Research Article

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PHARMACOGNOSTIC EXPLORATION AND PHYTOCHEMICAL PROFILING OF WHOLE PLANT OF *Polycarpaea aurea* Weight & Arn

Jamal Basha D [1]*, Srinivas Murthy BR [2], Prakash P [2], Sridevi N [1], Muni Kumar N [1], Asma S [1], Rohit K [1],
[1]Department of Pharmacognosy, Sri Padmavathi School of Pharmacy, Tiruchanoor, Tirupati, Andhra Pradesh, India
[2]Department of Pharmaceutics, Sri Padmavathi School of Pharmacy, Tiruchanoor, Tirupati, Andhra Pradesh, India

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***Corresponding author**
E-mail: jamal0210@gmail.com

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ABSTRACT

Ethanobotanically, the entire plant and its parts are generally utilized by local people for the treatment of different ailment conditions without standardisation. The standardisation of crude drugs is a crucial part of establishing its correct identity and purity. Prior to any crude drug can be included in herbal pharmacopoeia, pharmacognostic and physicochemical parameters and standards to be established. *Polycarpaea aurea* Weight & Arn perennial herb belongs to Caryophyllaceae. It is commonly known as Rathirajuma. The whole plant traditionally used in the treatment of diabetes, dysentery, microbial infections and used as diaphoretic. In the view of lack of pharmacognostic study of whole plant of *Polycarpaea aurea* Weight & Arn subjected to standardisation according to WHO quality control methods. In the present work, the macroscopical, microscopical, physicochemical parameters were assessed and phytochemical profiling with estimation of potent compounds present in whole plant performed. Morphological evaluation if individual plant parts revealed that the characteristic features which helps in early identification of plant and anatomy of whole plant provide valued information for the correct identity of specie. Phytochemical investigation reveals the presence of valuable metabolites. The total flavonoid content was found to be 216mg of quercetin per gram weight of extract and the total alkaloid content was found to be 774 mg of atropine per gram weight of extract. The present pharmacognostic and phytochemical evaluation studies will be useful in identification and authentication of whole plant of *Polycarpaea aurea* Weight & Arn.

Keywords: Standardisation, WHO, *Polycarpaea aurea.*

INTRODUCTION

Medicinal plants are playing a key part in traditional systems for the remedy of various maladies, because they are considered as green medicine and green medicine is always believed to be safe. However the primary obstacle being used of conventional medicine in the developed nations is absence of proof of documentation and stringent quality control measures. There is need of documentation for the research work carried out on traditional medicines and in this context, with the present upsurge in the phytotherapeutics, the availability of genuine plant material becoming famine. With this negative aspect, there is need to standardize the plants and its parts to be utilized as a medicine. The process of standardization can be acquired by step wise i.e. pharmacognostic and phytochemical studies. Proper identification and quality assurance of beginning material is a significant stride to guarantee reproducible quality of herbal medicine which will helps us to affirm its safety and efficacy[1].

Pharmacognostic investigations of *Polycarpaea aurea* belonging to family Caryophyllaceae, The genus Polycarpaea is comprised up of 133 species of plants dispersed crossover Asia, Mauritania, Morocco, North America and available species in India *P.nivea, P.gnaphalodes, P.candid, P.lancifolia, P.robusta, P.microphylla. Polycarpaea aurea* commonly known as Rathirajuma (Telugu), Areshina saasuvae (Kannada)[2]. Traditionally it was claimed as anti diabetic, anti dysentery, diaphoretic, anti microbial, anti fungal, anti diarrhoeal[3]. It is rich source of alkaloids and flavonoids. In the present study an effort has been made to exact identity and standardisation of whole plant of *Polycarepaea aurea* Weight & Arn.

MATERIALS AND METHODS

Collection and authentication

The plant *Polycarpaea aurea* Wight & Arn was collected from Tirumala hills, Tirupati, India, and it was identified and authenticated. The taxonomical identification and authentication of the plant was done by Dr. P. Jayaraman, Botanist, Director for Institute of Plant Anatomy Research Center (PARC), Chennai. The voucher specimen number of the certificate was PARC/2016/B312 and deposited at the herbarium for further reference.

Pharmacognostic evaluation

Organoleptic characters

The exomorphological characteristics of whole plant of *Polycarpaea aurea* was carried out according to the standard procedures [4, 5, 6].

Microscopic evaluation

Preparation of sections

Free hand sections of the individual parts of *Polycarpaea aurea* such as leaves, stems, and flower were cut into thin sections manually with sharp cutting edge of blade. Then transferred on slide cleared by warming with chloralhydrate, stained with phloroglucinol and concentrated HCl and mounted in glycerine. The lignified and cellulosic tissues were recognized by utilizing different staining techniques and photographs of the

microscopical sections were captured with the help of the motic photomicroscope provided with motic images plus 2.0. software.

Physico chemical analysis

Physicochemical parameters such as ash value, moisture content and extractive values were according to methods described in pharmacopeia and WHO guidelines[4, 5, 6].

Phytochemical analysis

For the phytochemical studies, about 500gm of the powder was extracted successively with petroleum ether, chloroform, and methanol with soxhlet extractor and in the end extracted with aqueous solvent by maceration. The extractives were calculated with reference to air dried drug and subjected to analyse the active phytochemical compounds with chemical reagents[4, 5, 6].

Preparation of Plant Extract

Soxhlet extraction

About 500gm of the whole plant material was successively extracted with solvents like petroleum ether, chloroform, and methanol in Soxhlet apparatus. The extract was concentrated and traces of the solvent were completely removed under reduced pressure and stored in vacuum desiccators for the further use. Aqueous extract was prepared by macerating the dried powder in distilled water. The extract was concentrated in water bath and stored in desiccators.

