine oxidase inhibitor used to treat hyperuricemia is allopurinol, although it frequently has negative effects on other organs. The purpose of this study was to compare the effectiveness of allopurinol and Nyctanthes arbor-tristis plant leaf extract in treating MSU-induced gout in albino rats. MSU crystals were injected intraarticularly to cause experimental gout, which was then treated with allopurinol and a plant extract from Nyctanthes arbor-tristis. In addition to hematological indices like RBC, WBC, PCV, Hb, MHC, and MCHC, biochemical markers such as serum uric acid, creatinine, cholesterol, serum triglycerides, AST, ALT, and serum protein were evaluated. Serum uric acid and ezymes significantly increased after MSU treatment, and hematological parameters revealed a noticeable imbalance, indicating the induction of gout. These changes were considerably recovered after treatment with Nyctanthes arbor-tristis leaf extract, which also showed protective benefits similar to those of allopurinol. The study demonstrates

Nyctanthes arbor-tristis's strong anti-gout properties and points to its potential as a natural remedy that may be less harmful than traditional treatments.

KEYWORDS: *Gout, Nyctanthes arbor-tristis, Allopurinol, Albino rats, Biochemical markers, Hematological changes.*

INTRODUCTION

Monosodium urate (MSU) crystals precipitate within soft tissues and joints, causing gout, a frequent crystal-induced arthritis that triggers an inflammatory reaction. The end product of purine metabolism, uric acid, is a weak acid that, in physiological conditions, circulates as the deprotonated urate anion. It then joins forces with sodium ions to produce MSU. The needle-shaped crystals seen under a microscope are known to have a triclinic structure.[1][2]

The mythical plant Nyctanthes arbor-tristis (Oleaceae) has significant therapeutic benefits in Ayurveda. Plants have been used as medicine for as long as people have existed. The "Rigveda," which was composed between 4500 and 1600 BC, is arguably the oldest collection of human knowledge and contains the earliest documented usage of medicinal plants for illness prevention and treatment.[3] Plant contain flavonoids, phenolic acid, glycosides alkaloids. Nyctanthes used in all type traditional medicinal system Ayurveda, Siddha, Unani. Ayurveda “Science of life” “Science of longevity”.[4] The plant has drawn interest from the scientific and business communities because to its possible applications in textiles, food, cosmetics, pharmaceuticals, and traditional medicines, among other fields. The scientific literature has long shown that NAT can be used to treat conditions like rheumatism, intractable sciatica, malaria, bronchitis, wound healing, skin problems, stomachic, astringent, menstrual, biliary, liver, and chronic fever.

Despite the fact that allopurinol is typically well tolerated, a number of side effects may necessitate stopping treatment. Peripheral neuropathy delayed Leukopenia or thrombocytopenia, as well as Guillain-Barré syndrome, are extremely uncommon. Skin symptoms are more prevalent; typically, three weeks after starting treatment, 2% of patients experience a rash or pruritus.[5] It presents as high-grade fever, liver dysfunction, renal failure, leukocytosis with eosinophilia and severe skin lesions that may fit the criteria for Stevens-Johnson syndrome or toxic epidermal necrolysis. An immunoallergic mechanism and the buildup of allopurinol or its metabolite oxipurinol, which may be the primary culprit, are

involved in the pathophysiology of allopurinol hypersensitivity, despite the fact that the exact cause is unknown.[6]

Fig. 1: Wistar Rats as an experimental animal.

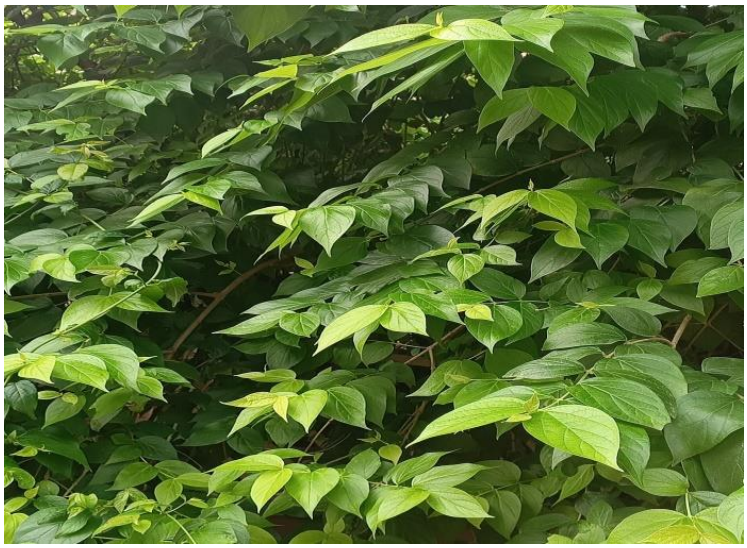


Fig. 2: N. arbor-tristis as an experimental plant.

MATERIALS AND METHODS

Selection and maintenance of animal

The present study was conducted on Nyctanthes arbor-tristis plant extract (herbal) and Allopurinol (commercially drug) in Wistar rats. In this study rats purchase central animal facility All India Institute of Medical Science (AIIMS), New Delhi 130 ± 10 gm body weight. The two exposure periods used in this investigation were 21 and 42 days.

