IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 12, Issue 4, December 2021
Impact Factor: 5.731

Pharmacognostic Anatomical and Preliminary Phytochemical Analysis of Medicinal Weed Plants Found in Bhandara Region. (M.S.)

Sayeda Parveen Qureshi
P.G. Department of Botany, J. M. Patel College, Bhandara, Maharashtra, India
drsdprvnqureshi17@gmail.com

Abstract: *In the past two decades, concurrently with the renewed interest in drugs of plant origin as novel sources of bioactive compounds, extensive scientific research have been addressed on the properties of traditional plant against several diseases, as anthelmintic ,digestive, laxative and many others. Weeds are unwanted plants, but all unwanted plants may not be weeds.Generally weeds have been neglected and their use for medicinal purpose has not been considered on a large scale. Weeds flora of Bhandara District is very rich. The different phytochemicals like Alkaloids, Cellulose, Carbohydrates, Flavonoides, Glycosides, Phenols, Quinons, Saponins, Tannins, Terepenoids, Steroids and many others screen out in the plants are key reservoirs of many new essential drugs. Some important medicinal weeds studied in the present investigation were carried out they are Euphorbia hirta, Tridax procumbens, Parthenium Hysterophorus, Cassia tora, Achyranthus aspera. The present investigation is an attempt to analyze the crude drug of the whole plant. Such type of work can be utilized for identification and authenticity of the drug required for the standerdisation of the plant..*

Keywords: Alkaloids, Glycosides, Steroids, Weeds

I. INTRODUCTION

Herbal medicine is known to be the oldest form of healing .It originated from ancient Greek as far back as 1600BC. With Herbal Renaissance happening all overthe globe, medicinal herbs are staging a phenomenal comeback. Ethno botanical information from India estimates that more than 6000 higher plant species forming about 40% of the higher plant diversity are used in its codified and folk healthcare tradition. In India,.Ayurvedic system of medicine has existed for over four thousand years. From ancient literature it is evidence that the various parts of the plants were used in Siddha, Ayurveda & Unani medicines for the treatment of disease of humanbeing. Plant diversity is composed of more than 5,00,000 botanical species. Nowadays about 80% of the world population still uses herbal medicine for primary health problems. For the progress of human beings the plant resources play an important role they fulfill many needs food, fuel, fiber and medicine. Every plant on this planet are useful in medicine, industry & allelopathy .Weeds are unwanted plants, but all unwanted plants may not be weeds. Generally weeds have been neglected and their use for medicinal purpose has not been considered on a large scale. The advantage of natural drugs is their easy availability, economically cheap , less or no side effect they have been used in traditional medicine practicessince prehistoric times. Numerous phytochemical with potential or established biological activity have been identified. Like these, we used some weeds for the analysis of drug properties and conduct some preliminary tests like phytochemic al analysis macroscopic, microscopic & organoleptic *Achyranthes aspera (L.)* is known as Apamaga, in Ayurveda belongs to plant family Amaranthaceae. It is an erect perennial herb growing up to one meter in height and as found throughout India.

The entire plant is considered as stomachic, laxative, expectorant, depurative, digestive, anthelmintic and anti inflammatory and to treat asthma, dyspepsia, bronchitis, flatulence and menstrual disorders. It is mainly used in cough, bronchitis, ashthma, skin diseases and anemia Kirtikar & Basu (1988).Euphorbia hirta it is the treatment and prevention of many diseases. The plant parts are widely used in traditional system of medicines in the treatment of respiratory diseases gastrointestinal disorders Mohamad Sadia (2014). Tridax procumbens. (L.) is a common plants found in the tropics. Traditionally it isused for the treatment of bronchial catarrh, dysentery ,malaria, diarrhea, high bloodpressure

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 12, Issue 4, December 2021
Impact Factor: 5.731

and to check hemorrhage from cuts, bruises and wounds & to prevent falling of hair .It possesses Ant diabetic (Durgacharan et.al 2008), Anti-bacterial (Chitra pai et. al 2011).