Fluorescence analysis

Fluorescence analysis is an essential parameter for first line standardization of herbal drugs. The whole plant powder material was treated separately with different reagents and exposed to visible and ultraviolet light (short and long) to study the fluorescence behaviour. Fluorescence provided by a drug is one of the several methods used for analyzing crude drugs. Fluorescence is a type of luminescence in which the molecules emits visible radiation passing from higher to lower electronic state. The molecules absorbs light usually over a specific range of wavelength, get excited from ground state to a high energy level and many of them emit such radiations while coming back to the ground state. Such a phenomenon of re-emission of absorbed light that occurs only when substance is receiving the exiting rays is known as "Fluorescence". For fluorescence analysis, powdered drug was sieved through 60 mesh and observations were made following[4, 5, 6].

Total phenolic content (TPC) determination

Folin-ciocalteu method was used for the determination of the total phenolic content of the plant extracts using gallic acid as an internal standard. 1ml of the extract (1mg/ml) was mixed with 9ml of distilled water in a 25ml volumetric flask. 2.5ml of a 10 fold dilute Folin-ciocalteu phenol reagent (FCPR, 1:10) was added. After 5min, 10ml of 7.5% Na_2CO_3 solution was added to the mixture and made up to the mark with distilled water. The mixture was incubated in the dark for 90mins at room temperature. A set of standard solutions of gallic acid in standard concentrations were prepared in the same manner as described for the extracts. The absorbance of the extracts and standard solutions were read against the reagent blank at 760nm with a UV/Visible spectrophotometer (UV-1800, Shimadzu, Japan). The total phenolic content was determined from the calibration curve (Figure 12) and expressed as milligram of gallic acid equivalent (GAE) per gram of the extracts. The determination of the total phenolic in the extract was carried out in triplicate[7].

Determination of Total Alkaloids[8]

Separation of Alkaloids

A part of extract residue was dissolved in 2N HCl and then filtered. 1 ml of this solution was transferred to separatory funnel and washed with 10ml chloroform (3 times). The pH of this solution was adjusted to neutral with 0.1 N NaOH. Then 5 ml of BCG solution and 5ml of phosphate buffer were added to this solution. The mixture was shaken and complex extracted with 1, 2, 3 and 4 ml chloroform by vigorous shaking, the extract was then collected in a 10 ml volumetric flask and diluted with chloroform.

Preparation of standard curve

Accurately measured aliquots (0.4, 0.6, 0.8, 1 and 1.2 ml) of Atropine standard solution was transferred to different separatory funnels. Then 5ml of pH 4.7 phosphate buffer and 5 ml of BCG solution was taken and the mixture was shaken with extract with 1, 2, 3, and 4ml of chloroform. The extracts were then collected in 10ml volumetric flask and then diluted to adjust solution with chloroform. The absorbance of the complex in chloroform was measured at spectrum of 470nm in UV-Spectrophotometer (shimadzu UV-1800) against the blank prepared as above but without Atropine and plotted calibration curve (Figure 13).

RESULTS AND DISCUSSION

Pharmacognostic Evaluation

Macroscopic studies

It is assumed that macroscopical evaluation of any plant drug is considered to be the primary step for establishing its quality control profile. Proper authentication of a drug depends almost entirely on macroscopical description of a crude drug includes size, nature of outer and inner surfaces, type of fracture and organoleptic characteristics like colour, odour, taste etc.

P. aurea is annual erect herb, about 30cm height, sometimes shorter, much branched and suffruticose; branches terete; internodes long, densely white pubescent turning grey-pubescent or glabrescent when old (Figure 1).

Leaves opposite, rarely pseudo verticillate due to presence of a few secondary leaves in axils, sessile, linear, obtuse at base, entire at margin, mucronate at apex, surface wrinkled and margin recurved on drying; stipules scarious, lanceolate, entire, acuminate, 3mm long, nerveless, colourless or yellowish brown. Inflorescence is cyme and irregular.

Flowers are 3mm long; bracteoles ovate-lanceolate, entire, acute, 1-1.2x 1mm, grey with a faint brownish tinge; pedicels is 1mm long, pubescent. Sepals are five, free, ovate-lanceolate, entire, acute, 2x 0.8mm, exceeding petals and capsules, scarious, reddish brown. Stamens are five, forming a cup of 0.2 mm high at base with petals and encircling ovary. Ovary 1-loculed, free from base, conic, obtuse, 0.6x 0.4mm, style slender, 0.4mm long. Capsules ovoid-elliptic, 1.2x 1mm, small-stiped, 3-valved; tips faintly incurved when young, recurved after dehiscence; seeds 3-5, reniform, 0.5 x 0.3mm, purplish brown with radiating lines at attachment and a groove.

Table 1: Physicochemical parameters of powdered *Polycarpaea aurea*

S. No	Constant	Values in %w w/w
1	**Moisture content**	3
2	**Total Ash**	29.5
	Acid insoluble ash	6.5
	Water soluble ash	5.5
3	**Extractive values**	
	Pet.ehter	2.3 (non greasy)
	Methanol	**8.8 (non greasy)**
	Water	5.2 (non greasy)

Table 2: Fluorescence Analysis of *Polycarpaea aurea*

Treatments	**Observations**		
	Day light	**Short UV (254nm)**	**Long UV(365nm)**
Powdered drug as such	Light brown	Dark brown	Light brown
Powder + methanol	Light brown	Dark brown	Light brown
Powder + 1% glacial acetic acid	Brown	Brownish black	Brownish green
Powder + 10% NaOH	Light brown	Dark brown	Light brown
Powder + dilute NH_3	Brown	Dark brown	Light brown
Powder + conc. HNO_3	Light brown	Brown	Dark brown
Powder + dil.NH_3 + conc.HNO_3	Dark brown	Brown	Brownish black
powder + 1M H_2SO_4	Light brown	Dark brown	Light brown
Powder + 1M HCl	Light brown	Dark brown	Light brown
Powder + 10% $Fecl_3$	Light brown	Dark brown	Light brown
Powder + Acetone + Methanol	Light brown	Brown	Dark brown
Powder + 10% Iodine	Light brown	Dark brown	Light brown