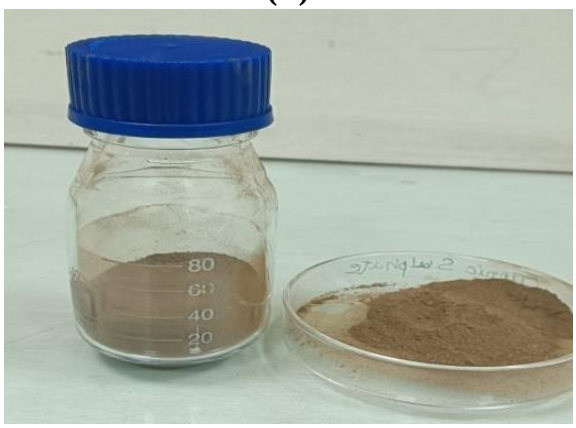
The male wistar rat shown in figure 1 was chosen as the experimental animal for this investigation because it is readily accessible year-round and can readily adapt to laboratory condition.

Preparation of plant extract by Nyctanthes arbor-tristis leaves

Prior to the preparation of plant extracts, Plant authentication**:** *Nyctanthes arbor-tristis* **BOT/PB/806** done by Botany department C.C.S.U. Meerut Uttar Pradesh show in figure 2. Medicinal plants can be used to treat illnesses and have positive pharmacological effects. The leaves were collected from the plant and washed twice with double distilled water. Leave dry in laboratory oven for one day at 60 ^{0} C temperature. After dry leaves grind using laboratory grinder. 10 gm fine powder mix in 100 ml double distilled water and put on magnetic stirrer hot plate for 30 minute then mixture was filtered using filter paper. Plant extract preparation procedure show in figure 3.

(A)

(B)



(C)

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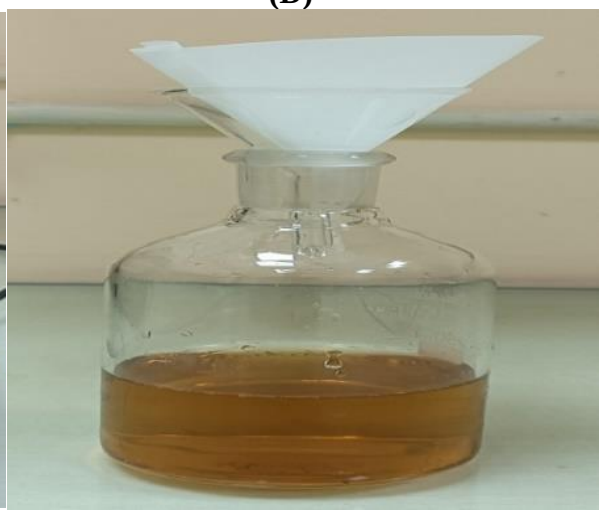

(E)

Fig. 3: (A) Plant leaves (B) Dry leaves powder (C) Plant power and double distilled water (D) Plant extract filtrate (E) Plant extract.

Experimental animal: Male Wistar rats body weight 130 ± 10 gm

MSU: Mono Sodium Urate Crystal (20mg/kg body weight)

Plant: Nyctanthes arbor-tristis (parijat or harisingar) (20ml filtare /kg body weight)

Allopathic drug: Allopurinol (50mg /kg body weight).

Collection of blood sample

An incision was made in the heart to extract blood. Blood was drawn and placed in anticoagulant-containing vials. Before centrifuging at 3000rpm for 15 minutes, the serum blood sample was allowed to rest at room temperature for 30 minutes. After centrifuge for different hematological and biochemical analyses, the samples were put in vials. After 21 and 42 day of post treatment of plant extract and allopurinol. Biochemical parameters including serum uric acid, creatinine, cholesterol, serum triglyceride, AST, ALT, Total Protein and blood urea nitrogen (BUN) along with hematological indices such as RBC, WBC, PCV, Haemoglobin (Hb) MHC, MCHC were altered.

RESULTS AND OBESERVATION

Biochemical Parameters

Estimation of Protein (in blood)

Table 1: Changing in total protein in wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and allopurinol (21 day and 42 day).

Groups	Treatments	Total protein (g/dl) (%)	
		Day 21	Day 42
I	Control	12.66 ± 0.75	12.55±0.25
II	Mono Sodium Urate induced	6.67±0.51	5.78±0.35
III	Plant extract	11.54±0.07	12.33±0.31
IV	Allopurinol	10.33±0.03	11.32±0.38

Result are expresed as mean ±S.E.M. (n=6).

Total protein was studied different group via Lowey et al. method. Negative control experimental Group I treated with normal saline. In positive control experimental group II administration of MSU protein content was found to be more decreased as comparison of control group at the end of experimental duration. In Group III plant extract protein content more similar as control group and Group IV allopurinol protein content increased as comparison MSU and slightly low as comparison control and plant extract (Table 1and figure 4).

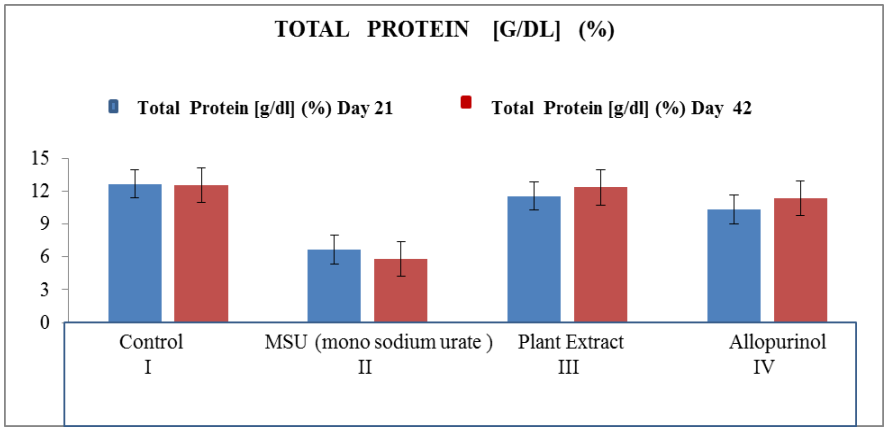

Fig. 4: Changing in total protein in wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol (21 day and 42 day).

