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Research Article

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Phytochemical Composition, *In-vitro* Antioxidants (DPPH), Anti-inflammatory and FTIR Spectral analysis of *Tecoma stans* Linn. (Bignoniaceae)

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Abstract

Background: Medicinal plants provide good remedies for human diseases and play a vital role in our day to day life. Indian systems of medicines are all based on the knowledge of drugs from plants. *Tecoma stans* Linn is also known as yellow bells, yellow elder, trumpet flower, belonging to the family Bignoniaceae.

Aims: The present study aimed to conduct a preliminary phytochemical Composition, antioxidants ,anti-inflammatory activity and FTIR spectral analysis of methanol and aqueous flower extracts from *Tecoma stans*.

Methods: The solvents methanol, and aqueous are used for extraction of *Tecoma stans* plant parts. Phytochemical screening of plant parts was carried out in both the solvents. Determination of total phenol content was carried out using Folin - Ciocalteau method and total flavonoid content using Aluminium chloride spectrophotometric method. Antioxidant activity of methanol extract of plant samples were evaluated with DPPH and standard method. Anti - inflammatory activity of the flower parts the plant were analysed by *an* In-vitro protein denaturation inhibition assays. The FT-IR is a very useful technique for identifying the functional groups present in the mixture.

Result: The result revealed the presence of flavonoids, alkaloids,Triterpenoids, Phenolic compound, Steroidal glycosides, saponins, tannins, Reducing Sugar, in methanol and aqueous extract. Total phenol content and total flavonoid of Tecomastans flowers are methanol297.93± 0.26, 255.42± 0.19 and aqueous extract 197.30± 0.47, 165.85± 0.25 respectively. In results it was found that methanol extract shows highest phenol content and total flavonoids.IC_{50} for standard ascorbic acid was found to be 75.42µg/ml and for methanol and aqueous extract flower was found to be 78.20 µg/ml and 80.75 µg/ml respectively. The DPPH radical scavenging activity of *Tecoma stans* was evaluated and compared with ascorbic acid. The presence inhibition of flowers extract was calculated at various concentration (10,20, 30,40,50 etc.) as well as standard ascorbic acid. The highest scavenging activity of methanol and aqueous extract were 37.1±0.31% and 36.34 ±0.21% at concentration of 50 µg/ml.FT-IR analysis confirmed the presence of various functional groups.

Conclusion: The results obtained from the preliminary standardization of *Tecoma stans* are very helpful in the determination of the quality and purity of the crude drug.These bioactive compounds may be responsible for the medicinal properties of *Tecoma stans* Linn. The plant thus deserves further developmental studies.

Keywords: *Tecoma stans* Linn., Phytochemical composition, In-vitro antioxidant activity, DPPH, Anti-inflammatory, FTIR spectral analysis.

1 Introduction

The importance of plant-derived medicines is seriously underestimated in modern medicine. Higher plants, as sources of medicinal compounds, have continued to play a dominant role within the maintenance of human health since past [1]. Over 50% of all modern clinical drugs are of natural product origin and natural products play a crucial role in drug development programs within the pharmaceutical industry [2].The pharmacognostical study is one among the main criteria for identification of plant drugs.

Tecoma stans is a flowering perennial shrub belongs to the family Bignoniaceae. The entire plant possess medicinal value and used for the treatment of various ailments. Traditionally the roots are used as diuretic, tonic, anti-syphilitic and vermifuge [3]. The decoction of flowers and bark are used for stomach pains. Traditionally, in Mexico the plant is used in the treatment of diabetes [4,5]. The plant leaves have been found to inhibit the growth of yeast infection. The bark and flowers are used traditionally for antimicrobial activity and for the treatment of various cancers. It was reported that the leaves possess significant wound healing property [6], anti-oxidant and anti-microbial [7], anti-bacterial [8], anti-spasmodic [9] and anti-diabetic [10] properties. *Tecoma stans* is usually planted as a decorative in warmer climates throughout the planet because of its showy yellow flowers and pinnate foliage.

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Almost all the parts of *Tecoma stans* are of medicinal importance and used traditionally for the treatment of varied ailments, traditionally for reducing blood sugar. The *Tecomastans* leaves, barks and roots are used for a spread of purposes in herbal medicine. Bark shows cardiotonic and chloretic activity[11-12].In the context where chronic inflammatory diseases are on the rise, the search for effective and sustainable treatments has become essential. Natural anti-inflammatories derived from plant sources are gaining popularity due to their beneficial effects and often superior safety profile compared to synthetic drugs. Unlike the latter, which can lead to unwanted side effects and long-term complications, natural compounds offer a holistic approach to the treatment of inflammation [13-14]. Incorporating phytochemicals into health regimens allows inflammatory mechanisms to be targeted while minimizing the risks associated with conventional treatments. This review aims at describing the traditional uses, phytochemical profiles and therapeutic potential of various parts of *Tecoma stans*.

Fig1. Flower parts of *Tecoma stans.*

2. Materials and Methods

2.1. Collection of Plant Material

The flowers of *Tecoma stans* were collected in their natural habitat in March 2025. The identification and classification of *Tecoma stans* were confirmed by Prof. N.K.Singh, botanist affiliated with the Department of Botany, Govt, College Sargoan Dist Mungeli at the Affiliated to University of Atal Bihari Vajpayee University Bilaspur, Chhattisgarh, India. The plant was stored in a dry place, protected from humidity and light. The roots were then cleaned, cut into small pieces and dried..