II. Materials and Method

Sample Collection

The fresh Plants of *Euphorbia hirta, Tridax procumbane, Parthenium hysterophorus, Cassiatora, Achyranthus aspera,* were collected from the Bhandara region of Maharashtra.

Field Survey for Collection of Plant Materials

The proper number of samples were collected from the field and bring itdirectly to the laboratory.Field survey was carried out on 25 September 2020 in and around the Bhandara . During field visit generally, we concentrate on medicinal weeds for the study of preliminary analysis and anatomical features. The plants used in the present investigation were selected based on their medicinal use and weed properties .(Characteristic features)

Macroscopic Study

The macroscopic study is the morphological description of the plant parts which are seen by naked eye .

Organoleptic Character

Organoleptic evaluation can be done by sense organs, which provide the simplest aswell as quickest means to establish the identity and purity to ensure the quality of a particular drug. Organoleptic characters such as shape, size, color, odour, and taste of stem. leaf structure like margin, apex, the base surface, venation, etc are evaluated.

Microscopic Study

Microscopy is used to determine the structural cellular and internal tissue feautures of Plants. It is usually used to identify and differentiate two herbals that are similar. This is the commonly used technique , convenient, quick and can be applied to proprietary medicines too. Microscopic inspection alone can't always provide complete identification but when used in the association with other analytical methods that is by taking plant section and qualitative microscopic test for detection of cellular contents in all the different plant weeds. Plant part under study took in the form of appropriate section to study the presence or absence of type of cells or tissue. Chemicals like safranine use for clear visualization of cellular content. Using microscope detecting various cellular tissues, trichomes, stomata, starch, granules, calcium oxalate crystals and important parameters whichplay an important role in the identification of crude drug. The crude drug can also be identified microscopically by cutting the thin T.S especially by staining them with proper staining reagents.

Phytochemical Test

Sample of Plant parts are washed with water. Then with the help of mortar and pester grinded it very well with the help of muslin cloth it have been filtered. Then it is used for the Phytochemical tests.

III. Results and Discussion

3.1 Field Survey for Collection of Plant Materials

Field survey was carried out in 25 September 2021 in and around the Bhandara region and the data of field visit presented in Table – 1. During field visits few medicinal weeds are brought to the labortatory inthe polythene bag. The plants used in the present investigation were selected based on their medicinal use and weed (interesting features) properties. Further, medicinal weeds are subjected to further studies i.e., study of macroscopic studies, microscopic studies, organoleptic features, powder analysis and double staninig techniques.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 12, Issue 4, December 2021
Impact Factor: 5.731

3.2 Macroscopic Studies

Figure: 1. ***Euphorbia hirta,*** **2.** ***Tridax procumbance,*** **3 .** ***Parthenium hysterophorus***

Figure: 4. ***Casiatora*** **5.** ***Achyranthes aspera***

3.3 Euphorbia hirta

This plant belong to *Euphorbiaceae* Family and it is an erect or procumbent annual herb, 15-50 cm hight. Root is tap root system.stem densely clothed with yellow hairs, branches often 4- angaled.The leaves opposite,1.3-3.8cm long and 0.6-1.6 cm wide, obliquely elliptic, apex acute, base usually unequal-sided, margins serrulate or dentate, hairy, dark green above and pale beneath.Flowers numerous, less than 1.3 mm long, crowded in small globose, greenish-yellow axillary cymes. Fruits Capsules minute,1.25 mm in diameter, trigonous, appressed hairy. Seed angular, 0.8mm long, light reddish- brown.

