INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES
[ISSN: 0975-4725; CODEN(USA):IJPS00]
Journal Homepage: https://www.ijpsjournal.com

Research Article

Qualitative and Quantitative Phytochemical Analysis Of *Wedelia Trilobata* Linn

Aditya V. Ubhale*[1], Sakshi S.Madavi[1],Shivani D. Wagh[1],Vaishnavi P. Lawane[1], Pankaj H. Chaudhary[2], Prashant J. Burange[3],Dipti B. Ruikar[4]

[1]*Research Scholar, P. R. Pote Patil College of Pharmacy, Kathora road, Amravati – 444604 Maharashtra, INDIA.*
[2]*Assistant Professor, Department of Pharmacognosy, P. R. Pote Patil College of Pharmacy, Kathora road, Amravati - 444604 Maharashtra, INDIA.*
[3]*Assistant Professor, Department of Pharmaceutical Chemistry, P. R. Pote Patil College of Pharmacy, Kathora road, Amravati - 444604 Maharashtra, INDIA.*
[4]*Principal, P. R. Pote Patil College of Pharmacy, Kathora road, Amravati – 444604, Maharashtra, INDIA.*

ARTICLE INFO

Received: 21 May 2024
Accepted: 25 May 2024
Published: 07 June 2024

Keywords:
Phytochemical studies, Thin Layer Chromatography, UV-VIS Analysis , FTIR Analysis.

DOI:
10.5281/zenodo.11520151

ABSTRACT

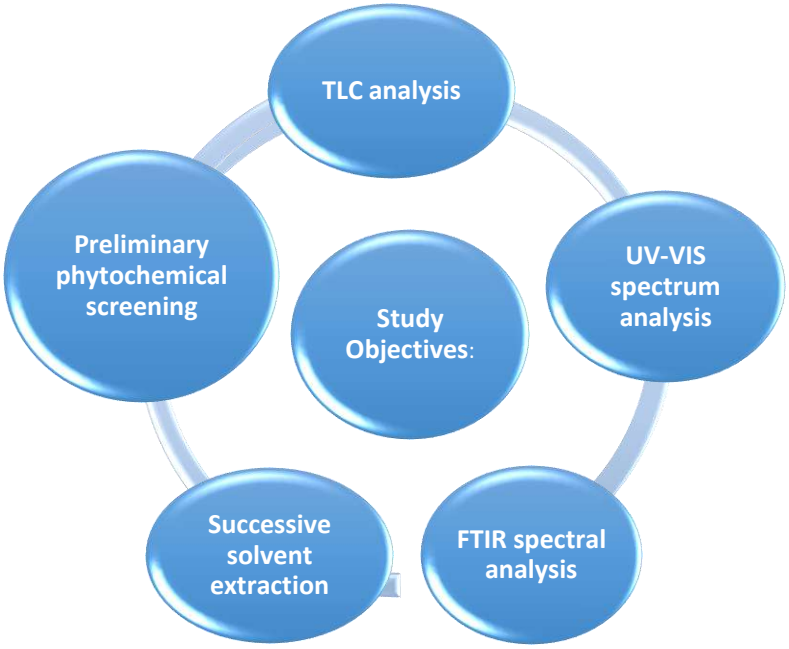
Aim:
To study a qualitative and quantitative phytochemical screening on Wedelia trilobata L.
Material and Methods :
Extractive values, loss on drying (LOD), total ash, water-soluble, and acid-insoluble ash were determined per WHO guidelines. Preliminary phytochemical screening and qualitative chemical studies were conducted for various phytoconstituents. UV-VIS spectrum, FTIR spectral analysis, and TLC analysis is done using four solvents.(Aqueous ,ethanol,Chloroform And Benzene).
Results:
Chemical evaluation and TLC revealed alkaloids, glycosides, flavonoids, steroids, saponins, and tannins, with steroids confirmed via TLC fingerprinting. UV-VIS spectrum identified peaks for four solvents. FTIR spectrum indicated alcohols, phenols, alkanes, alkynes, alkyl halides, aldehydes, aromatics, nitro compounds, and amines.
Conclusions:
Preliminary phytochemical screening of Wedelia trilobata aids in standardization and avoiding adulteration. Physicochemical data support monograph development. Chromatographic fingerprinting can standardize extracts and formulations. Evaluating Wedelia trilobata is essential for its practical clinical applications.

***Corresponding Author:** Aditya V. Ubhale
Address: *Research Scholar, P. R. Pote Patil College of Pharmacy, Kathora road, Amravati – 444604 Maharashtra, INDIA.*
Email : Ubhaleaditya7@gmail.com
Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