2.2. Preparation of the Plant Extract

Tecoma stans extract was prepared by macerating 15 g crushed flower in 100 mL methanol and aqueous solution for one week at room temperature. The extract was then filtered through Whatman No. 1 filter paper to remove plant residues and obtain a clear liquid. The filtered extract was dried in an oven at 45 °C for 3 days, to remove excess solvent. The extract obtained was then stored in opaque glass pillboxes, hermetically sealed, protected from light and humidity, and at low temperature.

2.3. Phytochemical Screening

Qualitative chemical tests were performed to determine the presence of alkaloids, carbohydrates, cardiac glycosides, polyphenols, saponins, tannins and terpenoids. Phytochemical analysis Preliminary qualitative screening for phytochemicals, of all these plant species was carried out with the following Standard methods [15-17].

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1. Test for Flavonoids (Alkaline reagent test)

2 ml of extract was treated with few drops of 1N sodium hydroxide solution and observed the formation of intense yellow color. This yellow color becomes colorless on addition of dilute hydrochloric acid, indicating the presence of flavonoids.

2. Test for Alkaloids (Mayer's Test)

2 ml of extract was treated with 2 drops of Mayer's reagent. Presence of white creamy precipitate indicates the positive test.

3. Test for Steroids (Libermann Burchard Test)

1ml of extract was dissolved in 10 ml of chloroform. To this mixture equal volume of concentrated sulfuric acid was added by sides of the test tube. The upper layer becomes red while lower layer of sulfuric acid turns yellow in color with green fluorescence indicating the presence of steroids.

4. Test for Saponins (Foam test)

2ml of extract was taken in a test tube and 6 ml of distilled water was added to it. The mixture was then shaken vigorously. The persistence of foam was observed that indicates the presence of saponins.

5. Test for Terpenoids (Salkowski test)

2ml of extract was treated with 2 ml of acetic anhydride. Few drops of concentrated sulfuric acid was then added to this solution and observed the formation of blue, green rings that indicates the presence of terpenoids.

6. Test for Quinones

1 ml of extract was added to the 2 ml of dilute NaOH. Formation of blue green or red coloration confirms the presence of quinones.

7. Test for Tannins (Braymer's test)

2 ml of extract was allowed to react with 10% alcoholic ferric chloride solution. Formation of blue or greenish color of the solution was observed. This was the indication of the presence of the tannins.

8. Test for Phlobatannins (Precipitate test)

About 2 ml of extract was added to 2 ml of 1% aqueous hydrochloric acid and the mixture was boiled. Deposition of a red precipitate confirmed the presence of phlobatannins.

9. Test for Phenolic Compounds (Ferric chloride test)

Few drops of the extract were treated with 5% aqueous ferric chloride. Formation of deep blue or black color indicates the presences of phenolic compounds.

10. Test for Coumarins

2ml of extract was treated with 3 ml of 10% NaOH. Observed the formation of yellow color indicating the presence of coumarins.

11. Test for Anthocyanins

2ml of extract was treated with 2 ml of 2N hydrochloric acid and ammonia was added to it. Observed the appearance of pink-red color turning blue-violet. This indicates the presence of anthocyanins.

12. Test for Leucoanthocyanins

2ml of extract was allowed to react with 5 ml of isoamyl alcohol. Appearance of upper layer red in color indicates the presence of leucoanthocyanins.

13. Test for Fatty acids

0.5 ml of extract was added to 5 ml of ether and allowed it to evaporate on filter paper. Then the filter paper was dried and observed the appearance of transparency on filter paper, the indication of the presence of fatty acids.

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2.4 Quantitative determination of chemical constituents

(a) Determination of total flavonoids content

Total Flavonoid Content (TFC) was assessed by spectrophotometric method with minor modification [18]. For each sample, 500 µL of the samples (1000 µg/mL) were mixed with 2.2 mL of aquadest and 150 µL of 5% $NaNO_2$. After 5 min, 150 µL of 10% $AlCl_3$ was added. Then, 6 min later, 2 mL of 1M NaOH was added. The absorbance was read at 510 nm. Quercetin was taken as standard for the calibration curve. The total flavonoid content was calibrated using the calibration curve based linear equation. The total flavonoid content was expressed as mg quercetin equivalent/g dry extract.

(b) Determination of total phenolics content

The total phenol content was determined by using the Folin-Ciocalteu method [19] with few modifications. For each sample, 500 µL of the samples (1000 µg/mL) was added to 3.5 mL distilled water and 250 µL of 2N FC reagent. The mixture was incubated at room temperature for 8 min, and then 250 µL of 20% Na_2CO_3 was added to the mixture, and incubated again for 2 h. The absorbance was read at 765 nm. Gallic acid was taken as standard for the calibration curve. The total phenol content was expressed as mg gallic acid equivalent/g dry extract.

2.5. Determination of *In-vitro* antioxidant activity by DPPH

DPPH Free Radical Scavenging Assay

DPPH (1, 1-diphenyl-2- picrylhydrazyl (a, a-diphenyl-bpicrylhydrazyl) radical scavenging analysis was performed according to the reported method with slight modifications. Briefly, 1 mg/ml solutions of compounds and ascorbic acid were prepared by dissolving them into DMSO (Dimethyl sulfoxide).10,20,30,40,50, µL of each was added separately to 10.0 mL amber color volumetric flasks containing 2.0 ml of 0.01mM DPPH (prepared in ethanol). The final volume was made up to 3.0 ml and allowed to stand for 30 minutes in the dark and after 30 min absorbance was checked at 517 nm by using UV-visible spectrophotometer [20]. Pure DPPH solution (0.01mM) was used as a control and ethanol was as a blank. The decrease of in absorbance equates the DPPH radical scavenging capacity. The above process was repeated three times for ascorbic acid and compounds/ samples. The radical scavenging ability was calculated according to the formula:

Radical scavenging activity = $(A_0 - A_T / A_0) \times 100$

Where, A_0 is the absorbance of pure DPPH solution (0.01mM), and A_T is the absorbance of (DPPH) and compounds / samples.