3.4 Tridax procumbans

It is a hispid, procumbent and annual herb.that belong to Asteraceae family.stem is up 60 cm tall. Base woody, some times rooting at the nodes. The Leaves ovate ,2-7 cm long and 1-4 cm wide, apex acute or acuminate , base cuneate, margins serrate to coarsely dentate or trilobed. Flowers borne in small, solitary, terminal heads; peduncles 10-20 cm long; ray florets strap-shaped, white; disc florets yellow. Fruits achenes black, turbinate, 2-2.5 mm long with feathery pappus. Seeds numerous, small with tuft of silky hairs on one side for wind dispersal.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 12, Issue 4, December 2021
Impact Factor: 5.731

3.5 Parthenium hysterophorus

The plant belong to Asteraceae family. A short-lived annual herb with an extensive root system and erect shoot; up to 2 m high.stem erect main stem, upper half of the main stem becomes highly-branched at flowering; stems appear to be striped due to longitudinal grooves or ribs and they becomes woody with age. Leaves is pale green, deeply lobed and coverd with fine soft hairs. Creamy-white flowers occur at the tips of the stems. Clusters of male and female florets are grouped as five-lobed flowers on the terminal branches of the flower stem and measure 4-6mm in diameter. Fruits Achene small, flattened, triangular and dark brown-black with two thin, white, spoon-shaped appendages.

3.6 Cassia tora

A foetid, annual herb or undershrub. Family Fabaceae , stem 0.3-1 m tall with glabrous branches. Leaves 6-12.5 cm long; leaflets in 2-4 opposite pairs with a conical gland between each of the two lowest pairs of leaflets; blades 1.5-5 cm long and 1.5-2.5 cm wide, membranous, ovate- oblong. Apex acute to subacute, often mucronate, base acute to asymmetrically rounded. Flowers usually in pairs, on veryshort axillary peduncle; pale yellow, upper petal 2-lobed and the others entire.Fruits pods stout, 4- angled, 15-25 cm long , containing 25-30 seeds. Seeds 4-5 mm long , rhomboidal, yellowish brown to tan red, shiny.

3.7 Achyranthes aspera

The plants herbs and shrub, erect or procumbent, annual or perennial herb with spreading branches, woody base. Achyranthes aspera is belongs to Amaranthaceaefamily. Angular, ribbed, pubescent, simple or branched from the base, often reddish-purplish tinged. Root is tap and branched. The leaves are generally opposite or alternate, simple, entire, exstipulate and usually covered with hairs. Flowers Greenish-white,numerous, in axillary or terminal spikes up to 75 cm long; bracts membranous, oblong, enclosed in the hardened parianth. Fruits utricle, oblong-cylindric, truncate at apex, rounded at base. Seeds Reddish-brown, sub-cylindrical.

3.8 Organoleptic Features

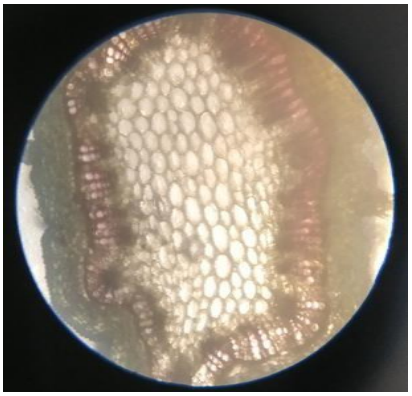
Organoleptic studies of all the Six species were carried out in the presentinvestigation (Table).

Sr.No	Plant Name	Colour	Odour	Taste	Nature
1	*Euphorbia hirta*	Ashes	Odourless	Bitter	Terrestrial nature
2	*Tridax procumbance*	Green	Characteristic	Acrid	Terrestrial nature
3	*Parthenium hysterophorus*	Lightgreen	aromatic	Bitter	Terrestrial nature
4	*Cassiatora*	Dark Green	odourless	Bitter	Terrestrial nature
5	*Achyranthus aspera*	Pale green	Characteristics	Sweet	Terrestrial nature

IV. Microscopic Study

4.1 T.S. stem of *Euphorbia hirta*

1. Thick cuticle
2. Trichomes present on the outer surface of epidermis
3. Epidermal cells are elongated compactly arranged.
4. Cortex region made up of parenchymatous & Chlorenchymatous cells, Laticifers present in the cortical region
5. Treachery elements of xylem are similar to vessels and tracheids.
6. Phloem was externally surrounded by fibrous tissue.
7. Pith cells were big ,thin walls and have intercellular spaces.