Table 3: Preliminary Phytochemical Analysis of various extracts of *Polycarpaea aurea*

S.No.	Test	Pet. Ether	Chloroform	Ethyl acetate	Methanol	Water
1)	Carbohydrates	-	-	-	-	-
2)	Alkaloids	-	-	-	+	-
3)	Glycosides	-	-	-	+	-
4)	Tannins	-	+	-	+	-
5)	Steroids	-	-	-	+	-
6)	Triterpenoids	-	-	-	-	-
7)	Flavanoids	-	-	-	+	-
8)	Saponins	-	-	-	-	-

"+" represent **presence "_"** represent **absence**

Figure 1: Morphological appearacne of *P. aurea*

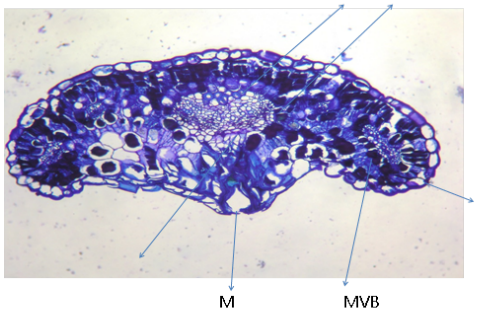

Figure 2: Transverse section of leaf (10x)
ADE- Adaxial Epidermis; PM- Palisade Mesophyll ; LM- Lamina MVB- Marginal Vascular Bundle; M-Midrib; MVB- Midrib Vascular Bundle.

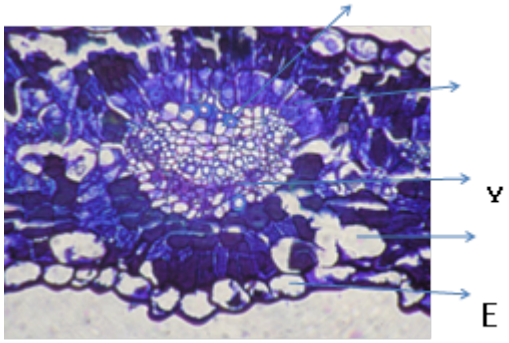

Figure 2.1: Transverse section of leaf (20x)
Ph- Pholem; BS- Bundle Sheath; X- Xylem; MT- Mesophyll Tissue; EP- Epidermis

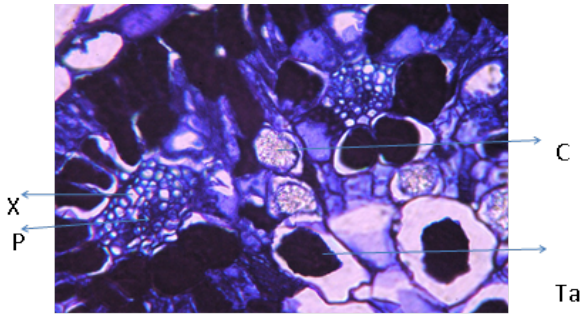

Figure 2.2: Transverse section of leaf lamina margins (40x)
X-Xylem; Ph- Pholem; Ta- tannin; Cr-Crystals

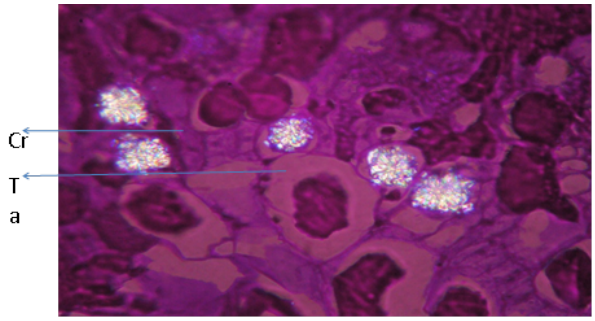

Figure 2.3: Transverse section of crystals in leaf (40x)
Cr- crystals; Ta- Tannin

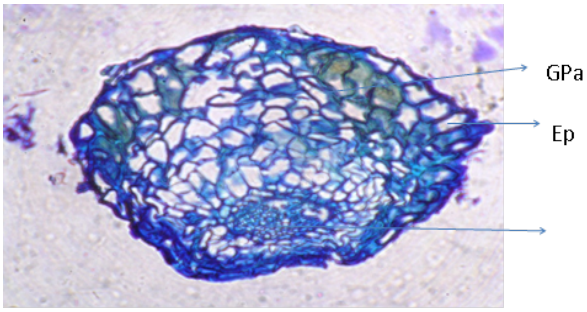

Figure 3: Transverse section of petiole (20x)
GPa-Ground Parenchyma; Ep- Epidermis; VB-vascular bundle

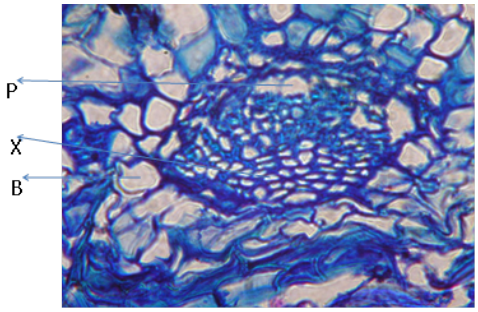

Figure 3.1: Transverse section of vascular bundles of the petiole (40X)
Ph-pholem; X- xylem; BS- bundle sheath