Table 2: Change in blood glutathione (GSH) activity in Wistar rats treated with Plant extract and Allopurinol 21 Day and 42 Day.

Group	Treatments	Blood glutathione (GSH) (mg/ml)	
		Day 21	Day42
I	Control	4.21±0.43	4.01±0.01
II	Mono Sodium Urate induced	2.76±0.03	2.37±0.42
III	Plant extract	4.10±0.26	3.87±0.42
IV	Allopurinol	3.38±0.56	3.37±0.33

Result are expressed as mean ± S.E.M. (n=6).

Value are Mean± SE and expressed in percent(n=6).

Table 2 show the effect of blood glutathione (GSH) in blood of rats treated with glutathione and allopurinol MSU decreased GSH level as comparison of control group (74% and 65%). However, plant extract show similar result as control group while Allopurinol increased GSH level as comparison MSU and slightly low as comparison control and plant extract group. (Table 2 and Figure 5).

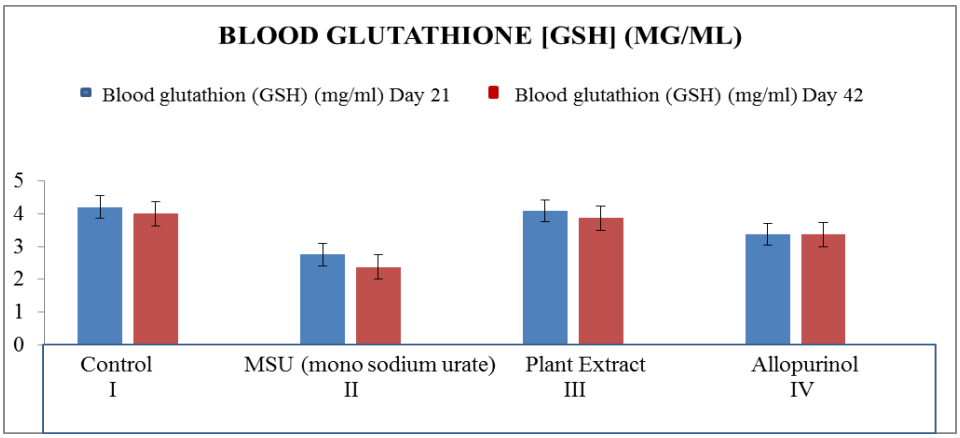

Fig. 5: Change in blood glutathione (GSH) activity in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Table 3: Change in activity of aspartate aminotransferase (AST) in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Group	Treatments	Aspartate aminotransferase(AST) (IU/L)	
		Day 21	Day42
I	Control	29.5±1.08	30.3±0.73
II	Mono Sodium Urate induced	80.6±0.77	85.5±1.25
III	Plant extract	30.7±0.43	32.4±0.63
IV	Allopurinol	32.7±0.64	30.7±0.32

Result are expressed as mean± S.E.M. (n=6).

MSU administration resulted in a significant increase of Aspartate aminotransferase activity in serum by 270% and 277% compared to control. Plant extract decreased value AST and Allopurinol also decreased value AST. But plant extract work fast as compare allopurinol. (Table 3 and figure 6)

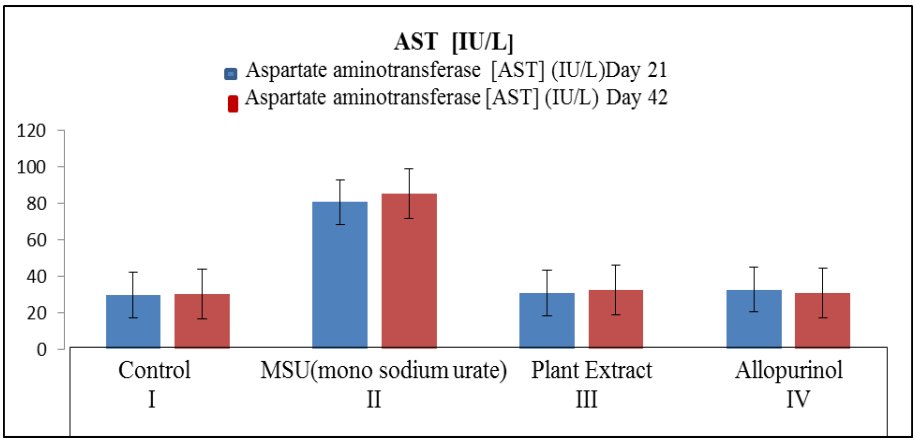

Fig. 5: Change in activity of aspartate aminotransferase (AST) in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Table 4: Change in activity of alanine aminotransferase (ALT) in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Group	Treatments	Alanine aminotransferase (ALT) (IU/L)	
		Day 21	Day42
I	Control	143± 14.34	124±5.77
II	Mono Sodium Urate induced	332±29.85	356±29.2
III	Plant extract	188± 5.32	115±1.34
IV	Allopurinol	192± 4.31	121± 2.25

Resul are expressed as mean ± S.E.M. (n=6).

As show in table 4 and figure 6 alanine aminotransferase ALT activity was significantly increased in MSU group rats by 230% to 280% compared to control group. Plant extract treated group decreased elevated ALT and Allopurinol also decreased ALT level (Table 4 and Figure 7).