INTRODUCTION

Natural products have provided some of the important lifesaving drugs used in the armamentarium of modern medicine. However, among the estimated 250,000-400,000 plant species, only 6% have been studied for biological activity and 15% have been investigated phytochemically. This illustrates the need for planned activity guided phyto-pharmacological evaluation of herbal drugs.[1,19] Wedelia trilobata is one kind of species of the Asteraceae family commonly known as Bhringraj, Singapore Daisy, Rabbits Paw, Trailing Daisy, Bay Biscayne creeping- oxeye, Creeping oxeye, Trailing daisy, Wedelia, Yellow dots. It is native to north and central America and in the Indies. Wedelia includes 104 additional species and they are found mainly in the tropical areas in America. The genus is named in honor of German botanist and physician Georg Wolfgang Wedel [2]. It was introduced to humans mostly as aground covering plant in Mexico, Central America (i.e. Belize, Costa Rica, Guatemala, Honduras, Nicaragua and Panama), the Caribbean and tropical South America (i.e. French Guiana, Guyana, Surinam, Venezuela, Brazil, Bolivia, Colombia, Ecuador and Peru). This species is widely naturalized in the coastal districts of northern and eastern Australia. It is most common in the coastal parts of south-eastern Queensland and north-eastern New South Wales.[3] It is regarded as a significant environmental weed in Bangladesh, and a minor or potential environmental weed in New South Wales and Western Australia as well. Its whole plant and leaves are used to cure hair disease, jaundice, fevers, astringent, hemorrhages, toothache, asthma, bronchitis. [4] Wedelia trilobata (L.) Hitchc., commonly known as "Creeping Daisy" or "Bay Biscayne Creeping-oxeye," is a perennial herbaceous plant belonging to the Asteraceae family. It is native to tropical regions and is widely distributed across various continents, including Asia, Africa, and the Americas. This review aims to provide a comprehensive overview of the botanical characteristics, phytochemical composition, pharmacological properties, and therapeutic applications of Wedelia trilobata. Botanically, Wedelia trilobata is characterized by its creeping or trailing growth habit, triangular or lobed leaves, and vibrant yellow daisy-like flowers. The plant has been extensively studied for its phytochemical constituents, revealing the presence of various bioactive compounds such as flavonoids, alkaloids, terpenoids, phenolics, and essential oils. These phytochemicals contribute to the plant's diverse pharmacological properties, including antioxidant, anti-inflammatory, antimicrobial, antidiabetic, anticancer, hepatoprotective, and wound healing activities.

Furthermore, this discusses the therapeutic potential of Wedelia trilobata in traditional medicine systems and its emerging applications in modern pharmacotherapy. The plant extracts and isolated compounds have shown promising effects in preclinical studies, warranting further investigation for their clinical efficacy and safety. Additionally, the ecological significance, cultivation practices, and conservation efforts related to Wedelia trilobata are also addressed. Wedelia trilobata represents a valuable source of bioactive compounds with diverse pharmacological activities. Further research aimed at elucidating its mechanisms of action, standardizing extraction methods, and conducting clinical trials is essential for harnessing its full therapeutic potential and promoting its sustainable utilization in healthcare and pharmaceutical industry



MATERIALS AND METHODS

Collection and Authentication:

Wedelia Trilobata Linn. whole plant was collected, from Kathora ,Amravati, Maharashtra, India and authenticated by Dr. Parul Nandgaonkar , Assistant Professor ,Department of Dravyaguna, PRPPCMSA (P. R. Pote Patil College of medical sciences ayurved, Amravati) .P. R. Pote Patil College Of Pharmacy. Authentication specimen number is PRPPCMSA/Authentication Letter/2023-24/01. The whole plant was kept for shade drying. Since certain compounds get denatured in sunlight, they were dried under shade to avoid decomposition. Dried specimen was powdered using mechanical grinder and passed through 60 mesh sieve to get the powder of desired coarseness. Powdered material was preserved in an air tight container.

Preparation of Plant Extract:

To prepare various extracts of Wedelia Trilobata Linn, the dried plant was powdered by using dry grinder and passed through sieve no.60. This powder was packed into Soxhlet apparatus and extracted successively with different solvents, starting from solvent of high polarity to low polarity. The process was continued until the solvent in the thimble becomes transparent. All the extracts were dried to produce a semisolid mass and stored in airtight containers.[5]

Successive solvent extraction by using soxhlet apparatus:

Principle:

To prepare various extracts of Wedelia Trilobata Linn., a successive solvent extraction procedure was adapted. The plant materials were subjected to successive extraction with different solvents, starting from solvent of high polarity to low polarity.

Materials:

Dried whole plant powder of Wedelia Trilobata Linn.

Solvents:

Water, Ethanol, Chloroform, Benzene.

Procedure: An about 50 gm of powdered drug of the selected medicinal plant was subjected to extraction by using methanol as solvent in a soxhlet apparatus. The extraction was continued until the solvent in the thimble becomes clear or colourless. Then the heating was stopped and the mixture from distillation flask was collected and cooled. Then this mixture was filtered and concentrated by using evaporator at room

temperature. The extract was dried at room temperature and stored in amber coloured glass jar in a freezer or desiccator and was used for further experiments. The marc obtained after extraction was removed, dried and recharged, extracted with respective solvents [6].

Determination of extractive value:

Extractive values are used to evaluate the nature of phytochemicals present in the crude drugs. The extractive yield is a measure of the solvent's efficiency to extract specific components from the original material and it was defined as the amount of extract recovered in mgs compared with the initial amount of whole plant. It is presented in percentage and was determined for each techniques tested [7].