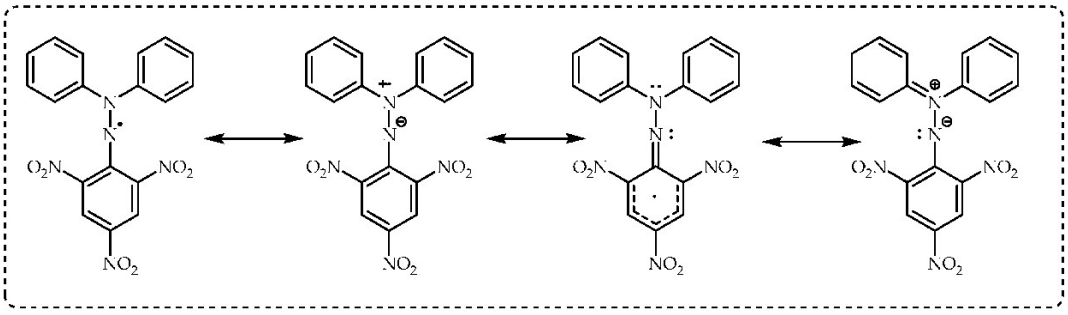

Fig.2. The chemical structures of a 1,1-diphenyl-2-picrylhydrazil radical (DPPH·).

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2.6 Evaluation of In - vitro anti-inflammation activity

Inhibition of albumin denaturation assay

Effect of methanol extract of Tecomastans flower on heat-induced bovine serum albumin (BSA) denaturation assay was carried out using a method described by Chandra et al. [21] with minor modifications. The reaction mixtures consist of varying concentrations (100, 200, 300 and 500 µg/mL) of methanol extract or reference drug Aspirin (an NSAID), 1% w/v BSA and phosphate buffered saline (PBS, pH 6.4) separately while PBS was used as control. The reaction mixtures were incubated at 37 °C for 20 min and the temperature was increased to keep the samples at 70 °C for 5 min. After cooling, turbidity was measured at 660 nm using UV-visible spectrophotometer (Schimadzu Double Beam UV-2600, Japan). The control represents 100% protein denaturation. The experiment was performed in triplicate. The Percentage inhibition of protein denaturation was calculated as follows:
Percentage inhibition =

(Abs Control –Abs Sample) X 100/ Abs control

The result is an average of three replicates.This method evaluates the potential of the extract to inhibit the denaturation of proteins, hence indicating its anti-inflammatory properties.

2.7 Fourier Transform Infrared Spectrophotometer (FTIR):

Fourier Transform Infrared Spectrophotometer (FTIR) is perhaps the most powerful tool for identifying the types of chemical bonds (functional groups) present in compounds. The wavelength of light absorbed is characteristic of the chemical bond as can be seen in the annotated spectrum. By interpreting the infrared absorption spectrum, the chemical bonds in a molecule can be determined [22]. Dried powder of different solvent extracts of each plant materials were used for FTIR analysis. 10 mg of the dried extract powder was encapsulated in 100 mg of KBr pellet, in order to prepare translucent sample discs. The powdered sample of each plant specimen was loaded in FTIR spectroscope (Shimadzu, IR Affinity 1, Japan), with a Scan range from 400 to 4000 cm 1 with a resolution of 4 cm^{-1}.

3. Results and Discussion

3.1 Preliminary Phytochemical Screening

The phytochemical screening including qualitative as well as quantitative estimation revealed that the three flowers used were rich in phenols, terpenoids and little flavonoids, with antioxidant, hydroxyl radical scavenging and nitric oxide radical scavenging activity. Thus from these biochemical investigations, it is quite evident that flowers *Tecoma stans* are very rich source of secondary metabolites.

The study of the chemical constituents and the active principles of the medicinal plants have acquired a lot of importance all over the world. The present study includes the phytochemical screening of the plants *Tecoma stans*. The qualitative chemical tests for the methanolic extracts were performed. The investigation showed that *Tecoma stans* contains, flavonoids, alkaloids, Triterpenoids, Phenolic compound, Steroidal glycosides,saponins, tannins, Reducing Sugar, in methanol and aqueous extract. and but steroids, Anthraquinones were absent in aqueous extract.

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Table 1: Phytochemical Screening of *Tecoma stans* flower Methanolic and Aqueous extract

S.N	Phytochemicals	Methanolic Extract	Aqueous Extract
1	Flavonoid	+	++
2	Alkaloid	++	+
3	Steroids	+	_
4	Triterpenoids	++	+
5	Phenolic compound	+	++
6	Steroidal Glycoside	+	+
7.	Anthraquinones	+	-
8	Saponins	+	+
9	Tanins	+	+
10	Reducing Sugar	+	+
11	Protein and amino acid	-	+

(+): Presence, (++, Stronger color denoting) ,(-): Absent

The results given in table 4.2 show that the total phenol content and total flavonoid of *Tecoma stans* flowers are methanolic297.93± 0.26, 255.42± 0.19 and aqueous extract 197.30± 0.47, 165.85± 0.25respectively.