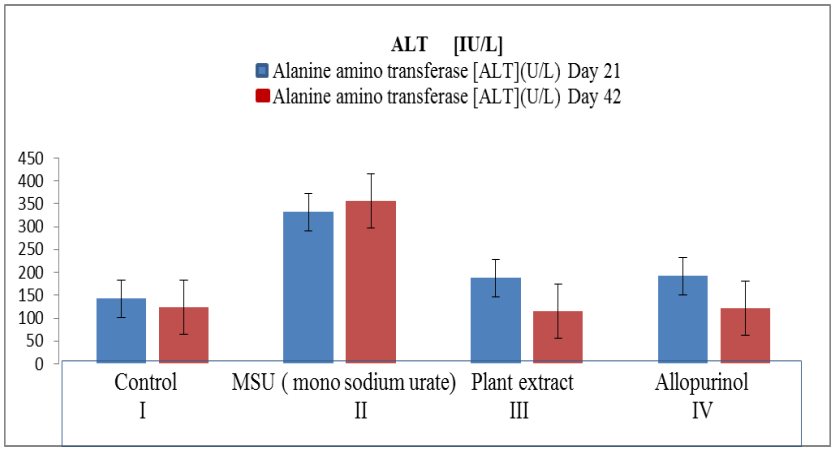

Fig. 7: Change in activity of alanine aminotransferase (ALT) in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Table 5: Change in activity of urea in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Group	Treatments	Urea (mg/dl)	
		Day 21	Day42
I	Control	47.5±0.49	40.1±1.11
II	Mono Sodium Urate induced	60.3±2.06	62.5±2.14
III	Plant extract	49.2±1.02	38.01±1.63
IV	Allopurinol	54.3±1.06	42.03±1.23

Result are expressed as mean ± S.E.M. (n=6).

Exposure to MSU caused increased in the activity of urea by 135% and !60% on day 21 and day42 resepectively as compared ro control rats. Plant extract help reducing elevated UREA more or less as control, allopurinol work slowly as compare plant extract(Table 5 figure 8).

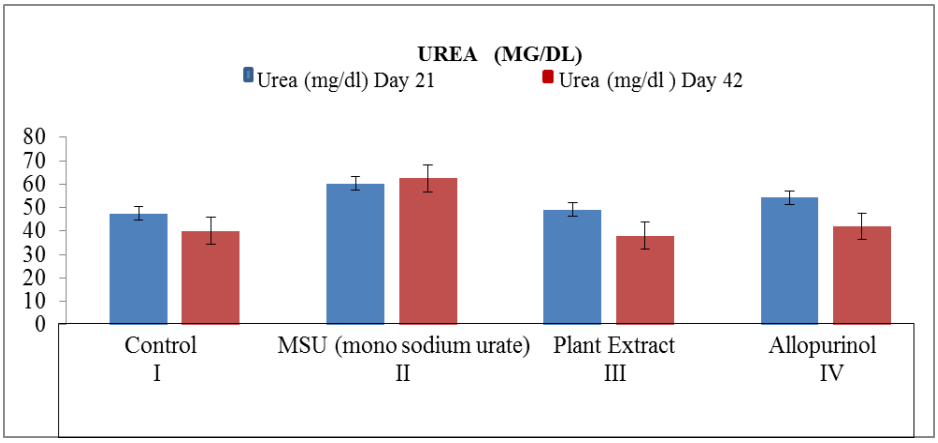

Fig. 8: Change in activity of urea in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Table 6: Change in activity of uric acid in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Group	Treatments	Uric Acid(mg/dl)	
		Day 21	Day42
I	Control	3.9±0.2	3.9±0.4
II	Mono Sodium Urate induced	6.3±0.5	6.8±0.6
III	Plant extract	4.3±0.3	3.7±0.4
IV	Allopurinol	4.1±0.3	3.9±0.2

Result are expressed as mean ± S.E.M. (n=6).

The table and figure show increased uric acid label in MSU group rats because gouty condition uric acid increase and decrease renal clearance, which can lead to oxidative stress and inflammation. Plant and allopurinol treated group decrease uric acid label.
(Table 6 and figure 9).

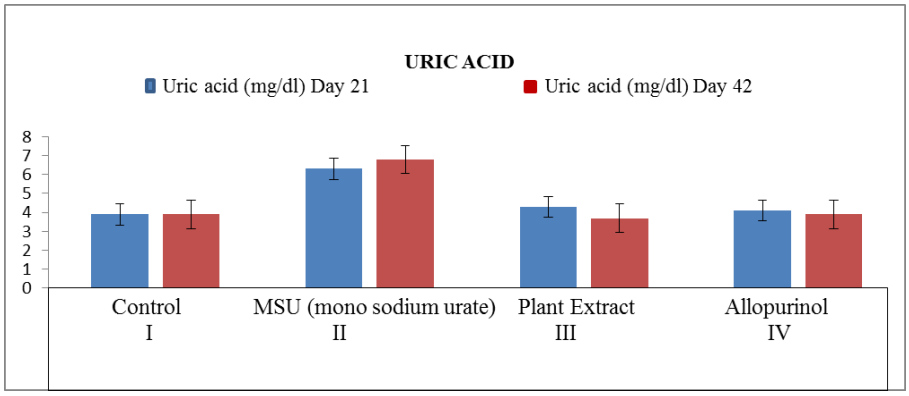

Fig. 9: Change in activity of uric acid in Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Table 7: Change in activity of serum creatinine Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21 Day and 42 Day.

Group	Treatments	Serum creatinine level (mg/dl)	
		Day 21	Day42
I	Control	0.8±0.04	0.8±0.06
II	Mono Sodium Urate induced	1.5±0.06	1.7±0.07
III	Plant extract	0.9±0.03	0.9±0.05
IV	Allopurinol	1.1±0.02	0.9±0.02

Result are expressed as mean ± S.E.M. (n=6).