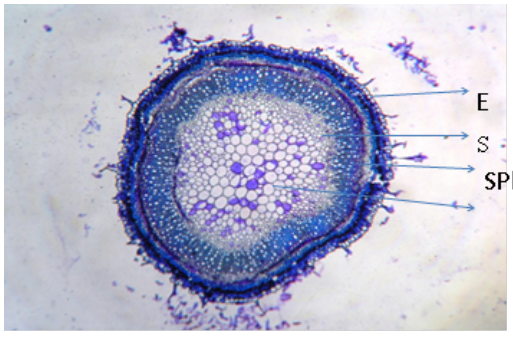

Figure 4: Transverse sections of young stem (4x)
E- epidermis; S- secondary xylem; SPh- secondary phloem; P- phloem

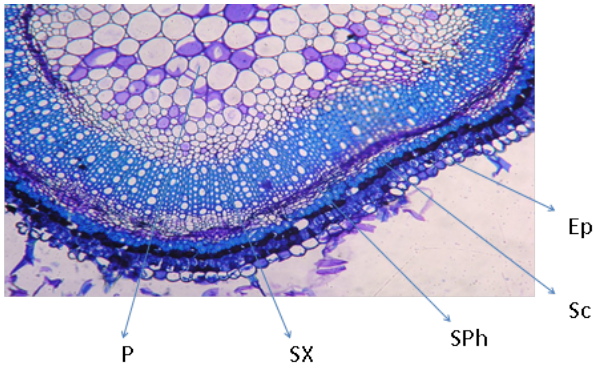

Figure 4.1: Transverse section of young stem (10x)
Ep- Epidermis; Sc- sclerenchyma; Sph- secondary phloem; SX- secondary xylem; P- pith

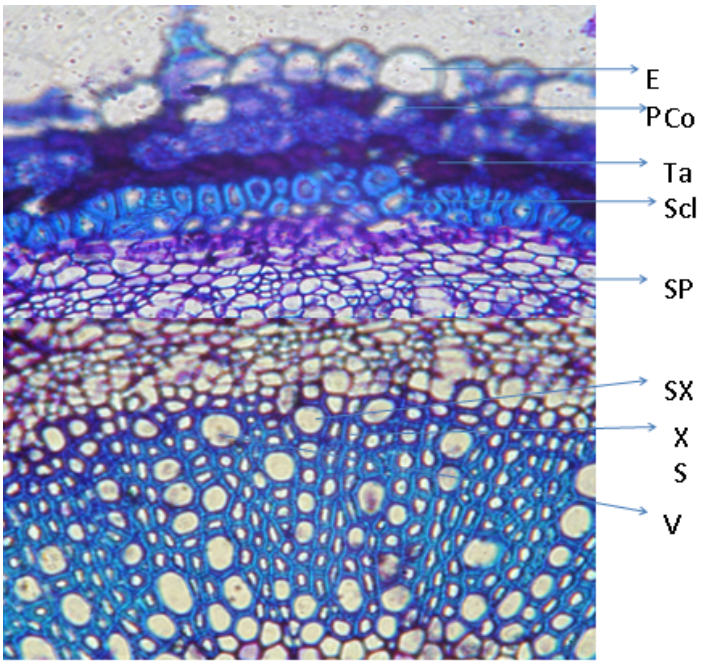

Figure 4.2: Transverse section of young stem (40x)
E- epidermis; Co- cortex; Ta- tannin; Scl- sclerenchyma; SPh- secondary phloem; SX- secondary xylem; X- xylem fibre; V- Vessels

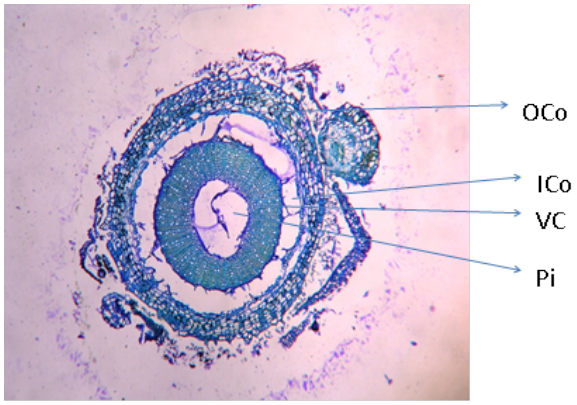

Figure 5: Transverse section of old stem (4x)
OCo-outer cortex; ICo- inner cortex; VC- vascular cylinder; Pi- pith

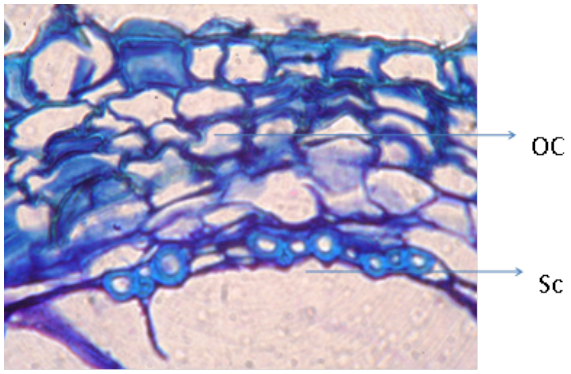

Figure 5.1: Transverse section of old stem (40x)
OCo- outer cortex; Scl- sclerenchyma

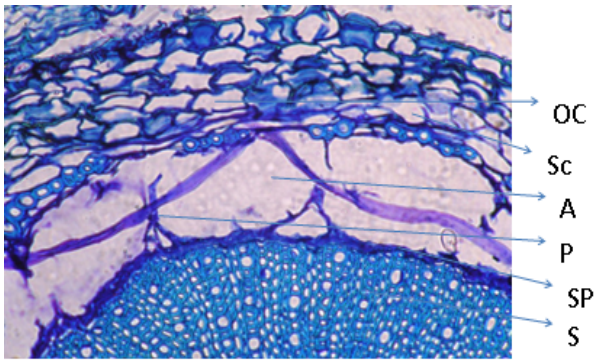

Figure 5.2: Transverse section of old stem (20x)
OCo-outer cortex; Scl- sclerenchyma; AC- alrchamber; PW- partition wall; SPh- secondary phloem; SX- secondary xylem