Table 2: Result of quantification studies *Tecoma stans* flower

S.N.	Extract	Test Parameter	Results(mg/g) (±SEM)
1.	Methanol	Total phenolic Total Flavonoids	297.93± 0.26 255.42± 0.19
2.	Aqueous	Total phenolic Total Flavonoids	197.30± 0.47 165.85± 0.25

Phytochemical is a natural bioactive compound found in plants, such as vegetables, fruits, medicinal plants, flowers and leaves, to protect against diseases. Some of the most important bioactive phytochemical constituents such as alkaloids, essential oils, flavonoids, tannins, terpenoids possess antioxidant [23-24], antiulcer [25], protective effects [26], inhibitory effects [27], in addition to hydroxyl radical scavenging activity. Phytochemical analysis of medicinal plants revealed the presence of major phytocompounds like Flavonoids, terpenoids, alkaloids, Steroids glycosides, phenolic and tannins as reported [28].

3.2 DPPH scavenging activity

DPPH scavenging activity of *Tecoma stans* flower extracts against DPPH radical were determined and the results are shown in table (4.3, 4.4). DPPH scavenging activity has been used by various researchers as a rapid, easy and reliable parameter for screening the in vitro antioxidant activity of plant extracts. DPPH is a stable free

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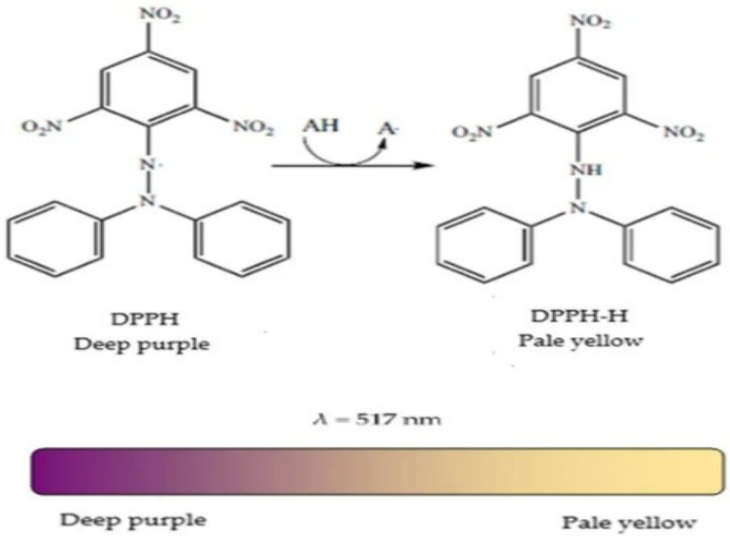
radical and accepts an electron to become a stable diamagnetic molecule. The absorption maximum of a stable DPPH radical in methanol was at 517nm. IC_{50} for standard ascorbic acid was found to be 75.42µg/ml and for methanol and aqueous extract flower was found to be 78.20µg/ml and 80.75µg/ml, respectively. In order to study the effects of these compounds on biological system more studies are needed as these compounds might be responsible for use of this plant in different diseases [29]. The DPPH radical scavenging activity of *Tecoma stans* was evaluated and compared with ascorbic acid. The presence inhibition of flowers extract was calculated at various concentration 10,20,30,40,50 etc.) aswell as standard ascorbic acid. The highest scavenging activity of methanolic and aqueous extract were37.1±0.31% and 36.34 ±0.21% at concentration of 50 µg/ml.

Phenolic compounds are very important plant constituents because of their scavenging ability due to their hydroxyl groups [30]. The polyphenolic compounds may contribute directly to the antioxidative action [31]. In addition, it was reported to play an important role in stabilizing lipid peroxidation [32]. The extract contain polyphenol is used for the prevention and cure of various diseases which is mainly associated with free radicals [33]. DPPH is a stable free radical in aqueous or ethanol solution and accepts an electron or hydrogen radical becomes a stable diamagnetic molecule. DPPH is usually used as a substrate to evaluate antioxidative activity of antioxidants.

In the presence of an electron-donating anti-oxidant, the purple colour typical of the free DPPH radical diminishes in intensity, a change that can be followed spectrophotometrically at 517 nm. The radical scavenging activities of the extract measured as decolorizing activity following the trapping of the unpaired electron of DPPH. The inhibitory effect of these extracts may be attributed to the presence of phenolic compound. It is well known that antioxidants can seize the free radical chain of oxidation and form stable free radicals. This would not initiate or propagate further oxidation DPPH has been used extensively as a fee radical to evaluate reducing substance [34].



Fig, 3. DPPH scavenging mechanisms by an antioxidant (AH)

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Table 3: Free radical scavenging capacity of Sample (Methanol extract)

S.N.		Concentration µg/ml	% DPPH free radical scavenging activity			
			Sample	IC_{50}	Ascorbic acid	IC_{50}
1.	1.	10	20.7±0.84	78.20	8.4±0.41	75.42
2.	2.	20	24.1±0.68		12.9±0.39	
3.	3.	30	28.6±0.61		18.7±0.59	
4.	4.	40	34.8±0.64		24.36±0.41	
5.	5.	50	37.1±0.31		35.72±1.01	

Values are mean ± SD (n=5)