Serum creatinine label increase in MSU group rats as comparison control group. Since high blood uric acid condition is responsible for increase creatinine level also effect kidney function Plant extract treatment and allopurinol show decreased level of creatinine level. (Table 7 and figure 10)

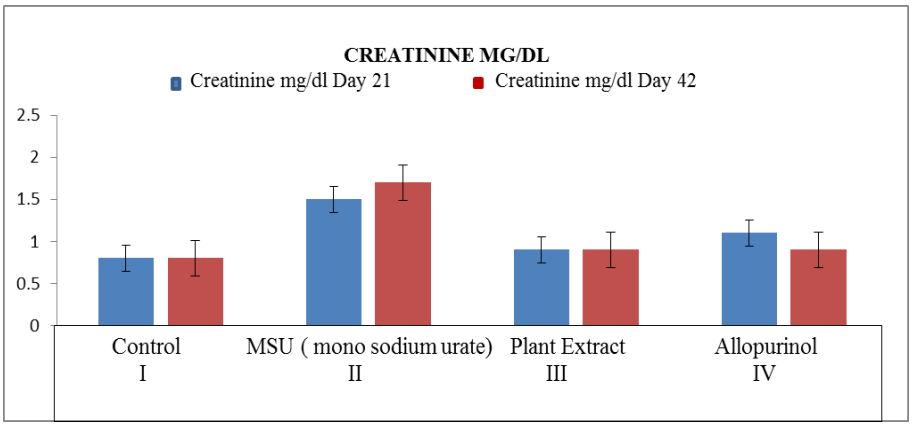

Fig. 10: Change in activity of serum creatinine Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21 Day and 42 Day.

Table 8: Change in activity of serum Cholesterol level Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Group	Treatments	Serum Cholesterol level (mg/dl)	
		Day 21	Day42
I	Control	80±2.5	81. ±2.4
II	Mono Sodium Urate induced	117±5.4	130±5.2
III	Plant extract	90±4.3	75±4.2
IV	Allopurinol	108±2.4	103±2.6

Result are expressed as mean ± S.E.M. (n=6).

Serum cholesterol level of 80mg/dl in control rats which are normal physiological condition. Gouty rats show elevated cholesterol level which show gout effect metabolism due to low movement and other physical activity. When rats treated with plant extract and allopurinol show decreased level of cholesterol and improve movement activity (Table 8 and figure11).

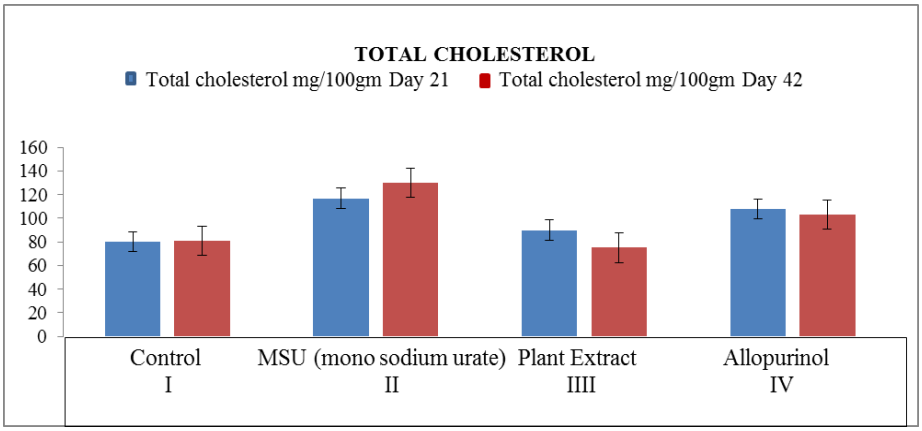

Fig. 11: Change in activity of serum Cholesterol level Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Table 9: Change in activity of serum Triglyceride level Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Group	Treatments	Serum Triglyceride level (mg/dl)	
		Day 21	Day 21
I	Control	62±2.1	61±2.3
II	Mono Sodium Urate induced	115±3.8	135±3.2
III	Plant extract	102±2.4	100±2.3
IV	Allopurinol	105±3.2	102±2.4

Result are expressed as mean ± S.E.M. (n=6).

The results show how herbal and allopathic drug affected biochemical parameters including serum triglyceride level in rats. Normal triglyceride level increase when rats exposed to MSU dose, but rats expose to plant extract and allopurinol serum triglyceride level decreased near control group (Table 9 and figure 12).

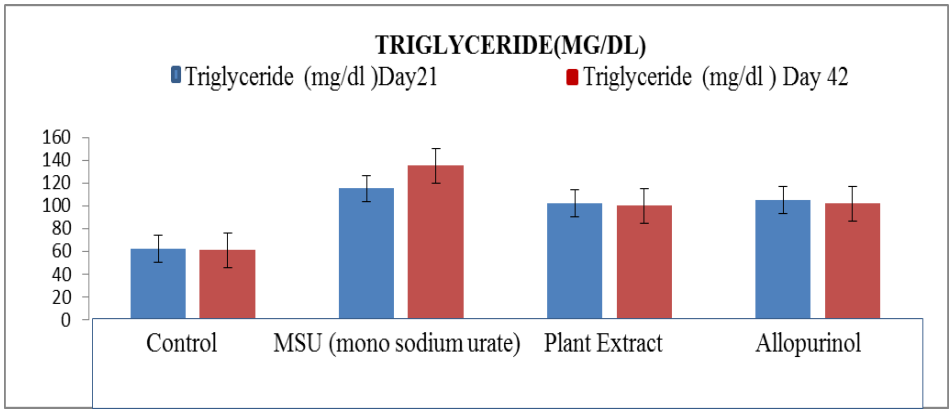

Fig. 12: Change in activity of serum Triglyceride level Wistar rats treated with Nyctanthes arbor-tristis plant leaves extract and Allopurinol 21Day and 42Day.

