PHARMACOGNOSTIC STUDY OF PHYLA NODIFLORA LINN.
Salve S.D and Bhuktar A.S*
Vivekanand Arts, Sardar Dalip singh Commerce & Science College, Aurangabad (M.S) India

Article Received on: 08/01/12 Revised on: 20/02/12 Approved for publication: 19/03/12

*Email: mayanksachin@gmail.com, ashbhuktar@gmail.com

ABSTRACT
The genus Phyla nodiflora Linn is aquatic plant belongs to family Verbenaceae found throughout India commonly known as Jalippali in Sanskrit and whole herb used as medicine. It is used in fever, cold, anti-inflammatory, diarrhea, ulcers, pain in knee joints, gonorrhea, asthma, hair afflictions, anthelmintic. The present study was carried out to investigate morphological, microscopic and phytochemical screening of whole plant antibacterial activity studied against Escherichia Coli, Pseudomonas aeruginosa, Staphylococcus aureus. The result study was useful for drawing pharmacognostic parameters for this species.

KEY WORDS: Phyla nodiflora, pharmacognostic study, Verbenaceae

INTRODUCTION
Phyla nodiflora Linn. syn. Lippia nodiflora (L.) Mich. is an important medicinal plant belongs to family verbenaceae it is distributed in tropical and subtropical region. In literature review it was found that the plant is antibacterial. The plant is useful in colic diarrhea, ulcers, asthma, Bronchitis, knee joint pain, gonorrhea. The plant contains sugar, flavonoids, sterols, essential oil, resin, non glucosidal bitter substance, tannin. Potassium nitrate and other constituents. Due to its diverse medicinal uses the present investigation of pharmacognostic standards, phytochemical and antibacterial study was carried out.

Morphology Of Plant
A perennial creeping herb, stems prostrate, mostly rooting at the nodes, 28-90 cm tall branches slender, procumbent densely appressed, pubescent. Leaves decussate, obovate, spatulate, elliptical, 1-8 cm x 0.5-2.5 cm, base long or short-cuneate, apex rounded obtuse, margin entire, sharply serrate above the middle, pubescent on both surfaces, petiole 2-7 mm long or absent exstipulate, Inflorescence axillary; 1-2.5 cm x 0.5-1 cm long after mature, densely many flowered, peduncle 1-11.5 cm long, bracteolate. Flowers sessile, calyx bilobed, up to 2 mm long, corolla white to pink, bilipped, upper lip erect and bifid, the lower lip 3 lobed middle lobe larger, stamens four, didynamous, anthers, dorsifixed, dehiscing longitudinally, ovary superior, bicarpellary.

MATERIALS AND METHOD
The whole herb of Phyla nodiflora Linn. where collected from Aurangabad Maharashtra state the plant was authenticated and voucher specimen was deposited at Vivekand Collge Sardar DalipSingh Commerce College Aurangabad. Maharashtra State. The fresh plant material was used to microscopy whereas the shade dried powder was used to Extract preparation

Microscopy
Qualitative microscopic evaluation was carried out by taking free hand transverse section of fresh leave and stem with the help of blade. Section were dehydrated with different alcohol grade and stained with safranin and light green these permanent preparation where observed in microscope of Phyla nodiflora.

Maceration
The stem also studied by maceration techniques. The pieces of stem where boiled in Jefferys fluid (chroomic acid 10% and nitric acid 10% in 1:1 proportion) the macerated cell where studied in detail.

Dermatology
Epidermis peeled out separately from leaf by means of forceps, peel of epidermis stain safranin and mounted in dilute glycerine monted on a slide. Observation of stomata and trichomes where recorded and mentioned type

Preparation Of Extract
25 gram of powder drug was extracted with methanol successively in the Soxhlet apparatus the extract obtained from successive solvent extraction where concentrated and filtered stored in air tight bottles at 4°C.

Preliminary Photochemical Screening
Methanol extract subjected to various qualitative chemical test to determine the presence of various phytoconstituents like alkaloids, glycosides, phenolics, tannin, phytosterols, flavonoids, saponins using method described.

Microorganisms
The three different species of bacteria used in the screening process were gram-positive Staphylococcus aureus and gram negative Pseudomonas aeruginosa and Escherichia coli. The bacteria where supplied by the Government Medical College Aurangabad Maharashtra

Antibacterial Screening
The bacterial activity was performed by Disc Diffusion method. The sterilized (autoclaved at 120 ºC for 30 min) nutrient agar medium pour in to sterile petriplates paper discs made using Whatman filter paper no. 1 (6 mm diameter) discs were sterilized and impregnated with 50 microliter plant extract and placed on seeded plate blank disc impregnate methanol used as a control these plate were incubated at 37 ºC for 24 hours to allow maximum growth of bacteria. Antibacterial activity of plant extract determined by measuring the diameter of zone of inhibition expressed in millimeter the experiment carried out three times

RESULT AND DISCUSSION
T.S of leaf
Single layered epidermis consisting unicellular trichome followed by layer of palisade cells beneath these spongy parenchyma extended to the lower epidermis arch shape vascular bundle along midrib surrounded by spongy
parenchyma xylem surrounded by phloem Stomata diacytic, anisocytic, amomocytic type.