$$\textbf{Extractive value } \frac{100y}{x}$$

Where,

x= Weight of drug in thimble

y =Weight of drug after drying

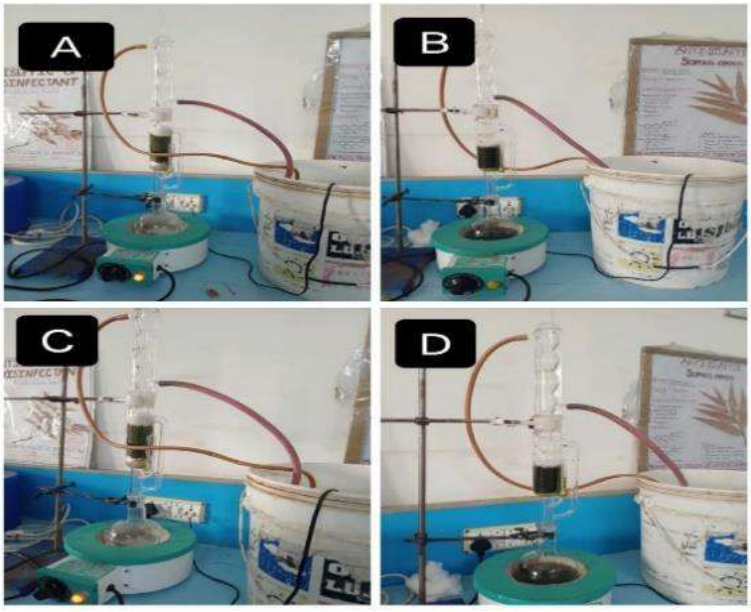


Fig.1 Successive solvent extraction

Successive Extraction

a. Etraction using water
b. Extraction using ethanol.
c. Extraction using chloroform
d. Extraction using benzene.

Determination of Physio-Chemical Constant:

Physico-chemical values such as the ash values, extractive values and percentage of loss on drying were carried out as per the standard method described in Indian Pharmacopoeia (1996) .

Determination of Ash values:

Crude drugs quality and purity was determined by ash values. Sodium, potassium, magnesium, carbonates of calcium salts, phosphates and silicates constitutes the total ash values. Powdered plant materials were subjected to total ash, acid insoluble ash and water soluble ash [8].

Determination of Total Ash:

Coarsely powdered leaf material of about 2 to 3gms was weighed and transferred to a pre-weighed silica crucible. In the crucible, powdered drug was spread evenly as fine layer and incinerated by gradually increasing the temperature not exceeding 450°C until colourless, indicates the carbon free. After incineration completion, silica crucible was cooled in a desiccator and weighed. The same procedure was repeated to get a constant weight. The percentage of total ash was determined with reference to the shade dried plant material [9].

Total ash value =(100(Z-X)%)/(Y-X)

where, x= weight of empty crucible
y= weight of crucible + Sample
z= weight of crucible + Ash

Acid-insoluble ash:

The ash obtained from the above method was boiled for 5-10min with 25ml of dilute HCl. The insoluble ash was collected in an ashless filter paper or a Gooch crucible. The crucible or filter paper was washed with hot water. The acid insoluble ash was transferred to a pre-weighed silica crucible. This was repeated until constant weight obtained. The acid insoluble ash percentage was calculated with reference to the air-dried drug [10].

$$\text{Acid insoluble ash value: } = \frac{100(y-x)}{z} \%$$

where,
x= weight of empty crucible
y= weight of crucible + acid insoluble ash
z= weight of sample

Water soluble ash value:

The ash obtained in the determination of total ash was boiled for about 5-10min in 25ml of water. The insoluble matter was collected in a silica crucible, washed with hot water. The insoluble ash so obtained was transferred to a pre- weighed silica crucible. The silica crucible was heated gradually to a temperature of 450°C for 15 min to get a constant weight. The crucible was cooled and weighed. The percentage of water soluble ash was calculated by subtracting weight of insoluble matter from the weight of total ash [11].

$$\text{Water soluble ash value} = \frac{100(y-x)}{z} \%$$

where,
x= Water insoluble ash
y= Total ash
z= weight of sample

Moisture content (loss on drying) (LOD):

2gms of powder drug was accurately weighed and taken in a petri dish. The dish was kept in a hot air oven maintained at a temperature 110°C for 4 hours until a constant stable weight was recorded. The procedure was repeated. The dish was cooled in a desiccator at room temperature and weighed [12].

$$\text{Loss on drying: } \frac{100(x-y)}{y} \%$$

where,
x =Weight of drug + weight of empty petri dish
y = Weight of drug after drying

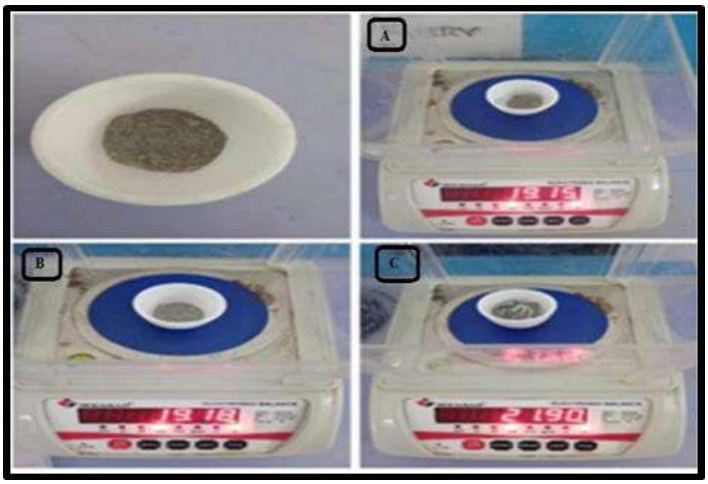


Fig.2 Ash Values

A. Total Ash
B. Acid Insoluble Ash
C. Water Soluble Ash

Qualitative phytochemical screening of various plant extracts:

Various chemical tests are conducted to identify different phytochemicals Terpenes, Alkaloids, Flavonoids, Glycosides, Tannins and Phenolic compound based on the protocols available in the literature.

Test for alkaloids:

Extracts were dissolved individually in dilute hydrochloric acid and filtered [13,14,15].

A. **Mayer's Test:**

Filtrates were treated with Mayer's reagent (Potassium Mercuric Iodide). Formation of a

yellow coloured precipitate indicates the presence of alkaloids.