Heamatological Parameters

Table 10: Show the total RBC count for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42Day.

Group	Treatments	RBCs Count (mill/mm^3)	
		Day 21	Day 21
I	Control	6.8± 0.02	6.9±0.04
II	Mono Sodium Urate induced	4.8±0.35	4.9±0.23
III	Plant extract	5.3±0.22	5.8±0.12
IV	Allopurinol	5.1±0.34	5.4±0.13

Result are expressed as mean ± S.E.M. (n=6).

Red blood cell (RBC) counts in MSU-induced rats were significantly lower than in the control group in the present study, suggesting hematological change brought on by gout induction. An RBC count that was marginally lower than the control after treatment with the plant extract suggested a stabilizing effect. It's interesting to note that while the RBC levels in the allopurinol-treated group were greater than those in the MSU group, they were still lower than those in the control and plant extract-treated groups. These results point to the plant extract's potential therapeutic benefit in MSU-induced circumstances by indicating that, although allopurinol partially normalizes RBC count, it exhibits a relatively superior regulating action. (Table 10 and figure 13).

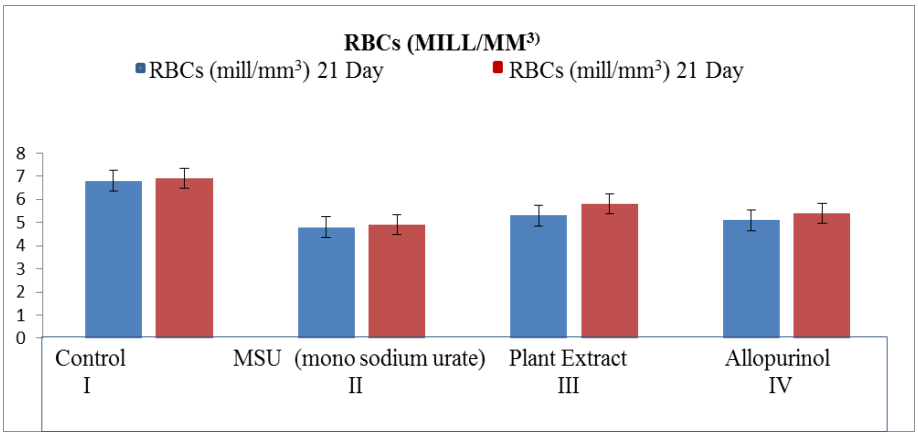

Fig. 13: Show the total RBCs count for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42Day.

Table 11: Show the total WBCs count for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42Day.

Group	Treatments	WBCs (10^3/mm^3)	
		Day 21	Day 21
I	Control	8.6±0.5	8.8±0.3
II	Mono Sodium Urate induced	9.7±0.3	9.9±0.5
III	Plant extract	8.9±0.3	8.7±0.6
IV	Allopurinol	9.3±0.2	9.1±0.3

Result are expressed as mean ± S.E.M. (n=6).

White blood cell (WBC) counts were significantly higher in MSU-induced rats, indicating an inflammatory response linked to the generation of gout. WBC levels were marginally lower in the plant extract treatment group than in the control group, suggesting that the extract had powerful anti-inflammatory properties. On the other hand, the WBC counts of the allopurinol-treated group were lower than those of the MSU group but they were greater than control and plant extract-treated groups. These findings imply that although the plant extract showed a relatively higher ability to adjust WBC count, allopurinol only partially modulated leukocyte levels. This demonstrates the extract's encouraging ability to reduce inflammation in situations brought on by MSU.(Table 11 and figure 14).

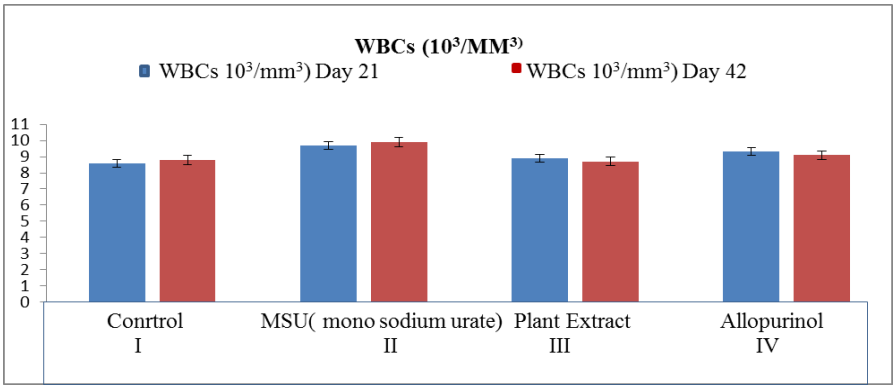

Fig. 14: Show the total WBCs count for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42Day.

Table 12: Show the total Haemoglobin for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42Day.

Group	Treatments	Haemoglobin (mg/dl)	
		Day 21	Day 21
I	Control	14.5±0.3	14.3±0.5
II	Mono Sodium Urate induced	10.0±0.5	9.0±0.3
III	Plant extract	12.06±0.2	13.03±0.2
IV	Allopurinol	11.03±0.3	12.04±0.6

Result are expressed as mean ± S.E.M. (n=6).