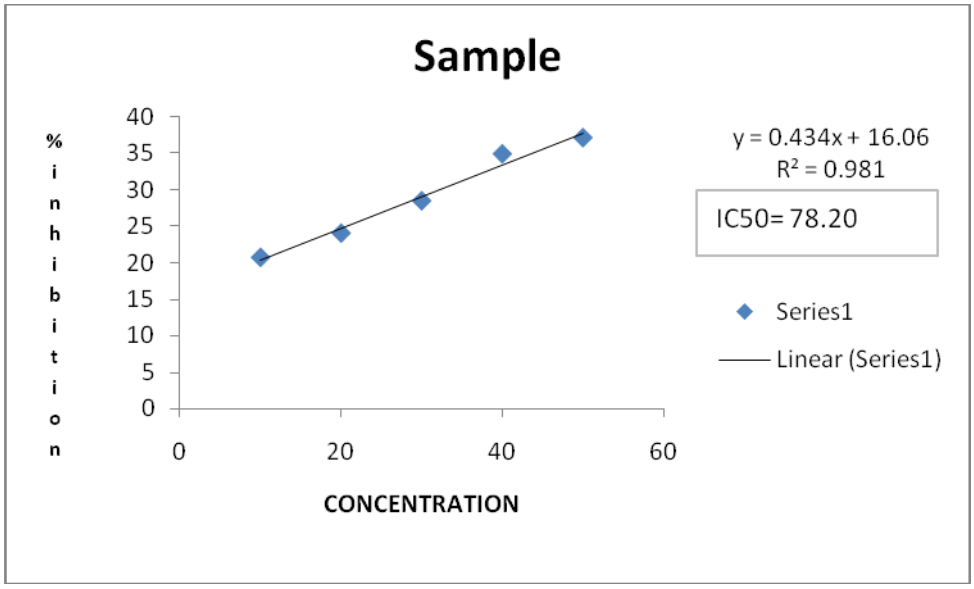

Fig. 4: Scavenging effect of sample (Methanolic extract) on DPPH assay.

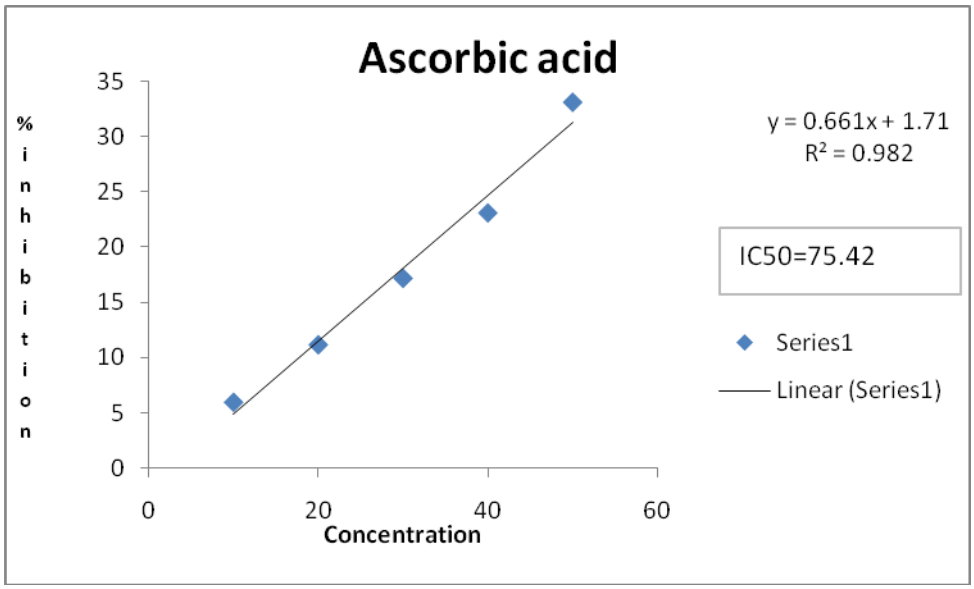

Fig. 5: Scavenging effect of ascorbic acid on DPPH assay

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Table 4: Free radical scavenging capacity of Sample (Aqueous extract)

S.no		Concentration µg/ml	% free radical scavenging activity			
			Sample	IC_{50}	Ascorbic acid	IC_{50}
6.	1.	10	21.42±0.30	80.75	8.4±0.41	75.42
7.	2.	20	23.64±0.30		12.9±0.39	
8.	3.	30	29.1±0.37		18.7±0.59	
9.	4.	40	35.08±0.28		24.36±0.41	
10.	5.	50	36.34 ±0.21		35.72±1.01	