B. **Dragendroff's Test:**

Filtrates were treated with Dragendroff's reagent (solution of Potassium Bismuth Iodide). Formation of red precipitate indicates the presence of alkaloids.

Test for carbohydrates: [14,15]

Extracts were dissolved individually in 5 ml distilled water and filtered. The filtrates were used to test for the presence of carbohydrates.

A. **Molisch's Test:**

Filtrates were treated with 2 drops of alcoholic a-naphthol solution in a test tube. Formation of the violet ring at the junction indicates the presence of Carbohydrates.

B. **Benedict's Test:**

Filtrates were treated with Benedict's reagent and heated gently. Orange- red precipitate indicates the presence of reducing sugars.

Test for saponins [14]

A. Foam Test:

0.5 gm of the extract was shaken with 2 ml of water. If foam produced persists for ten minutes it indicates the presence of saponins.

Test for phenols [14,15]

A. Ferric Chloride Test: Extracts were treated with 3-4 drops of ferric chloride solution. Formation of a bluish black colour indicates the presence of phenols.

Test for flavonoids [14,15]

A. **Alkaline Reagent Test**:

Extracts were treated with few drops of sodium hydroxide solution. Formation of an intense yellow color, which becomes colorless on an addition of dilute acid, indicates the presence of flavonoids.

B. **Lead acetate Test:**

Extracts were treated with few drops of lead acetate solution. Formation of yellow colour precipitate indicates the presence of flavonoids.

Test for Terpenoids [14]

A. Salkowski Test:

Take 1 ml of extract and treat it with 0.5ml of conc. HCl and observe for the formation of yellow precipitate or colouration.

Test for Cardiac Glycosides [14,15]

A. Keller Kelliani's Test:

Take Iml extract and treat it with Iml of glacial acetic acid and 2-3drops of 5% ferric chloride solution. To this mixture add 0.5mlof conc.H2SO4. Observe for a brown ring at the interface shows the presence of deoxysugar characteristics of cardenolides. A violet ring may appear below the ring while in the acetic acid layer, a greenish ring may form.

Test for Proteins [14,15]

A. Biuret Test:

Take 3ml of extract and treat it with 4% of sodium hydroxide solution and add few drops of 1% of copper sulphate solution and observe the formation of purple colour which indicates the presence of proteins.

B. Millon's Test:

Mix 3ml of extract with 5ml of millon's reagent and observe the formation of red precipitate.

Test for Tannins [14,15]

A. Ferric chloride Test:

Take Iml of extract and treat it with Iml of 10% alcoholic ferric chloride solution and observe for the formation of blue or greenish colour.

B. Lead acetate Test:

To the 2ml of test solution add 2ml of 10% sodium hydroxide solution and then boil for a minute. Add few drops of lead acetate solution. Formation of brown precipitate indicates presence of tannins.

Test for Fat and Oils (Saponification test)

2-3 ml of plant extracts was mixed with 0.5 N alcoholic potassium hydroxide solution along with 2 drops of phenolphthalein and heated for about 2 hrs. The formation of soap indicates the presence of fixed oils and fats.

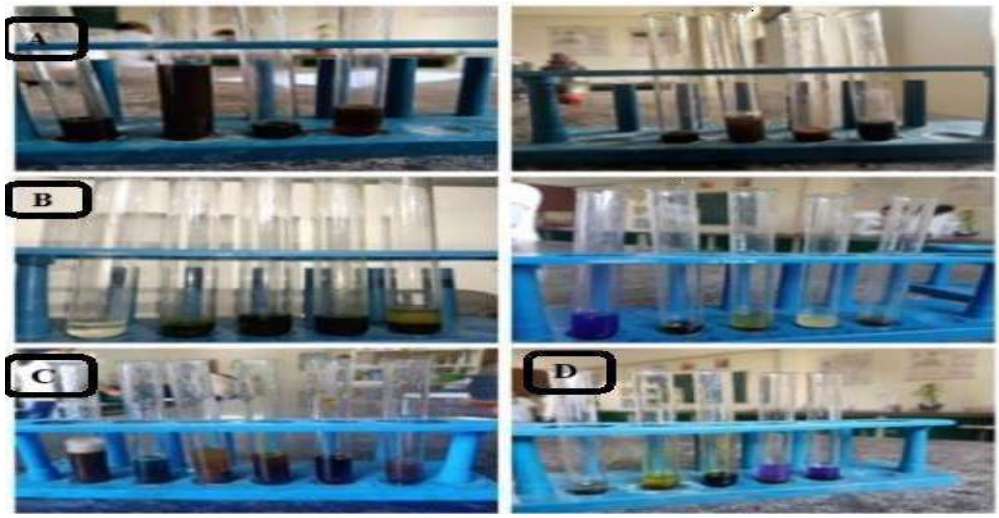


Fig. 3 Phytochemical Screening

Where,

A. Test using water extract.
B. Test using ethanol extract
C. Test using chloroform extract
D. Test using benzene extract

Thin layer chromatography analysis

TLC separation and evaluation for different phytoconstituent of four extracts is carried out using silica gel G F254 as stationary phase and different mobile phases as well as spraying reagents as summarised in Tables 01 Extracts are dissolved in their respective solvents and then spots are applied by using microcapillary on TLC plates[16]

