ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

International Journal of Ayurveda and Pharma Research

Research Article

PHARMACOGNOSY OF *PEETHA BHRINGARAJA* (*WEDELIA CHINENSIS* (OSBECK) MERRILL)

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ABSTRACT

Bhringaraja (*Eclipta prostrata* (L.)) is a plant widely used as a remedy for liver disorders, Anaemia etc. The drug is said to have three varieties based on the colour of its flower. *Peetha Bhringaraja* is the yellow flowered variety of *Bhringaraja*. The drug is botanically identified as *Wedelia chinensis* (Osbeck) Merrill belongs to the family Asteraceae. The drug is not that much abundantly seen nowadays. *Wedelia trilobata* is another similar invasive species belongs to the same family Asteraceae. The IUCN has listed *Wedelia Trilobata* in its 100 world's worst invasive alien species. Florida exotic plant pest council considered it as category 2 invader. Due to its invasion most of the similar Wedelia species got replaced. Pharmacognosy is the only reliable tool to differentiate among plants. For the purpose of utilisation of genuine source of *Wedelia chinensis* (Osbeck) Merrill, the plant was identified and detailed macroscopy and microscopy of root, stem and leaf along with the powder microscopy of whole plant is done.

KEYWORDS: *Peetha Bhringaraja, Wedelia chinensis* (Osbeck) Merrill, Macroscopy, Microscopy, Powder microscopy.

INTRODUCTION

Peetha Bhringaraja is the yellow coloured variety of *Bhringaraja*. It is *Vathakapha Hara* and does *karmas* like *Muthrala, Hridya, Vrishya, Swedakara, Kesya, Balya*.[1] It is botanically identified as *Wedelia chinensis* (Osbeck) Merrill belongs to the family Asteraceae. It is a procumbent perennial herb with stem rooting at nodes, growing upto 30cm to 1m in height.[2] The drug is often mistaken with *Wedelia trilobata*, which is another invasive species of same family. Pharmacognosy is the tool for identifying genuine drug. Pharmacognostical evaluation of a drug includes macroscopical (organoleptic) evaluation, microscopical evaluation and powder microscopy.

MATERIALS AND METHOD

Collection of sample: The whole plant of *Wedelia chinensis* (Osbeck) Merrill is collected from its natural habitat, washed thoroughly to remove soil and other impurities.

Method of study

Root, stem and leaf of the plant is studied macroscopically by evaluating its organoleptic features. For microscopical evaluation, thin section of each part is taken using blade and stained with saffranine, placed over a clean glass slide which is covered with a cover slip and observed under microscope. After analysing the sections in different magnifications different cells are identified. For doing powder microscopy, the whole plant of the drug which is cleaned well was dried and powdered. A pinch of powder is kept in a clean dry glass slide and a drop of glycerin was added to it and a thin smear is prepared and dried. This is then observed under microscope and cells are identified.

RESULT

Macroscopical or organoleptic evaluation of each part of the plant is done and it is tabulated.

Figure 1: Whole plant

Figure 2: Root

Root of *Peetha Bhringaraja* [*Wedelia chinensis* (Osbeck) Merrill]

Table 1: Organoleptic Evaluation

Parameters	**Root of *Peetha Bhringaraja* [*Wedelia chinensis* (Osbeck) Merrill]**
Shape	Narrow, elongated, rooting at nodes with lateral rootlets
Size	Varying
Colour	Pale creamish /greyish to Buff / greyish brown in colour
Texture	Nodular at some areas, Possess lateral rootlets
Odour	Not characteristic
Taste	Not characteristic
Fracture	Short
Fractured surface	Light creamish colour

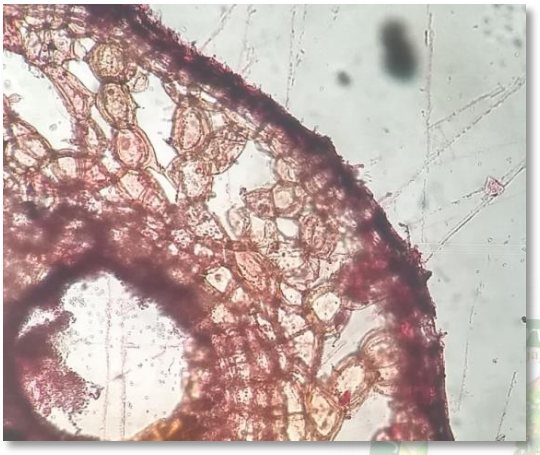

Figure 3: T.S of root (10X) showing outer cork, cortex and large air space

Figure 4: T.S of root (10X) showing outer cork, cortex, stone cells in cortex and not well developed pith

Stem of *Peetha Bhringaraja* [*Wedelia chinensis* (Osbeck) Merrill]