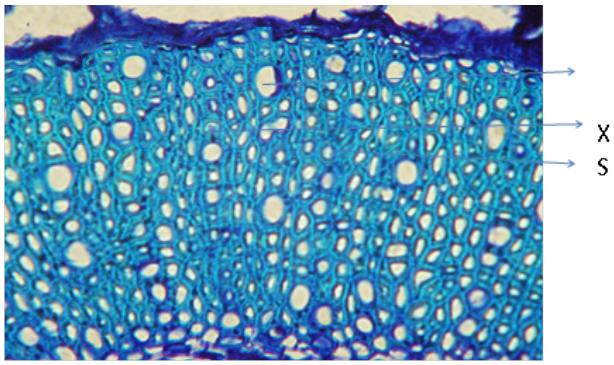

Figure 5.3: Transverse section of old stem (40x)
Ve-vessels; X- xylem fibers; S-secondary xylem

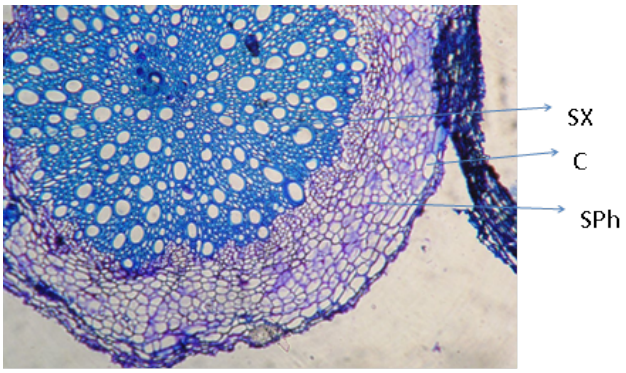

Figure 6: Transverse section of root (10x)
SX- secondary xylem; C- cortex; SPh- secondary phloem

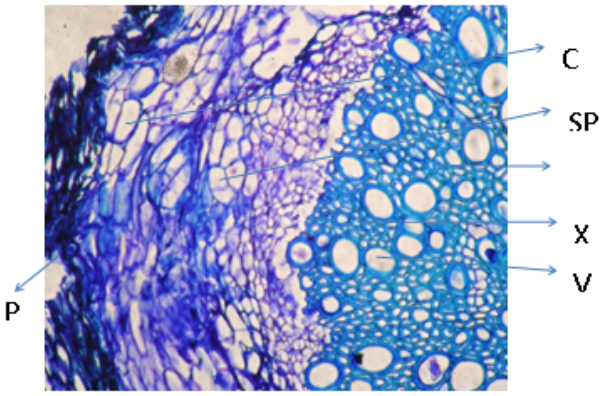

Figure No: 6.1 Transverse section of root (20x)
P- periderm; SP- secondary phloem; S- secondary xylem; Co- cortex; X- xylem fibers; V- vessel

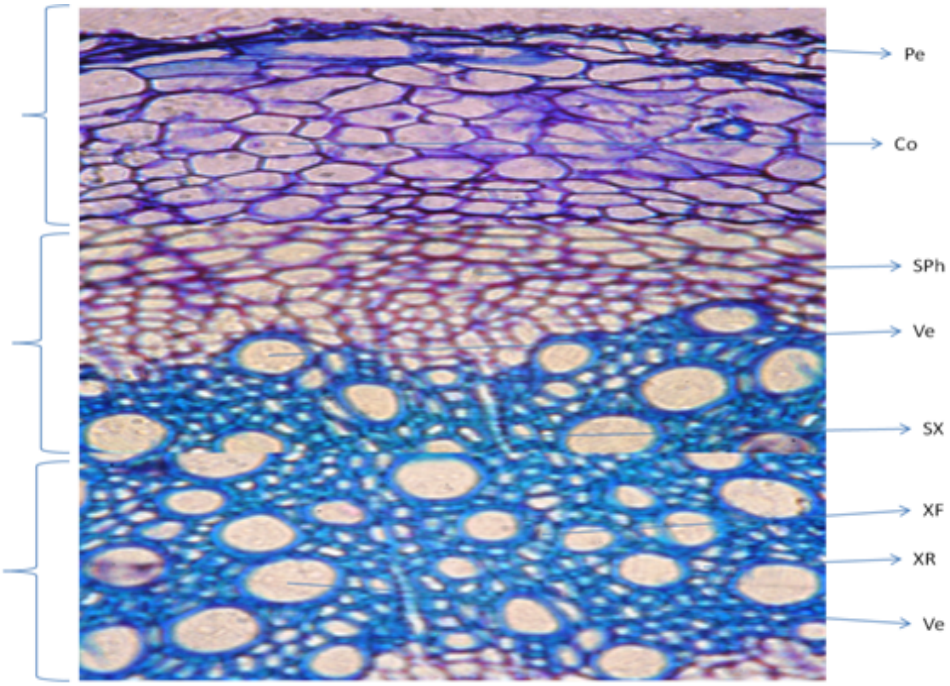

Figure 6.2: Transverse section of root (40x)
Pe- periderm; Co- cortex; SPh- secondary phloem; Ve- vessel; SX-secondary xylem; XF-xylem fiber; XR- xylem ray