Table 01: TLC Profile Of *Wedelia Trilobata* L. Leaves

Phytochemical	Mobile phase	Detecting Agent
Alkaloid	Toluene: ethyl acetate: Diethylamine (70:20:10)	Dragendroff's reagent
Flavonoid	Chloroform: Ethanol: Glacial Acetic Acid (9.4:0.5:0.1)	UV 365 nm
Saponin	Chloroform: Glacial Acetic Acid: Methanol: Water(64:32:12:8)	Vanillin Sulphuric acid reagent
Carbohydrate	Ethyl acetate: toluene (1:3)	10% ethanolic sulphuric acid reagent

UV VIS Analysis

The extracts were examined under visible and UV light for proximate analysis. For UV analysis the extracts were centrifuged at 3000 rpm for 10 min and filtered through Whatman No. 1 filter paper by using a high pressure vacuum pump. The sample is diluted to 1:10 with the same solvent. The extracts were scanned in the wavelength ranging from 260-900 nm using Perkin Elmer Spectrophotometer and the characteristic peaks were detected.[17]

FTIR Spectroscopic Analysis

Dried powder of Wedelia Trilobata Linn was used for FTIR analysis. 1 mg of the dried extract powder was encapsulated in 10 mg of KBr pellet, in order to prepare translucent sample discs. The powdered sample of the extract was loaded in FTIR spectroscope (Shimadzu, Japan), with a Scan

range from 500 to 4000 cm-1 with a resolution of
4 cm-1.[18]

RESULTS AND DISCUSSION:-

Determination of Physio-chemical Constant

Table 02 : Data Showing Ash Values, Extractive Values & Moisture Content Of Powdered Whole Plant Of Wedelia Trilobata Linn.

Sr. No	Physio-chemical analysis	Yield(%w/w)
1	Ash Values Total Ash	7.43
	Acid insoluble Ash	0.73
	Water Soluble Ash	1.25
2	Extractive Values Water Soluble extract	14
	Ethanol Soluble extract	12.6
	Chloroform Soluble extract	11.3
	Benzene Soluble extract	9.8
3	Loss on Drying (Water Extract)S	4.80

Qualitative phyto-chemical screening of various plant extract Wedelia Trilobata Linn.

Table 03: Preliminary Phytochemical Analysis Of Wedelia Trilobata Linn. Whole Plant Extract

Sr. No.	Phytoconstituents	Aqueous	Ethanol	Chloroform	Benzene
1	Alkaloids				
	a Mayer's test	+	+	+	+
	b Dragendroff test	+	+	-	+
2	Flavonids				
	a Alkaline reagent test	+	+	+	+
	b Lead acetate test	+	+	-	-
3	Carbohydrates				
	a Molisch test	+	+	-	-
	b Benedicts test	+		-	-
4	Protein				
	a Biuret test	+	+	-	+
	b Millon's test	+	+	-	-
5	Terpenoids				
	a Salkowaski test	+	+	-	-
6	Tannis and Phenol				
	a Ferric chloride test	+	+	+	+
	b Lead acetate test	+		+	+
7	Saponins				
	a. Foam Test	+	+	+	+
8	Glycosides(Cardiac)				
	a. Killer killani test	+	+	-	+
9	Glycosides(Anthraquionones)	-	-	-	-
10	Steroids				
	a. Salkowaski test	+	+	+	+

11	Fats and oils a. Saponification Test	+	+	+	+
12	Starch a. Iodine Test	+	+	+	+

Table 04: TLC Profile Of Extracts For Different Phytochemical Classes.

Phytochemical	Extract				Rf Value			
	W	E	C	B	W	E	C	B
Alkaloids	+	+	+	+	0.89	0.82	0.79	0.73
Flavonoids	+	+	+	-	0.97	0.91	0.76	-
Saponin	+	+	+	+	0.53	0.68	0.78	0.85
Carbohydrate	+	+	-	-	0.54	0.88	-	-

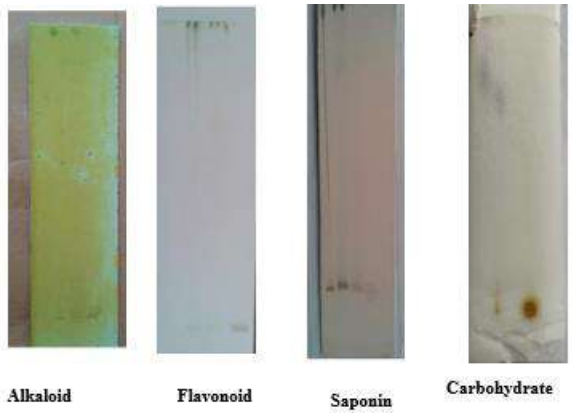


Fig. 4 TLC profile

Thin layer chromatography (Figure 4) confirmed presence of saponis in aqueous, ethanol, chloroform and benzene extracts among four extract at Rf 0.53,0.68,0.78 and 0.85 .While presence of alkaloids observed in Water ,ethanol ,Cholroform and benzene extract at Rf 0.89,0.82,0.79,073 and flavonoid observed in Water ,ethanol, chloroform extracts at Rf 0.97,0.91,0.76.While Carbohydrate Observed in Only Water and Ethanol at Rf 0.54,and 0.88.