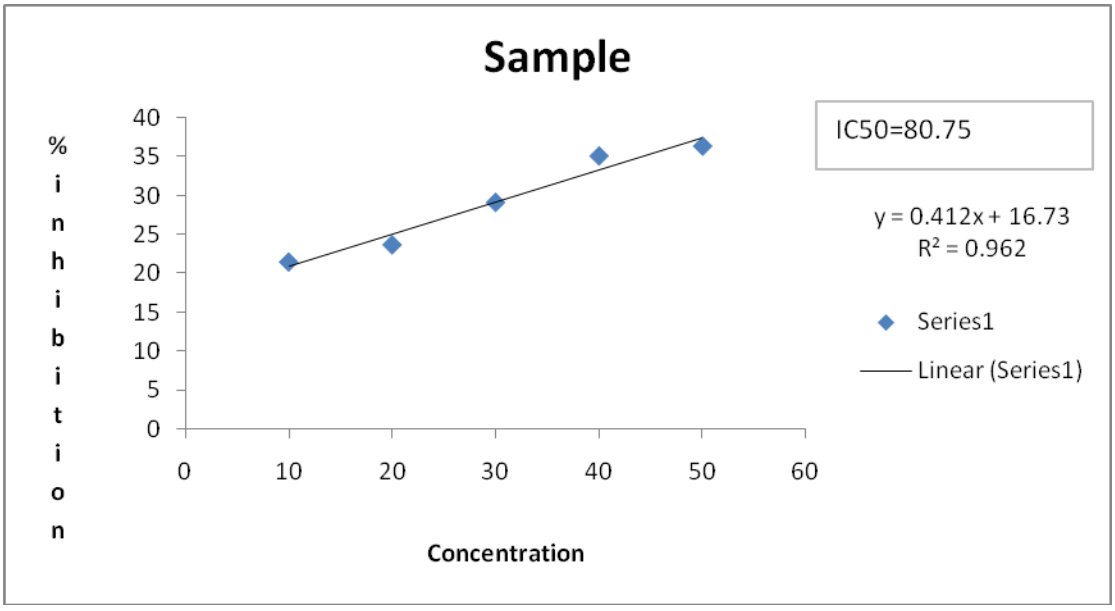

Fig. 6: Scavenging effect of sample (Aqueous extract) on DPPH assay.

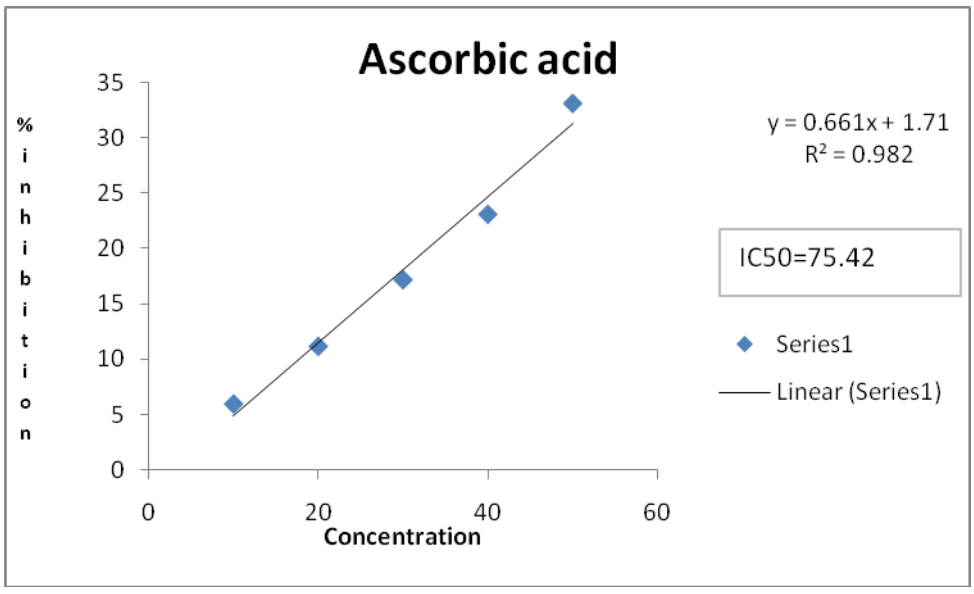

Fig. 7: Scavenging effect of ascorbic acid on DPPH assay.

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3.3 The *In-vitro* anti-inflammatory activity

The ethical challenges and the nonexistence of rationale to use animals for pharmacological research of new chemical compounds, when other suitable methods are available or could be investigated, pushed us to select the protein denaturation bioassay and membrane stabilization potential for in vitro evaluation of anti-inflammatory property activity of studied plant materials [35].

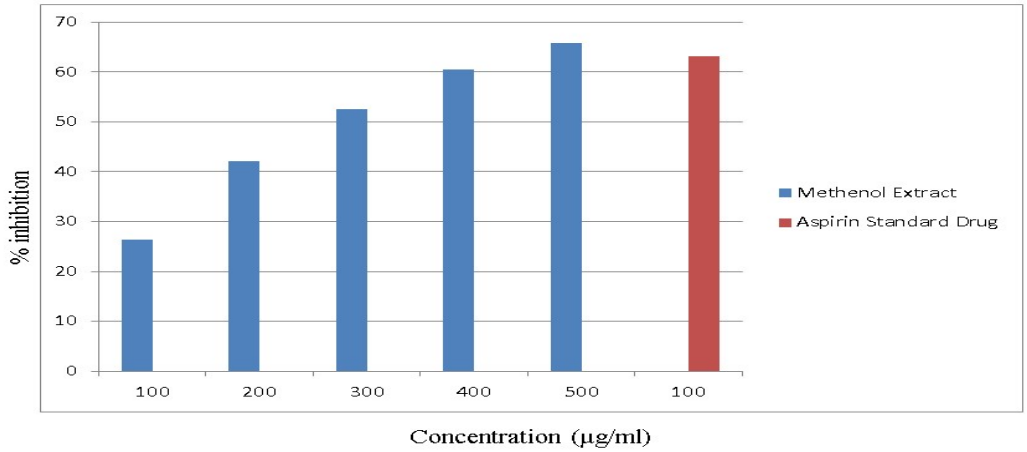
The inhibition of protein denaturation

Inhibition of albumin denaturation Protein Denaturation is a process in which proteins lose their tertiary structure and secondary structure by application of external stress or compound, such as strong acid or base, a concentrated inorganic salt, an organic solvent or heat [36]. Most biological proteins lose their biological function when denatured. Denaturation of proteins is a well documented cause of inflammation. As part of the investigation on the mechanism of the anti-inflammation activity, ability of plant extract to inhibit protein denaturation was studied. It was effective in inhibiting heat induced albumin denaturation. Maximum inhibition of 65.78 % was observed at 500 µg/ml. Aspirin, a standard ant inflammation drug showed the maximum inhibition 63.15 % at the concentration of 100 µg/ml compared with control (Table 4.5).