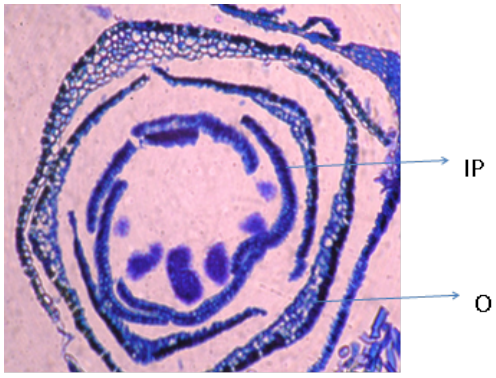

Figure 7: Transverse section of perianth members (20x)
IPe- inner petal; OPe- outer petal

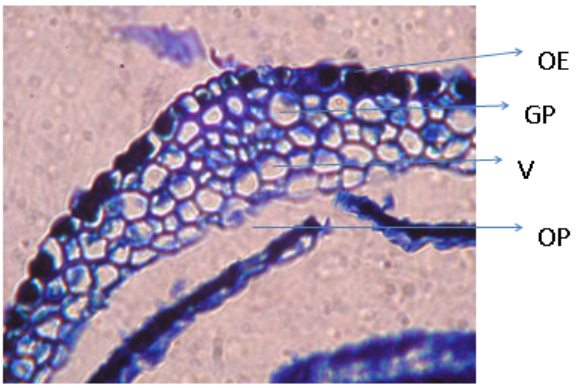

Figure 7.1: Transverse section of perianth (petal) (40x)
OEp- outer epidermis; GPa- ground parenchyma; VS- Vascular strand; OPe- outer petal

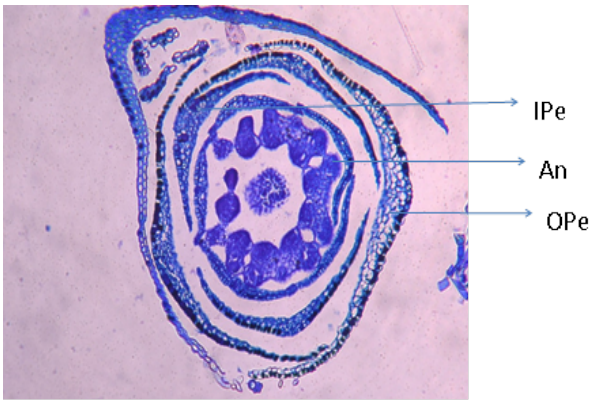

Figure 7.2: Transverse section of flower (10x)
IPe- inner perianth; An- anther; OPe- outer perianth

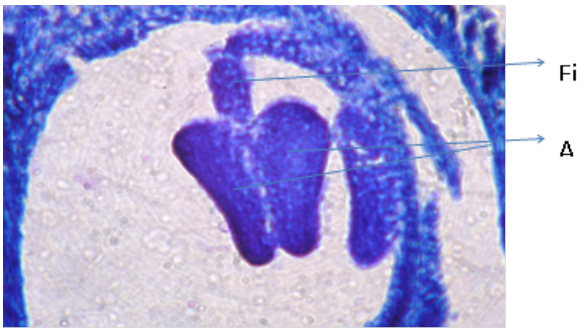

Figure 8: Transverse section of stamen (40x)
Fi- Filament; A-anther

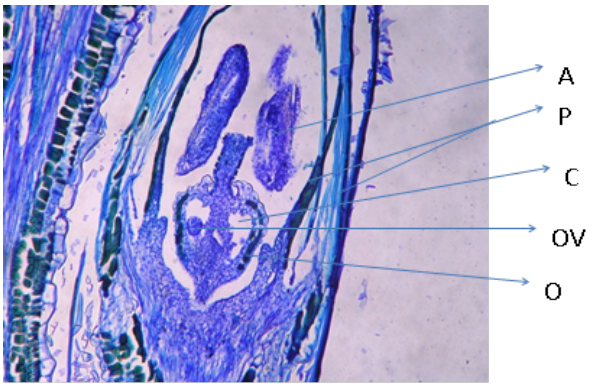

Figure 9: Longitudinal section of young ovary (10x)
An-anther; Pe- petal; Ca- capsule; OVI- ovule; OV- ovary

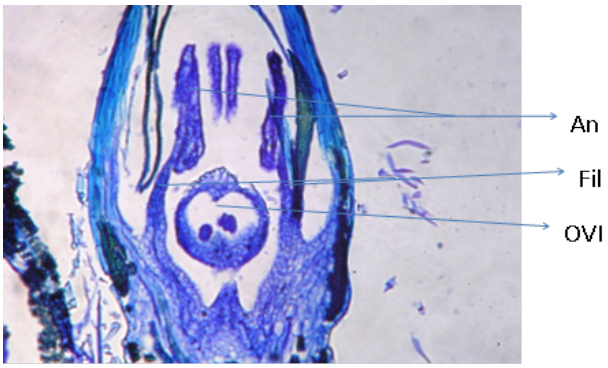

Figure 10: Longitudinal section flower (10x)
An- anther; Fil- filament; OVl- ovule