UV-VIS Analysis

The UV-VIS profiles of Four W. trilobata extracts, utilizing solvents that range from polar to non-polar (including aqueous ethanol, chloroform, and benzene), were measured across wavelengths spanning 190 nm to 800 nm. This range was selected due to the distinct peak sharpness and clear baseline. An absorbance band at specific wavelengths serves as a useful indicator for identifying compounds with σ-bonds, π-bonds, lone electron pairs, chromophores, and aromatic rings. The Aqueous extract showed the peaks at 200,413,569 nm with the absorption 1.368,0.078,0.064 respectively. While Ethanolic extract showed the peaks at 200,336.7,427.2 nm with the absorption 1.102,0.146,0.163 respectively. Chloroform extract showed the peaks at 334.2,417.19,693.2 nm with the absorption 0.0527,0.0913,0.041respectively. Benzene extract showed the peaks at 200,423.14,549.63 nm with the absorption 0.712,0.09678,0.0965 respectively. Figure 5 shows the absorption spectrum for Four different extracts of W. trilobata, which appear nearly transparent in the 200-400 nm wavelength range and the obtained data of UV-VIS spectroscopic analysis in the Various extract of W. trilobata, is given as follows in table 5.

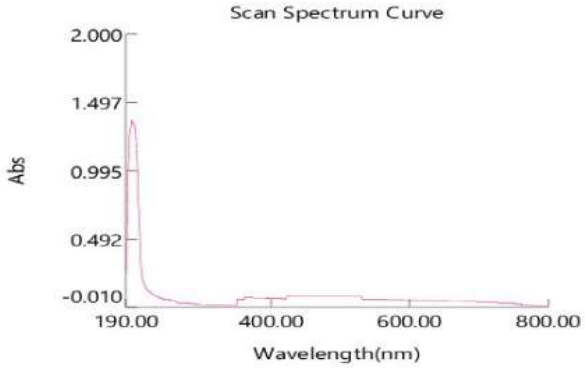


Figure - a) Aqueous extract

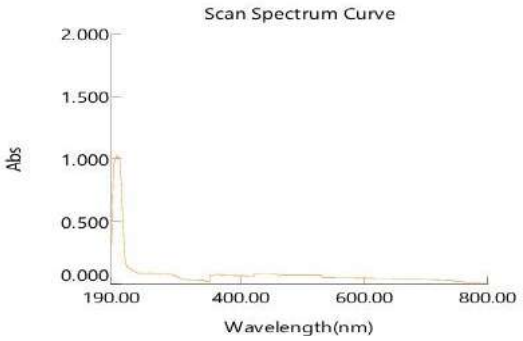


Figure - b) Ethanol Extract

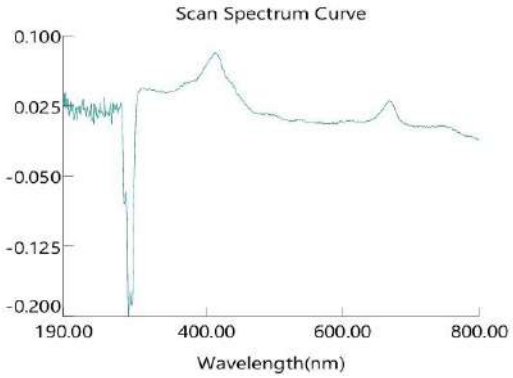


Figure - c) Chloroform extract

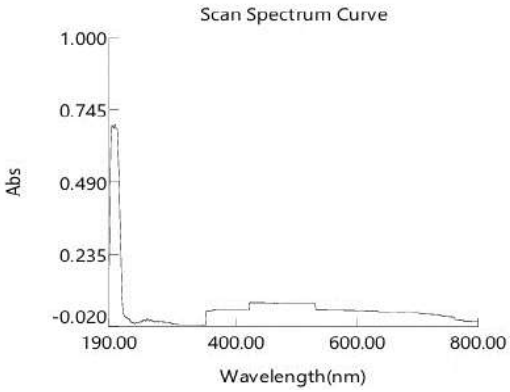


Figure - d) Benzene Extract

Fig. 5 UV spectrum of various extract of W.trilobata

Table no. 05: UV analysis of various extract of W. trilobata

Benzene extract		Chloroform extract		Ethanol extract		Aqueous extract	
Wavelength (nm)	**Absorbance**	**Wavelength (nm)**	**Absorbance**	**Wavelength (nm)**	**Absorbance**	**Wavelength (nm)**	**Absorbance**
200	0.712	334.2	0.0527	200	1.102	200	1.368
423.14	0.0978	417.19	0.0913	336.7	0.146	413	0.078
549.63	0.0965	693.2	0.041	427.2	0.163	569	0.064

Instrument Performance Details:

- The analysis was performed using a UV-VIS Spectrophotometer, model number 28-1950-01-0031.
- The spectral bandwidth was set to 2.00 nm for the initial scan.

First Scan Spectrum Performance:

- The scan spectrum range was from 190.00 to 800.00 nm.
- Measurements were taken in Absorbance (Abs) mode.
- The interval between measurements was 1.00 nm.
- The scanning speed was set to medium.
- The data file was saved as "D:\New folder (5)\W. Trilobata Water Ex.spd."
- The data was created on Monday, April 08, 2024, at 9:08:04 AM.
- The data type recorded was original.
- The analysis was conducted by the Administrator.

Additional Instrument Performance Details:

- The UV-VIS Spectrophotometer, model number 28-1950-01-0031, was also used with a spectral bandwidth of 0.00 nm for a subsequent scan.

Second Scan Spectrum Performance:

- The scan spectrum range was from 190.00 to 500.00 nm.
- Measurements were taken in Absorbance (Abs) mode.
- The interval between measurements was 1.00 nm.
- The scanning speed was set to medium.