Figure 5: Stem

Table 2: Organoleptic Evaluation of Stem

Parameters	**Stem of *Peetha Bhringaraja* [*Wedelia chinensis* (Osbeck) Merrill]**
Shape	Cylindrical, prominent or bulged at nodes
Colour	Reddish brown to brown in colour
External characters	Presence of whitish appressed hairs
Texture	Rough due to presence of hairs
Odour	Not characteristic
Taste	Slightly bitter
Fracture	Slightly fibrous

Microscopy of stem

Figure 6: T.S of Stem (4X) showing outer Epidermis, cortex with air spaces, vascular bundles and pith

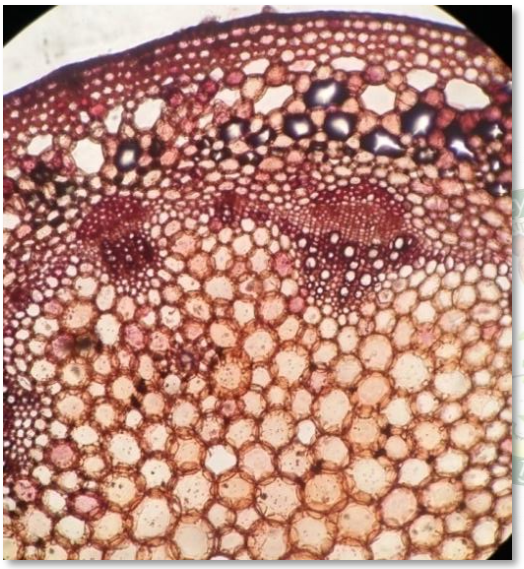

Figure 7: T.S of Stem (10X) showing outer Epidermis, cortex, air space, vascular bundles and pith

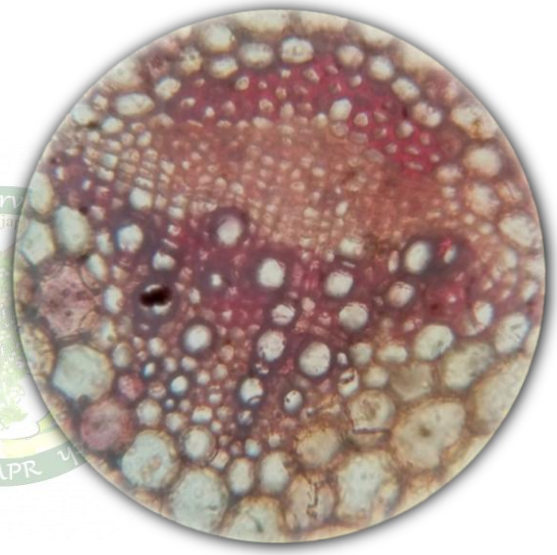

Figure 8: Vascular bundles 40X

Leaf of *Peetha Bhringaraja* [*Wedelia chinensis* (Osbeck) Merrill]

Figure 9: Leaf

Table 3: Organoleptic evaluation of leaf

Parameters	**Leaf of *Peetha Bhringaraja* (*Wedelia chinensis* (Osbeck) Merrill]**
Kind	Simple
Size	2.5 – 7.5cm long and 7mm – 3.2cm wide
Petiole	Short, Pale coloured
Shape	Linear – oblong or oblanceolate or oblong lanceolate
Base	Tapering
Lamina	Triple nerved
Apex	Acute
Margin	Entire / irregularly sub crenate, or crenate – serrate
Surface	Rough due to white appressed hairs
Colour	Green
Texture	Rough
Odour	Not characteristic
Taste	Characteristic
Fracture	Brittle

Microscopy of leaf

Figure 10: T.S of Midrib portion of leaf (10X) showing cuticle, epidermis, spongy parenchyma and vascular tissue in the centre

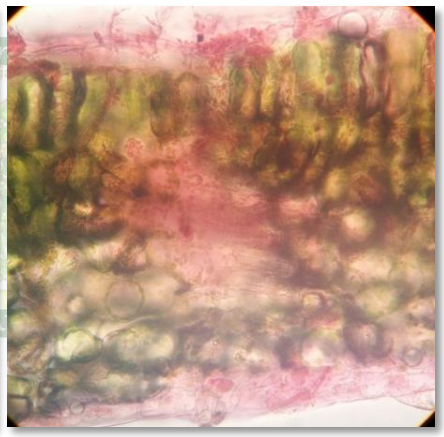

Figure 11: T.S through lamina of leaf (40X) showing pallisade parenchyma

Figure 12: Warty trichome (40X)