Table 5: Effect of *Tecoma stans* methanolic extract on heat induced protein denaturation

S.N.	Concentration (µg/ml)	Absorbance at 660 nm	% inhibition of protein denaturation
1	100	0.28 ± 0.05	26.31
2	200	0.22 ± 0.02	42.10
3	300	0.18 ± 0.03	52.63
4	400	0.15 ± 0.01	60.52
5	500	0.13± 0.07	65.78
6	100 (Aspirin) Standard anti-inflammation drug	0.14 ± 0.01	63.15
7	Control	0.38 ± 0.04	-

Each value represent the mean ± SD. N=3 experimental group were compared with control p <0.001 considered extremely significant.



Fig, 8: Anti-inflammatory activity of *Tecoma stans* methanolic extract using egg albumin Protein denaturation

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3.4 FTIR Spectral Data Interpretation

FT-IR study Table 4.6 shows the functional groups of the organic and inorganic compounds of the plant extract. The FTIR methods was performed on a spectrophotometer system, which was used to detect the characteristics peak values and their functional group. Infra spectrum shows beak area 3269.84 cm^{-1} (O–H stretch, free hydroxyl, phenols and 3011.05 cm^{-1} is presence of OH groups. The peak area at 2923.40, 2853.33 cm^{-1}vibration C-H stretching alkane and C-H stretching aldehyde. The beak area at 2179.92 and 2026.57 cm^{-1} shows C≡C stretching alkyne and aromatic compound. A strong stretching vibration at 1743.63 cm^{-1} and 1621.02 cm-1 shows the presence of carbonyl(C=O) and alkene(C=C) groups. The beak at 1529.51 cm-^{1} N–O stretch (in–ring) Nitro compound and 1462.76 cm^{-1} show C–H bend alkanes. The beak area a 1336.78 cm^{-1} shows O–H bending phenol. The beak at 1229.40 cm^{-1} shows Alkyl amine group. 857.05cm^{-1} beak shows C-H out plane bending. The beak areas 715.02 cm^{-1}, shows halogen compounds like C-Cl, compounds. FT-IR analysis of methanol flower and aqueous extracts of Tecomastans confirmed the presence of phenols, alcohols, carboxylic acid, amide, aldehydes, ketones, alkanes, alkenes, aromatics, amines and alkyl halides which show major peaks[37].

Table 6: FT-IR spectrum of Methanolic and Aqueous extract of *Tecoma stans*

Extract	Peak Value (cm^{-1})	Group	Class	Peak Detail
Methanolic Extract	665-730	C=C bending	Alkene	Strong
	857.05	C=C bending	alkene	Medium
	1068.13	C-O stretching	Primary Alcohol	Strong
	1163.75	C-O stretching	Ether	Strong
	1229.40	C-N stretching	Amine	Medium
	1336.78	O-H Bending	Phenol	Medium
	1416.59	O-H Bending	Aldehyde	Medium
	1462.76	C-H Bending	Alkane	Strong
	1529.51	N-O Stretching	Nitro Compound	Medium
	1621.02	C=C Stretching	Alkene	Weak
	1743.63	C=C Stretching	Carboxylic acid	Strong
	1870.25	C=O Stretching	Conjugated Anhyd.	Strong
	2026.57	C-H Bending	Aromatic	Weak
	2179.92	C≡C stretching	Compound	Weak
	2350.36	O=C=O	Alkyne	Strong
	2853.33	stretching	Carbon dioxide	Medium
	2923.40	C-H Stretching	Aldehyde	Medium
	3011.05	C-H Stretching	Alkane	Weak, Broad
Aqueous Extract	665.73	C=C bending	Alkene	Strong
	893.37	C=C bending	Alkene	Strong
	1067.73	C-O Stretching	Primary alcohol	Strong
	1098.17	C-O Stretching	Ether	Strong
	1232.16	C-O Stretching	Aryl ether	Strong
	1262.75	C-N Stretching	Aromatic Amine	Strong
	1392.03	C-H Bending	Aldehyde	Medium
	1591.18	N-H Bending	Amine	Medium
	1986.97	C=C=C	Allele	Medium
	2126.72	Bending	Alkyne	Weak
	2929.68	C≡C stretching	Alkene	Medium
	3224.85	C-H Stretching	Alcohol	Strong, Broad
		O-H Stretching		

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Spectral differences are the objective reflection of componential differences. By using FT-IR spectrum, we can confirm the functional constituent's presence in the given parts and extract, identify the medicinal materials from the adulterate and even evaluate the qualities of medicinal materials The results of the present study coincided with the previous observations observed by various plant biologist and taxonomist many researchers applied the FT-IR spectrum as a tool for distinguishing closely associated plants.