FTIR analysis

The FTIR spectrum was used to identify the functional groups of the active components present in plant extracts based on the peak values in the region of IR radiation. When the plant extract was analyzed into the FTIR, the functional groups of the compounds were appeared on different wave's length. The results of analysis of crude extract W. trilobata were given in tables and figs. These results showed that alkenes, esters, nitro compounds, alcohols, ethers, aromatics, carbonyls, aldehydes, alkyl halides were present in the extracts. FTIR spectroscopy is proved to be a reliable and sensitive method for detection of bio molecular composition. Figure 6 shows the FTIR spectrum for Four different extracts of W. trilobata

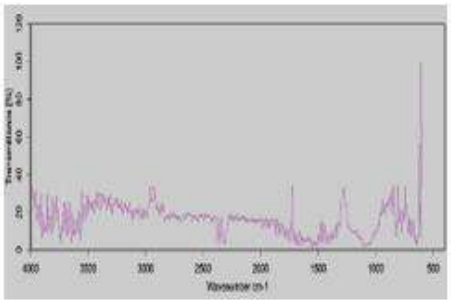


Figure - a) Aqueous extract

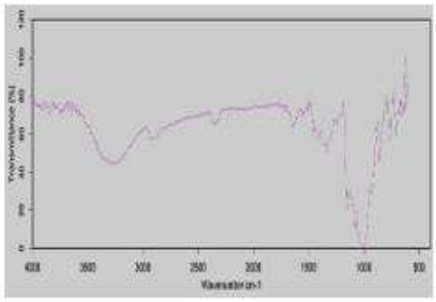


Figure - b) Ethanol Extract

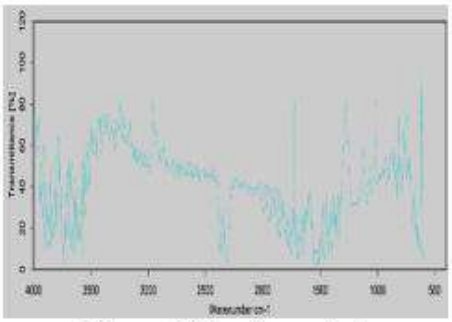


Figure - c) Chloroform extract

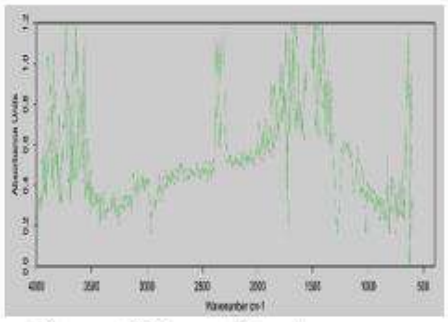


Figure - d) Benzene Extract

Fig.6 FTIR spectrum of various extract of W.trilobata

Table 06: FTIR Analysis Of Various Extract Of W. Trilobata

Functional group	Benzene extract	Chloroform extract	Ethanol extract	Aqueous extract
Alcohol(O-H Stretching)	3566.39	3297.77, 1093.64	-	3648.09
Alkanes(C-C Stretching	2942.11	2987.95	2942.51, 1417.23	-
Carboxylic acid(O-H Stretching)	2376.54, 2311.58	2351.04, 2310.79	2358.92 927.38	2310.54
Esters (C=O stretching)	1749.24	1749.20	-	-
Ketone ,Carboxylic	1715.68,	1683.16	1658.92	-

acid(C=O stretching)				
Primary Amide	1683.10	1652.53	-	1507.52
Alkene (C=C stretching)	1652.41, 638.17, 616.91	1652.53 775.57, 629.29,	783.41 629.76	1394.04, 650.40
Nitro compound (N-O stretching)	1541.20, 1507.42	1507.52	1507.64	-
Alkyl Halides	1224.89	1229.27	1279.56 783.41 691.68	1231.21
Amine (C-N Stretching)	1224.89	1229.27		-

FTIR spectroscopy was employed to identify the functional groups of the active constituents within plant extracts, utilizing the peak values in the infrared radiation spectrum. Upon analysis of the plant extract via FTIR, the functional groups of the compounds manifested at varying wavelengths. The findings from the examination of the crude extract of W. trilobata were detailed in Table no 6 . These results demonstrated the presence of alkenes, esters, nitro compounds, alcohols, ethers, aromatics, carbonyls, aldehydes, and alkyl halides in the extracts. FTIR spectroscopy has been validated as a dependable and precise method for detecting the biomolecular composition. The FTIR analysis results revealed distinctive absorption bands in the aqueous extract of W. trilobata, ranging from 3648.09 to 650.40, indicating the presence of functional groups such as alcohols, carboxylic acids, primary amides, and alkenes. Benzene extract exhibited a higher number of peaks compared to the aqueous extract, while the ethanolic extract contained peaks corresponding to alkanes, carboxylic acids, ketones, alkenes, nitro compounds, and alkyl halides at specific wavelengths including (2942.51,1417.23) (2358.92 927.38), (1658.92), (783.41,629.76), (1507.64), (1279.56,783.41,691.68) in the respective peaks Wedelia trilobata is one kind of species of the Asteraceae family commonly known as Bhringraj, Singapore Daisy, Rabbits Paw, Trailing Daisy, Bay Biscayne creeping-oxeye, Creeping oxeye, Trailing daisy, Wedelia, Yellow dots. It have a different chemical constituents likily alkoloid, flavonoids, carbohydrates, protein, terpenoid,tanins&fenols, saponin, cardiac glucosides, steroid,fats&oils . It consists different pharmacological activities like antioxidant activity, wound healing activity, antidiabetic activity, antihypertensive activity. Our study has focused on examining Qualitative and Preliminary Phytochemical study of Wedelia trilobata L. Organoleptic characteristics are important in drugs because they play a role in the detection of adulterated or substituted drugs. Thus leaves green in colour, emit a very fragrant and aromatic minty odor when bruised. The powdery appearance of the crushed leaves, with a coarse texture. These diagnostic elements are consistent with botanical standards and WHO guidelines. The study of physicochemical parameters such as moisture content and ash values are useful as it determines the physiological and non- physiological state of ash, this will help to determine the possibility of microbial growth and lastly contaminant or impurities