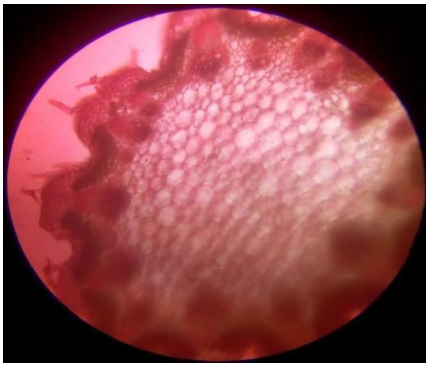


T.S. Stem of Euphorbia hirta

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 12, Issue 4, December 2021
Impact Factor: 5.731

4.2 T. S. Stem of *Tridax procumbans*

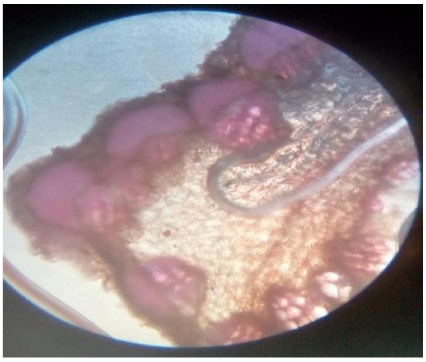
1. Thick cuticle present.
2. Trichomes present on the outer surface of epidermis
3. Epidermal cells are elongated compactly arranged.
4. Cortex region made up of parenchymatous cell
5. Collateral and open Vascular bundle present in ring
6. Large central pith is present made up of parenchymatous cell.



T. S. Stem of *Tridax procumbans*

4.3 T.S. Stem of *Parthenium hysterophorus*

1. T.S. stem was circular in outline with shallow ridges.
2. Single epidermal layer with thick cuticle
3. Epidermal hair and secreatory glands present.
4. Cortical layer is made of two region,outer layer is made of chlorenchymatous cells and inner layer is made of parenchymatous cells.
5. Crystals of oxalate present.
6. Vascular bundle Present.
7. Broad pith made up of parenchymatous cell.



T.S. Stem of *Parthenium hysterophorus*

4.4. T.S.Stem of *Cassia tora*-

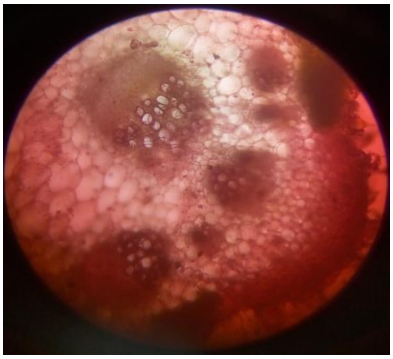
1.Single layered epidermis,stomata present.
2 .Cortex made up of outer collenchymatous and inner parenchymatous cell.
3.Vascular elements arranged in ring.
4Large parenchymatous pith present

T.S. Stem of *Cassia tora*

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 12, Issue 4, December 2021
Impact Factor: 5.731

4.5. T.S. Stem of *Achyranthus aspera*

1. T.S. Stem is quadra angular in shape with prominent ridges.
2. Epidermal cells are rectangular. covered with thick cuticle.
3. Cortex was 4 to 12 layered made up of collenchymas and parenchyma cells.
4. Calcium oxalate crystal presents.
5. Vascular bundles were Conjoint, collateral open.
6. Pith were made up of different shape and size of cells.



T.S. Stem of *Achyranthus aspera*

Phytochemical Test:

Test	Name of weed plants				
Phyto-Chemical	***Euphorbia hirta***	**Tridax procumbans**	***Parthenium hysterophorus***	**Cassia tora-**	***Achyranthus aspera***
Carbohydrates	+	+	-	+	+
Gum mucilage	+	-	+	+	+
Oil	+	-	-	+	-
Proteins	+	-	-	-	-
Alkaloids	+	+	+	+	+
Phenolic	+	+	-	+	+
Saponins	+	+	-	+	+
Tarpenoids	+	-	+	+	+
Flavonoids	+	+	+	-	-
Cardenolides	-	+	+	+	+
Vitamins	+	+	+	+	+