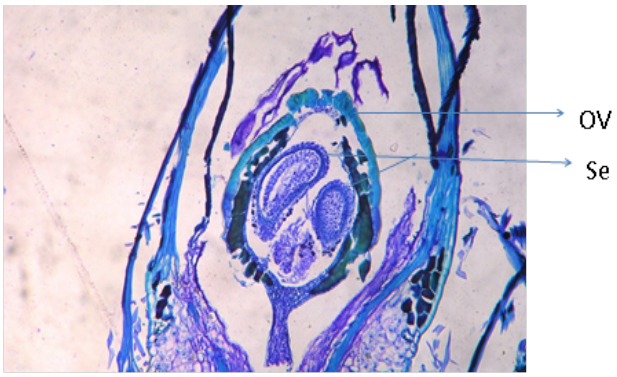

Figure 11: Longitudinal section of mature ovary (10x)
OV- ovary; Se-seed

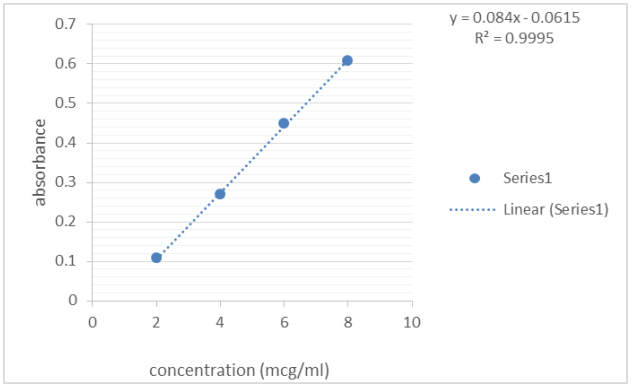

Figure 12: Calibration curve of Quercetin

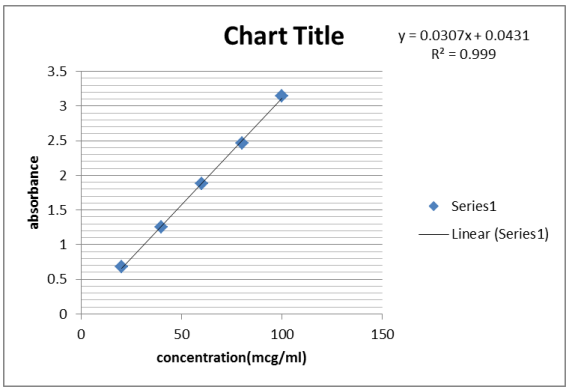

Figure 13: Calibration curve of Atropine

Microscopic studies

Leaf

The leaf is narrow and needle like. In cross sectional view the leaf appears slightly curved down along the margins, the central midrib being flat on the adaxial side and convex on the abaxialsides .The leaf is 450µm thick along the midrib and 1mm wide in horizontal plane (Figure 2).

The epidermal layer consists of fairly thick, spindle shaped thin walled cells with thin cuticle. The epidermal cells are 30µm thick. The mesophyll tissues consist of adaxial vertical pillars of compact palisade cells and adaxial zone of spherical and lobed loosely arranged parenchyma cells forming small air chambers (Figure 2.1).

There is a single centrally located prominent vascular bundle. This is the midrib vascular bundle which is collateral with adaxial phloem unit and abaxial xylem strand. The xylem elements occurring short are of many short lines of xylem cells. Phloem is massive and consists of small sieve elements and parenchyma cells. On the upper end of the phloem is seen a small cluster thick walled lignified fibers.

These are two marginal vascular bundles situated side by side in the lamina portion of the leaf. These marginal bundles are also collateral and circular with a few vertical rows of xylem elements and a mass of phloem elements.

Most of these cells of the mesophyll tissue possess thick masses of tannins as well as large spherical calcium oxalate crystals of druses (Figure 2.3). The druses occur is single in each cells, occupying the entire lumen of the cell. The druses are 20µm thick.

Petiole

The petioles are short, thin and somewhat widely elliptical in outline. It consists of large, thick walled radially rectangular epidermal cells. The ground tissue consists of angular thick walled and compact parenchyma cells. There is single, prominent vascular bundle to located at the lower end of the petiole (Figure 3).

The vascular bundles consist of wide pad of xylem elements which are small horizontally elongate and lignified. On the upper side of the xylem occurs a large mass of phloem elements (Figure 3.1).

Thin (Young) Stems

The young stem is circular in sectionals outline. It is densely covered with epidermal trichome (Figure 4). The stem measures 1.5mm in thickness. The epidermal layer has wide, vertically rectangular thin walled epidermal cells. Most of the epidermal cells bear dense epidermal trichome. The epidermal cells are 40µm thick. Inner to the epidermis occurs two layers of angular compact parenchyma cells. The third layer of cells possesses dense dark tannin. Inner to the tannin containing cell layer is one or two layer thick sclerenchyma cells. These are slightly radially elongated highly thick walled with wide lumen. The pith is wide and consists of circular thin walled, less compact parenchyma cells.

Secondary phloem is in continuous cylinder of uneven thickness. It consists of small thick walled sieve elements and fairly wider parenchyma cells. Secondary xylem is uniformly thick hollow cylinder comprising vessels and xylem fibers. The vessels are either solitary or less frequently in radial chains. They are elliptical or circular in shape. Their walls are thick. The diameter of the vessels ranges from 10-20µm. the xylem fibers are radially elongate, narrow and highly thick walled and lignified.

Old Stem

The old stem is 1.2mm thick. The stem consists of wide, highly thick walled, rectangular or squarish epidermal cells. Inner to the epidermis is the outer zone comprising about six layers of radially compressed rectangular thick walled cells. The inner most layer of the cortex consists of circular, thick walled sclerenchyma elements (Figure 5 & 5.1).

In between the sclerenchyma layer and the central vascular cylinder is wide gap of air chambers which are divided by this partition walls or filaments. Secondary xylem cylinder is unsheathed by thin layer of crushed and collapsed secondary phloem (Figure 5.2).

Secondary xylem is a hollow thicken cylinder with empty central core of pith. The xylem elements include numerous vessels, which are narrow, less prominent and they are arranged in numerous, narrow radial chains. The vessels are variable in size. They are mostly elliptical in outline or circular with thick walls. Xylem fibers are major components of the secondary xylem. They are angular, very thick walled and lignified; the cell lumen is reduced due to thick secondary walls (Figure 5.3).

Root

The root is thick with well developed periderm, wide cortex and solid and dense vascular cylinder. The root is 1mm thick.

The epidermis is broken and sloughed. The periderm consists of about nine layers of rectangular, thick walled suberised phellem cells. The periderm is 70µm thick. The cortical zone is fairly wide and with well preserved, horizontally elongated, thin walled compact parenchyma cells (Figure 6).