CONCLUSION

According to the research, the plant Wedelia trilobata L. is a significant source of many pharmacologically and medicinally important phytoconstituents. Wedelia trilobata L.plant

morphology has green colour, mild characteristic odour and bitter taste. It measures about 15- 30 cm long. Loss on drying, Total ash, Acid insoluble ash, Water soluble ash, and Extractive values are all included in the physicochemical parameters.

Wedelia trilobata L. is high in phytochemicals with high therapeutic value. The current phytochemical screening of Wedelia trilobata L. revealed the presence of bioactive compounds such as Flavonoids, Steroids, Alkaloids, Glycosides and Tannin that have medicinal value and distinct physiological action on the human body. The evaluation of Wedelia trilobata L. is required in order to use and formulate the plant in practical clinical applications that can be used for the benefit of mankind.

CONFLICT OF INTEREST:

The Authors declare that they have no conflict of interest for this study.

REFERENCE

1. Chaudhary and Tawar. Pharmacognostic and Phytopharmacological Overview on Bombax ceiba. Systematic Reviews in Pharmacy 2019; 10 (1): 20-25.
2. Lawane Vaishnavi & Dipti, Ruikar & Chaudhary, Pankaj. (2024). A Comprehensive Review on Sphagneticola Trilobata l. 2249-7781. 10.35629/7781-090213781389.
3. Ubhale AV, Chaudhary PH, Ruikar DB. A comprehensive review on Lepidagathias crisata Wild. Journal of Ayurveda and Integrated Medical Sciences. 2024 Apr 10;9(2):221-31.
4. Sabnam M. In Vitro Biological Investigations of Chloroform Extract of Wedelia Trilobata Leaves" (Doctoral dissertation, East West University).(2014).
5. Harborne AJ. Phytochemical methods a guide to modern techniques of plant analysis, springer science & business media; 1998 Apr 30.
6. Raaman, N. (2006); Phytochemical Techniques. New India Publishing Agency: Pitam Pura, New Delhi.
7. Indian Pharmacopoeia 2018, Volume IA, Published by: Indian Pharmacopoeia Commission Ghaziabad, Page no: 329.
8. Indrayan AK, Sharma S, Durgapal D, Kumar N, Kumar M. Determination of nutritive value and analysis of mineral elements for some medicinally valued plants from Uttaranchal. Current science. 2005 Oct 10:1252-5.
9. Indian Pharmacopoeia 2018, Volume IA, Published by: Indian Pharmacopoeia Commission Ghaziabad, Page no: 140.
10. Indian Pharmacopoeia 2018, Volume IA, Published by: Indian Pharmacopoeia Commission Ghaziabad, Page no: 141.
11. Indian Pharmacopoeia 2018, Volume IA, Published by: Indian Pharmacopoeia Commission Ghaziabad, Page no: 208.
12. Indian Pharmacopoeia 2018, Volume IB, Published by: The Indian Pharmacopoeia Commission Ghaziabad, Page no: 937.
13. Indian Pharmacopoeia 2018, Volume IB. Published by: The Indian Pharmacopoeia Commission Ghaziabad, Page no: 911.
14. Dr. K.R. Khandelwal, Dr. Vrunda Sethi, 29th edition April 2018: Practical Pharmacognosy Techniques And Experiments, Published by: Nirali Prakashan. Page no: 25.1-25.6.
15. S.B. Gokhale, Dr. A.U. Tatiya, Dr. M.G. Kalaskar: Practical Manual- Pharmacognosy And Phytochemicals, Published by: Nirali Prakashan. Page no:73-76
16. Chaudhary PH. et al. Pharmacognostical and phytochemical studies on roots of Bombax ceiba Linn. Journal of Pharmacy & Pharmacognosy Research 2014; 2 (6): 172-182.
17. Jain PK, Soni A, Jain P, Bhawsar J. Phytochemical analysis of Mentha spicata plant extract using UV-VIS, FTIR and

GC/MS technique. J Chem Pharm Res. 2016 Apr 6;8(2):1-6.

18. Saxena M, Saxena J. Evalution of phytoconstituents of Acorus calamus by FTIR and UV-VIS spectroscopic analysis. International Journal of Biological & Pharmaceutical Research. 2012;3(3):498-501.
19. Chaudhary PH, Khadabadi SS. Bombax ceiba Linn.: Pharmacognosy, Ethnobotany and Phyto-pharmacology. Pharmacognosy Communications 2012; 2 (3): 2-9.Anderson SR, Sinacori JT. Plummer-Vinson syndrome heralded by postcricoid carcinoma. Am J Otolaryngol. 2007;28:22–24.

HOW TO CITE: Aditya V. Ubhale, Sakshi S.Madavi,Shivani D. Wagh,Vaishnavi P. Lawane, Pankaj H. Chaudhary, Prashant J. Burange,Dipti B. Ruikar, Qualitative and Quantitative Phytochemical Analysis Of *Wedelia Trilobata* Linn, Int. J. of Pharm. Sci., 2024, Vol 2, Issue 6, 428-441. https://doi.org/10.5281/zenodo.11520151