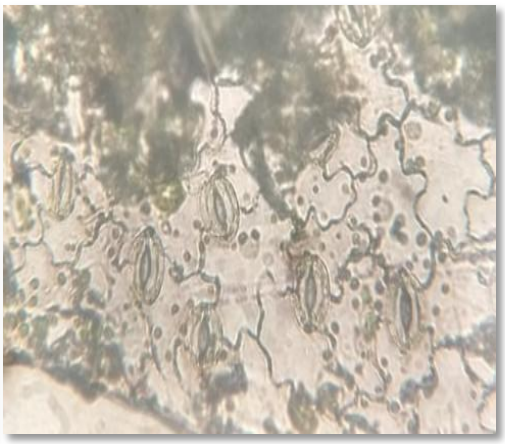

Figure 13: Stomata (40X)

Figure 14) Glandular trichome (40X)

Powder Analysis

Table 4: Organoleptic evaluation of Powder

Parameters	Powder of whole plant of *Peetha Bhringaraja*
Colour	Greenish grey
External appearance	Fibrous
Odour	Characteristic
Taste	Slight bitter and astringent

Powder Microscopy

Figure 15: Powder of whole plant of *Peetha Bhringaraja*

Figure 16: Lignified fibre

Figure 17: Pitted vessel

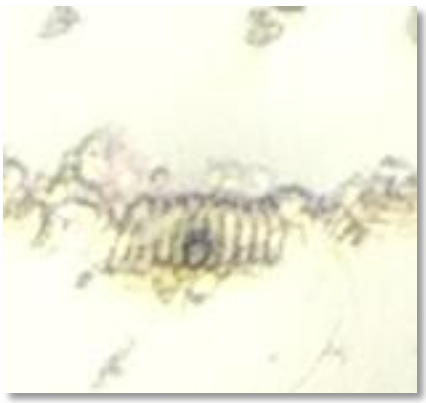

Figure 18: Spiral vessel

Figure 19: Trichome

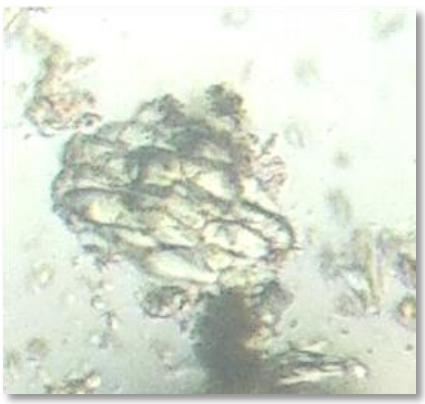

Figure 20: Parenchymal cells

Figure 21: Cut fragment of lamina of leaf

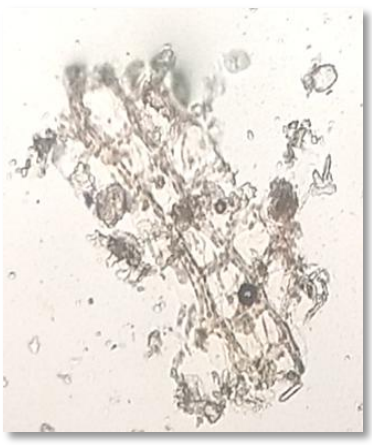

Figure 22: Cork

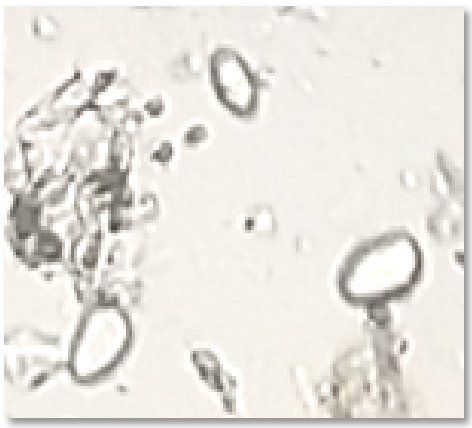

Figure 23: Starch grain

CONCLUSION

Pharmacognostical analysis of different parts of the drug *Wedelia chinensis* (Osbeck) Merrill was done. The root and stem of the drug was mainly characterised by large air cells in the cortex region. Leaf contains anisocytic type of stomata. Characteristic of all part was evident from the powder analysis. From the details pharmacognostical evaluation the drug *Wedelia chinensis* (Osbeck) Merrill can be differentiated from other Wedelia species.

ACKNOWLEDGEMENT

I am greatly thankful to Dr.P.Y.Ansary, Professor and H.O.D, Department of Dravyaguna vijnanam, GAVC, Tripunithura for his constant guidance and motivation. I am thankful to Dr.Shincymol.V.V, my guide, for her immense support and guidance throughout the work. I express my deep gratitude to Dr.Sara Moncy Oommen, for her moral support and advices.

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Cite this article as:
Krishna Priya. A, Shincymol. V.V. Pharmacognosy of Peetha Bhringaraja (Wedelia Chinensis (Osbeck) Merrill). International Journal of Ayurveda and Pharma Research. 2019;7(7):17-22.
Source of support: Nil, Conflict of interest: None Declared

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