Hemoglobin levels were significantly lower in MSU-induced rats than in the control group, suggesting anemia-like changes linked to gout induction. Hemoglobin levels were significantly higher than those of the MSU group but marginally lower than those of the control group after treatment with the plant extract, indicating a protective effect. Hemoglobin levels in the allopurinol-treated group were higher than those in the MSU rats, but they were still lower than those in the control and plant extract-treated groups. These results show that the plant extract provided a relatively greater restoration, indicating its potential as an effective therapeutic agent, even if allopurinol only partially corrected hemoglobin status. (Table 12 and figure 15).

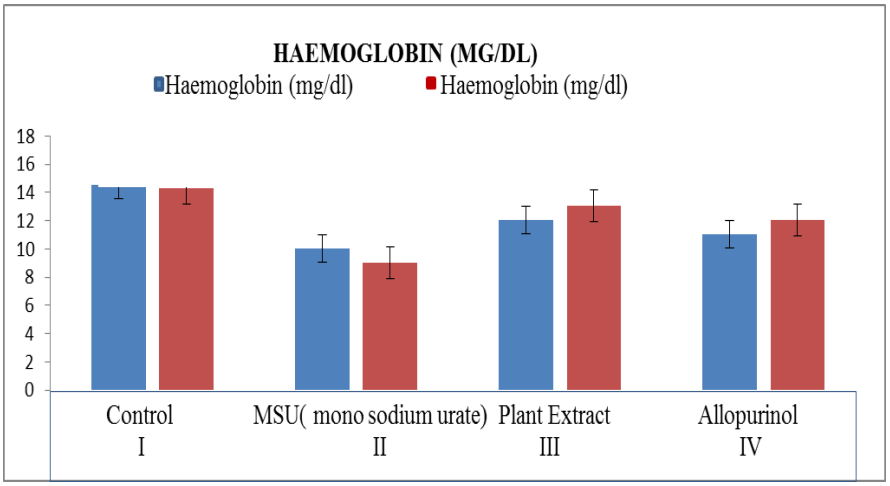

Fig. 15: Show the total Haemoglobin for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42Day.

Table 13: Show the total Packed Cell Volume for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42Day.

Group	Treatments	Packed Cell Volume(%)	
		Day 21	Day 21
I	Control	43.3±1.2	44.2±1.2
II	Mono Sodium Urate induced	33.5±1.0	33.6±1.3
III	Plant extract	38.4±1.2	39.2±1.3
IV	Allopurinol	41.5±1.3	41.3±1.1

Result are expressed as mean ± S.E.M. (n=6).

Packed cell volume (PCV) in MSU-induced rats was significantly lower ($p < 0.01$) than in the control group, suggesting that gout induction had compromised their hematological state.

PCV values improved after treatment with the plant extract; they were significantly higher than those of the MSU group ($p < 0.05$) but still marginally lower than those of the control and allopurinol groups. PCV levels were lower than the control but higher than those of the MSU and plant extract-treated groups ($p < 0.05$) in the allopurinol-treated group. These findings imply that whereas allopurinol successfully recovers PCV, the plant extract also has significant remedial potential. relatively superior repair, underscoring its potential as a strong medicinal substance (Table 13 and figure16).

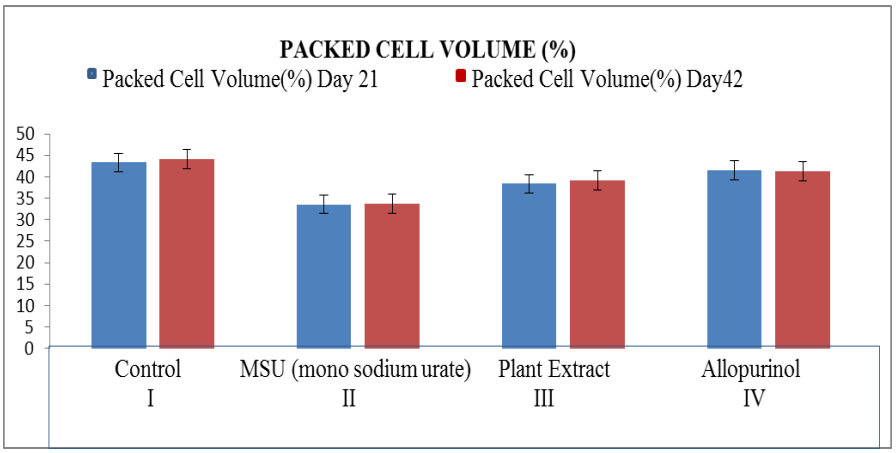

Fig. 16: Show the total Packed Cell Volume for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42 Day.

Table 14: Show the total MCV for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42Day.

Group	Treatments	MCV (Femtoliters)	
		Day 21	Day 21
I	Control	63.6±1.0	64.4±1.0
II	Mono Sodium Urate induced	66.3±1.3	67.4±1.4
III	Plant extract	65.3±1.2	65.6±1.3
IV	Allopurinol	65.7±1.2	65.4±1.4

Result are expressed as mean ± S.E.M. (n=6).

Mean corpuscular volume (MCV) was considerably higher in MSU-induced rats than in the control group ($p < 0.01$), suggesting that gout induction is linked to altered erythrocyte shape. MCV values were significantly lower after treatment with the plant extract than in the MSU group ($p < 0.05$), while they were still marginally higher than in the control. In a similar vein, allopurinol treatment considerably reduced MCV in comparison to the MSU group ($p < 0.05$), but values were still slightly higher than the control. These results imply that

allopurinol and plant extract both have similar remedial capacity and efficiently reduce MSU-induced MCV increase. (Table14 and Figure 17).