V. CONCLUSION

Medicinal weeds continue to be extensively used as a major source of drugs for the treatment of many health disorders all over the world. Most plant species are wild. The local people depend on the wild resources in the form of foods, medicines, fodder etc .There are number of weeds found in Bhandara region which adversely effect the growth of crops and health of organism, but some weeds are used to cure various diseases. The main aim of these work was the documentation and exploration of the medicinal weeds growing in this area. In thePresent study an attempt has been made for morpho anatomical as well as phytochemical. Standarization of these weeds plant for contraction in the quality control of herbal drug .The result from this study have provided information on the morphological, anatomical and phytochemical parameter on weed plants *Euphorbia hirta , Tridax procumbans Parthenium Hysterophorus, Cassia tora, Achyranthus aspera* which can be used for identification and quality control of the crude drug plants.

REFERENCES

[1]. Abdullah ,Abdul Latif,S.H.Afaq and Asad Ullah Khan., "Ethnobotanical Studies and antimicrobial activity of Chirchita (Achyrathus aspera Linn.) Extracts,"Hamdard Medicus,Vol.55,No. 1,2012

[2]. A D Hole ,Y M M Dhanorkar, B.P.Garav, Dhar and Gandhidas Sonajirao Lavekar., "Powder Microscopy and

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 12, Issue 4, December 2021
Impact Factor: 5.731

phytochemical studies of Ayurvedic single drug –Apamarga (*AchyranthusAspera linn)*," J.D.R.A.S.Vol.XXIX, No3-4,pp.61-72,Aug2008.

[3]. Asha .S,Deevika B,Mohamad Sadiq.A., " *Euphorbia hirta Linn*-A review on traditional uses,phytochemistry and pharmacology," World Journal of PharmaceuticalbResearch, Vol.3,Issue 4,pp 180-205,June 2014.

[4]. Chitra Pal, Ujjawala Kulkarni, Manjusha Burde, Sowmya Murali,P.Mrudula and Yashwant Deshmukh., "Antibacterial activity of Tridax procumbans with special refrence to Nosocomial Pathogens," Journal of Pharmaceutical research Internatioal ,pp164-173, Dec2011.

[5]. Datta A Dhale,S.Sonal Bhoi., "Pharmacognostic characterization and phytochemical screening of Achyranthes Aspera Linn," Current Agriculture Research Journal,vol.1(1),51-57,July 2013.

[6]. Durgacharan Arun Bhagwat ,Suresh G,Killedar,Rahul S. Adnaik., "Antidiabitic activity of leaf extract of Tridax procumbans," International Journal of Green Pharmacy 2(2),Jan 2008.

[7]. Hemant Badwaik, Mukesh kumar singh, Deepa Thakur, Tapan kumar Giri and D.K. Tripathi., "The Botany, chemistry, pharmacological and therapeutic application of Oxalis corniculata linn – A Review,"International Journal Of Phytomedicine,3(1):1-8,Jan 2011

[8]. Lalita and Ashok Kumar., "Review on a weed Parthhenium hysterophorus (L.)"IJCRR, Vol 10 Issue 17,Sep 2018

[9]. Loveleen Kaur and Ajay Sharma., "Comprehensive review on ethnobotanical uses,phytochemistry,biological potential and toxicology of parthenium hysterphorus l.: A journey from noxious weed to a therapeutic medicinal plants," Journal of Ethnopharmacology,Vol 281,Dec 2021

[10]. Richa Bharadwaz and Shilpa varma ., "Tephrosia purpurea :- A natural herbs/Bliss ," International journal of phytomedicine , 8 ,468-471,2016

[11]. Sunil Kumar,Rashmi Malhotra and Dinesh Kumar., "Euphorbia hirta: Its Chemistry,traditional and medicinal uses,and Pharmacological activities," Pharmacognosy Reviews,4(7):58-61.July 2010.

[12]. Surendra Agrawal, Deepak Mohale and G.S.Talele., "Pharmacological activities of Tridax procumbans (Asteraceae),"Medicinal Plants,2 (2) May 2010