The secondary phloem is a thin continuous cylinder, enclosed the xylem cylinder. At certain places the phloem intrudes slightly into its xylem cylinder. The sieve elements of the phloem occur in circular clusters in the region where the phloem intrudes the xylem. Phloem parenchyma cells are large and occur in alternate phloem sieve elements (Figure 6.1).

Secondary Xylem

The xylem cylinder is 600µm in diameter. Secondary xylem includes vessels, xylem fibers and xylem rays. The vessels occur in several radial rows or radial chains. The vessels are either elliptical or circular and thick walled with wide lumen. The vessel diameter varies from 10-30µm (Figure 6.2). The xylem fibers are narrow with thick walls and reduced lumen. They are rectangular of polyhedral. Xylem rays are thin, narrow and straight. The ray cells are radically elongated and have thick lignified walls**.**

Crystal Deposition

Calcium oxalate crystals are common in the cortical cells of the root. These are two types of crystals in the cortical cells. One type is sand crystals which consist of minute sand like bodies found in dense mass inside the cell. The second type is druses. The druses are spherical bodies with spiny surface. The cells containing cells are 30×100µm in size. The druses are 60µm in diameter.

Flower

Structure of the flower was studied in cross sectional as well as longitudinal section views; in cross sectional view, the number of sepals and petals, and their aestivation were studied. The flower is pentamerous with five sepals and five petals (Figure 7).

All perianth members are imbricate in aestivation of the five perianth members, two members have margin completely out and two margins are completely in, the fifth perianth has one margin in and the other margins is out . The perianth members are all thick in the middle and gradually tapering towards the margins. There is a single circular vascular bundle in the middle parts. The vascular bundle is collateral with xylem elements located on the lower end and phloem elements on the upper end. The outer epidermal cells of the perianth members are large, squarish in shaped and possess dense accumulation of tannin. The ground parenchyma cells are wide, angular, thin walled and compact. The outer perianth members are 80µm wide and 80µm thick in the midrib region (Figure 7.1).

The inner perianth members are comparatively narrow and thin. They are 450µm wide and 50µm thick in the middle. The structure of the inner perianth is similar to that of outer perianth. The outer epidermal cells have tannin content, there is single small, collateral vascular bundle in the mid part, the ground parenchyma cells are angular, thin walled and compact (Figure 7.2).

Stamens

There are five stamens of which two are abortive. The remaining three stamens are fertile, they dithecous and four called. In LS view, the anthers show epipetalous filament and conical anther which is broad below and narrow above. The anther is 100µm thick and 80µm in height (Figure 8).

Gynoecium

The gynoecium has a short thick stalk. The ovary is angular in LS view with wide upper part. The style is thick, long and the stigma is blunt and flat. The surface cells of the ovary are dilated into vertically elongated glandular cells (Figure 9).

The ovules are in axile placentation. The ovules are orthodropous. The ovary after formation of seeds develops into many seeded capsule. The fruit is elliptical in shaped. It consists of outer sclerotic epicarp and parenchymatous mesocarp. The mesocarp cells are filled with dense tannin. Seeds are of ovate or club shaped. They have thick sclerotic testa and dense endosperm. The seeds are 220µm long and 80µm thick (Figure 10 &11).

Physico chemical parameters

Physico chemical evaluation is an important parameter in determination of identity and quality. The results of Physico chemical characters such as moisture content, total ash, acid insoluble ash, water soluble ash, percentage of extractive values in various solvents such as pet. ether (40^0C-60^0C), methanol and water are presented in Table 1.

Fluorescence analysis

Fluorescence analyses of powdered drug material with different reagents were carried out to observe the colour reaction (Table 2).

Phytochemical Analysis

Qualitative phytochemical examination revealed the presence of alkaloids, glycosides, tannins, flavonoids, and steroids in various solvents and tabulated in Table 3.

Total Flavonoid Content

The standard graphs of Quercetin yielded curve with regression coefficient, $r^2 = 0.999$ (Figure). The total flavonoid content in the methanol extract of the whole plant extract of *Polycarpaea aurea* was estimated by Quercetin equivalents. The total flavonoid content was found to be 216 mg of Quercetin per gram weight of extract respectively. The flavonoid present in the extract might counter act the diabetic condition, which can probably be the reason for the anti diabetic activity would be antioxidant activity (Figure 12).

Total alkaloid content

The standard graphs of Atropine yielded curve with regression coefficient, r^2=0.999. The total alkaloid content in the methanol extract of the whole plant of *Polycarpaea aurea* was estimated by atropine equivalents. The total alkaloid content was found to be 774 mg atropine per gram weight of extract respectively.

CONCLUSION

The plant kingdom is true source of natural medicines. If we are able to curb naturally rapacious nature of an ever expanding human population, perhaps a considerable number of those

potentially useful species and may be examined scientifically and clinically. The present study results of whole plant of *Polycarpaea aurea* would provide useful information for the identification as whole. Morphological, microscopic and physicochemical standards carried out, can be considered as identifying parameters to substantiate and authenticate the plant. Pharmacognostic studies of the findings there in will enable the identification of the plant to the future investigation. This would be providing a basis for the pharmacognostic standardisation of the plant drug. Preliminary phytochemical investigations of methanolic extract found to contain alkaloids, glycosides, tannins, flavonoids and phenolic compounds. The determination of total flavonoids and alkaloids content was carried out and standards established in quantifying the total flavonoids and alkaloids in methanol extract in terms of Quercetin (216mg) and Atropine (774mg) equivalents respectively. Thus, the present study on Pharmacognostic studies and active phytochemical compounds screening could be used as supplement information with regard to its identity which helpful in establishing the standards for *Polycarpaea aurea* as whole.

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