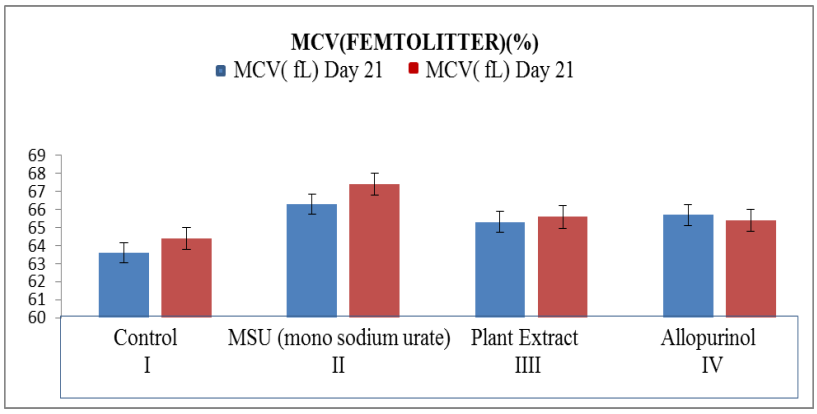

Fig. 17: Show the total MCV for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42 Day.

Table 15: Show the total MCH for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42 Day.

Group	Treatments		
		Day 21	Day 21
I	Control	31.3±0.4	32.4±0.6
II	Mono Sodium Urate induced	33.2±0.4	34.2±0.7
III	Plant extract	31.2±0.6	31.4±0.4
IV	Allopurinol	32.6±0.2	32.4±0.2

Result are expressed as mean ± S.E.M. (n=6).

Mean corpuscular hemoglobin (MCH) was considerably higher in MSU-induced rats than in the control group ($p < 0.01$), suggesting that the hemoglobin content per cell was changed. MCH was successfully normalized by the plant extract treatment; values were substantially lower than those of the MSU group ($p < 0.05$) and comparable to the control. The MCH values of the allopurinol-treated group, on the other hand, were greater than those of the plant extract-treated group but lower than those of MSU ($p < 0.05$). These findings indicate a much larger hematinic action of the plant extract under MSU-induced circumstances, as it improved MCH regulation while allopurinol only partially corrected the situation. (Table 15 n=and Figure 18).

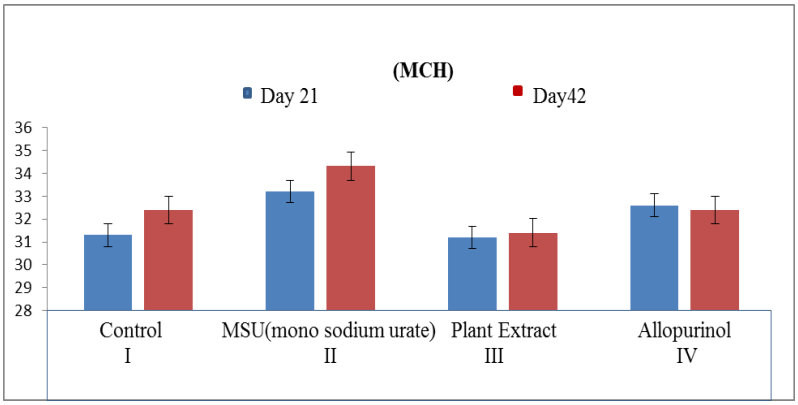

Fig. 18: Show the total MCH for the control, MSU and treated groups using Nyctanthes arbor-tristis plant leaves extract and Allopurinol Day 21 and 42 Day.

DISCUSSION

With a focus on serum biochemical and hematological markers, the current study examined the relative effectiveness of Nyctanthes arbor-tristis and allopurinol against monosodium urate (MSU)-induced gout in Wistar rats. Significant biochemical abnormalities, including higher uric acid levels, as well as modifications to protein and enzyme profiles, which suggested systemic metabolic stress, were brought on by MSU treatment. The inflammatory and oxidative effects of crystal deposition were further reflected in hematological changes, including changes in red cell indices (RBCs, WBCs, Hb, PCV, MCH, and MCV) and an increase in the total leukocyte count.

These changes were considerably reversed by treatment with Nyctanthes arbor-tristis extract. The extract restored hematological balance, adjusted serum biochemical parameters, and decreased uric acid levels. The various phytoconstituents, such as flavonoids and phenolics, which are well-known for their anti-inflammatory, antioxidant, and xanthine oxidase-inhibiting properties, may be responsible for these effects. The wide range of correction seen indicates that the plant extract has preventive actions that are multi-targeted. In rats given MSU, allopurinol treatment resulted in a notable decrease in serum uric acid and a partial restoration of hematological and biochemical markers. However, compared to Nyctanthes arbor-tristis extract, the total recovery with allopurinol was comparatively slower. Its single-target xanthine oxidase inhibition method, which mainly reduces uric acid but ineffectively addresses oxidative and inflammatory alterations, could be the cause of this. On the other hand, the plant extract showed wider and quicker benefits, indicating multi-target effects. Therefore, even if allopurinol is still effective, the extract demonstrated a significantly faster return to normal serum markers, suggesting more therapeutic potential.

CONCLUSION

The current investigation shows that allopurinol and Nyctanthes arbor-tristis extract both successfully reduced the hematological and biochemical changes brought on by monosodium urate in Wistar rats. Despite its effectiveness, allopurinol responded more slowly and only partially normalized some indicators. Nyctanthes arbor-tristis, on the other hand, caused quicker and more extensive benefits, most likely as a result of its multi-target antioxidant and anti-inflammatory qualities in addition to its ability to lower uric acid. These results imply that Nyctanthes arbor-tristis has therapeutic efficacy that is on par with, and in some ways better than, that of allopurinol, suggesting that it may be a viable natural supplement or alternative for the treatment of gout.

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