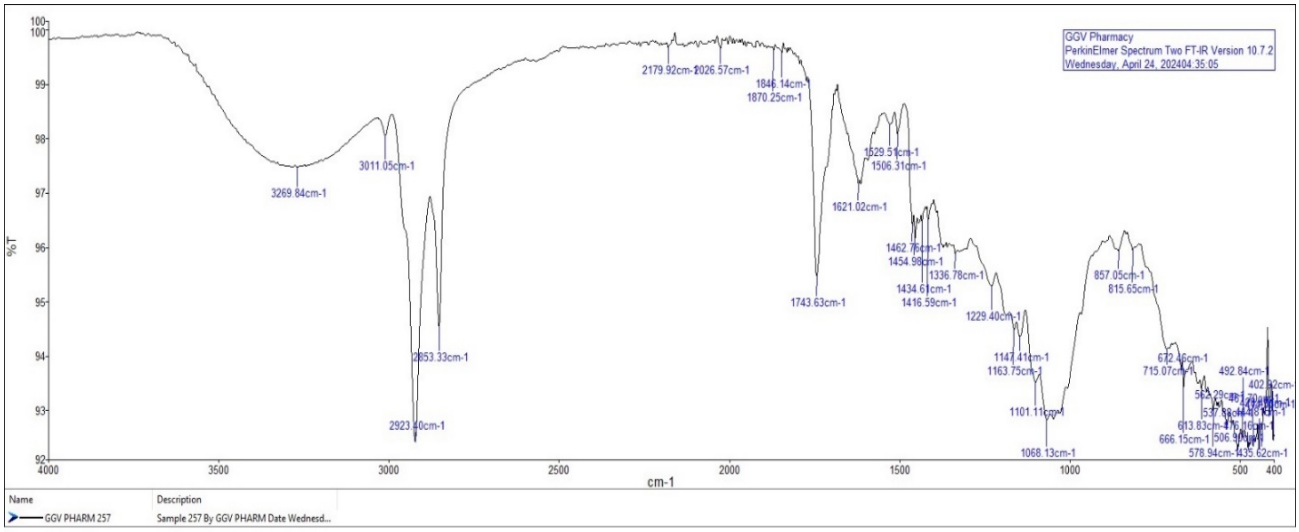

Fig 9: Shows the FT-IR frequency range of methanolic *Tecoma stans* flower

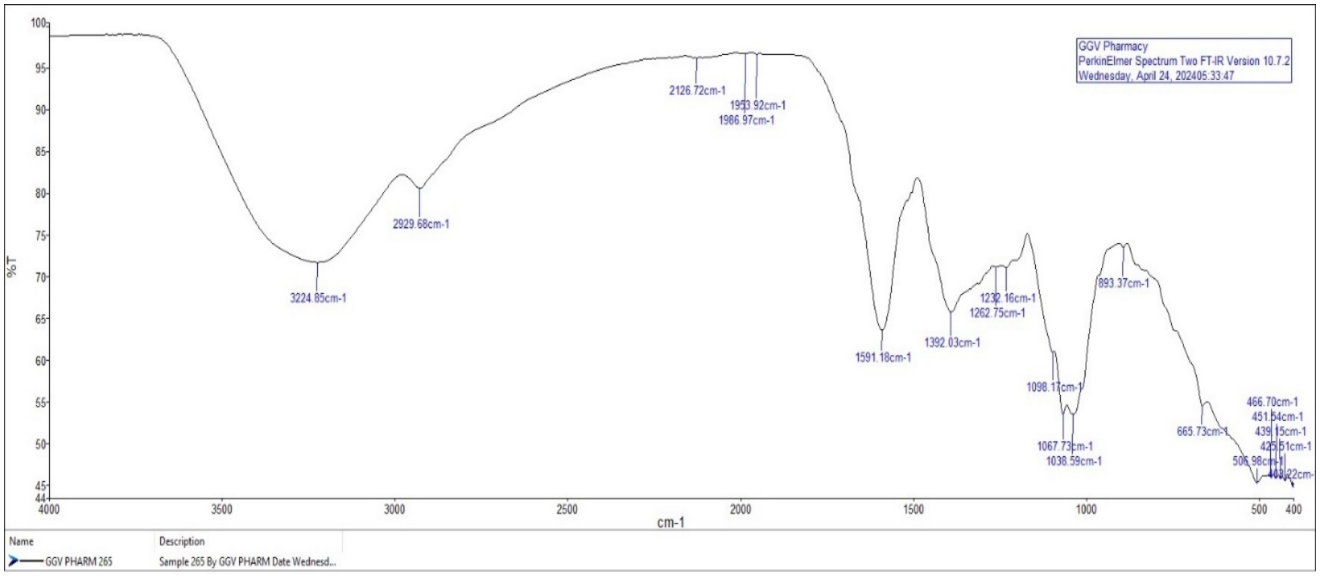

Fig 10: Shows the FT-IR frequency range of aqueous *Tecoma stans* flower.

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4. Conclusion

The *Tecoma stans* is widely used by traditional medical practitioners for the treatment of various diseases. Studies show a diversity of pharmacological activities in *Tecoma stans.* investigations of this plant. The present study indicates that *Tecoma stans* Linn. flower have a potent antioxidant , anti inflammatory activity. *Tecoma stans* is a lovely decorative plant that has historically been used as a carcinogen, antimicrobial, antioxidant, anti-ulcer, anti-inflammatory, anti-plasmodic, analgesic, and antidiabetic, among other things. Research on this plant is expanding constantly as a result of its potent medicinal applications. The isolation of several potent chemical components that form the foundation of its specific pharmacological activities was made possible by numerous phytochemical research. Researches on this plant are increasing day by day because of its potent pharmacological uses. *Tecoma stans,* showed that the crude extracts exhibited antioxidant free radical scavenging, anti-inflammatory, properties. However, further investigation employing isolation of constituents and screening models are needed for further confirmation of various potential of T*ecoma stans.*

5. Conflicts of interest

The authors declare no conflict of interest.

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