**T.S of stem**

T.S. of stem shows nearly quadrant outline with layered epidermis with cell longer than broad ranges from 25 to 50 x 20 to 40 micron posses unicellular trichome cortex is made up of chlorenchymatous and collenchymatous cell ranges from 30 to 66 x 30 to 70 micron endodermis 20 to 25 x 25 to 30 micron parenchymatous cells side or one side slender ranges 530 to 1000 x 30 to 66 x 30 to 70 micron fiber trecheid both ends range 75 to 420 x 1.5 to 20 micron fiber trecheid range 100 to 120 x 20 to 25 micron fiber trecheid simple perforation alter another simp ves of parenchymatous cell ranges 65 to 75 x 79 to 80 micron. phloem compressed and xylem a continous ring pith consist of parenchymatous cell ranges 65 to 75 x 79 to 80 micron vessels five type alternate pitted oblique end wall short beak simple perforation range 200 to 250 x 25 to 30 micron another type horizontal end wall alternate pitted without beak simple perforation range 190 to 225 x 22.5 to 23 micron third type spiral thickening range 740 x 30 micron fourth type simple perforation alternates pits long beak range 470 x 30 micron fifth type scalariform, horizontal end wall without beak long blunt end both side or one side slender ranges 530 to 1000 x 30 to 90 micron parenchymatous cells rectangular squares and oblong range 22-27 x 12.5 to 14 micron and 45 to 47 x10 to 12.5 micron

**Preliminary Phytochemical Test**

The photochemical test revealed the presence of alkaloids, phytosterols, flavonoids, phenolics, tannin. Table 1

**Antibacterial Screening**

Methanol extract of whole plant of *Phyla nodiflora* Linn shows antibacterial activity against *Psudomonas aeruginosa*, *Staphylococcus aereus*, *Eschericia coli*. Table 2.

**CONCLUSION**

In present investigation various standization parameter such as morphology, microscopy, photochemical screening, antibacterial activity was carried which could be helpful in authentication of *Phyla nodiflora*. The result of present study will also serve as reference material in preparation of monograph.

**REFERENCES**

5. Forestieri A M, Monforte M.T, Ragusa S. Trovato A Ja, Antiinflammatory, Analgesic and antipyretic activity in rodents of plant extracts used in African medicine phytotherapy research 1996, 10 (2), 100-106

**TABLE 1 SHOWS PRELIMINARY PHOTOCHEMICAL TEST OF PHYLA NODIFLORA**

<table>
<thead>
<tr>
<th>No</th>
<th>Tests</th>
<th>Methanol extract</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alkaloids</td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td>Flavonoids</td>
<td>+</td>
</tr>
<tr>
<td>3</td>
<td>Tannin</td>
<td>+</td>
</tr>
<tr>
<td>4</td>
<td>Phenolics</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td>Phytosterol</td>
<td>+</td>
</tr>
<tr>
<td>6</td>
<td>Glicosides</td>
<td>-</td>
</tr>
</tbody>
</table>

+ Present. - Absent

**TABLE 2 SHOWS ANTIBACTERIAL ACTIVITY OF METHANOL EXTRACT OF PHYLA NODIFLORA LINN AGAINST PSUDOMONAS AERUGINOSA STAPHYLOCOCUS AEREUS ESCHERCHIA COLI.**

<table>
<thead>
<tr>
<th>Sr no</th>
<th>Microorganisms</th>
<th>Zone of inhibition in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Methanol extract</td>
</tr>
<tr>
<td>1</td>
<td><em>Psudomonas aeruginosa</em></td>
<td>15±2</td>
</tr>
<tr>
<td>2</td>
<td><em>Staphylococcus aereus</em></td>
<td>7±2</td>
</tr>
<tr>
<td>3</td>
<td><em>Escherchia coli</em></td>
<td>8±2</td>
</tr>
</tbody>
</table>
FIGURE 9 - Trichome unicellular

FIGURE 10 - Vessels of phyla nodiflora
FIGURE 11 - ANTIBACTERIAL ACTIVITY OF METHANOL EXTRACT OF PHYLA NODIFLORA AGAINST STAPYLOCoccus AEREUS, PSUDOMonas AERUGINOSA, ESCHERICHIA COLI.

Source of support: Nil, Conflict of interest: None Declared