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Taxonomic importance of vessels elements in Genus *E. barnhartiicroizat*, Euph.

K .A .More*

*[a]Dept. of Botany, Yashvantrao Chavan Arts and Science College Mangrulpir,Dist, Washim(MH) India

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Abstract : Xylem element shows important taxonomic character for difficult to identification of some genera and species of the plants , Vessel element shows great variation in their size , wall thickening, shape, tail and characters of perforation plate like number, orientation and shape .The study of vessel elements which may be useful for the identification of a particular plants drugs because in the drugs the entire or various fragments of tissue are present. Many anatomist have contributed on the various aspect of vessel elements several workers studied the structure of vessel element. Present investigation shows study of these characters for Genus *E.barnhartii*.

Key Words: *E.barnhartii* ,Xylem elements ,Structure of vessels, Identification.

INTRODUCTION

In India regular pharmacognostic work had been started by Joshi (1947) mongraph on Himalayan Drugs given Morphology and histological feature of plants along with some pharmacological information. During the last few decades a large number of medicinal plants used in traditional systems have been studied pharmacognostically. Dutta and Mukharji (1950,1951)made an attempts to study pharmacognosy of certain Indian roots rhizome and leaf drugs. Mehara, Bhatnagar, and handa (1969) made a review on pharmcognocy of medicinal plants but compilation of anatomical studies have been inadequate puri (1971) prepared a review on anatomical studies on drug plants.

The present work includes the study of vessel elements which may be useful for the identification of a particular plants drugs because in the drugs the entire or various fragments of tissue are present. Many anatomists have contributed on the various aspect of vessel elements several workers studied the structure of vessel element. Woodworth (1935) Studied it in passifloraceae ; Chedle (1942,1955) and Fahn (1954a) in monocotyledones ; Cheadle and Kosakai (1973,1974,1975,1976) in Junicales, Hypolytrieae and Alstroemerialesthrough out the 20th century certain workers studied the dimension of vessel element and its importance in the phylogeny. They are chalk and chattaway (1934,1935) Scholander (1958). Zimmermann and Ayodeji (1981) .The study of dicotyledon was carried out by metcalf and chalk (1950) Solereder(1908) in the form of books

*Correspondent author :
Phone : 09689081542.
E-mail : kmore1914@gmail.com

MATERIALS AND METHODS

For study of vessels the preserved material were made into small pieces and boiled and cooled repeatedly until free from the air. A mecerated fluid was prepared by taking aqueous chromic acid (as per Jeffrey's). The pieces of wood were kept in the fluid for 24 hours and after 24 hours the material was crushed with the help of glass rod and washed with distilled water to remove excess stain. The material was stained in 1 % saffranin for 6 hours and microscopic observations. The camera Lucida of the vessels were drawn by taking measurements the illustrations were drawn with India ink and microphotographs were taken wherever possible.

The range of length and width of vessel elements was determined by the measurement of 20-25 vessel

elements and were classified as per the classification given by Radlford et al. (1974). Which is reproduced here for persual.s

A.	Extermely short	Less than 175 um
B.	Very short	175 to 250 um
C.	Moderately short	251 to 350 um
D.	Medium size	351 to 800 um
E.	Moderately Long	801 to 1100 um
F.	Very Long	over 1900 um

OBSERVATIONS

The various characters of vessel elements viz,.size wall thickening, shape, tail and characters of perforation plate like number, orientation and shape were studies. A survey of about 30-50 vessel elements of stem was carried out.

RESULT AND DISCUSSION

Vessel elements of *Euphorbia branhartii*croizat, Euph.

Vessel element of root(Table no-01 Plant No.)

Dimentions :-

Very short (class B) moderately short (class C) medium size (class D) vesseles were observed. The frequency of very short vessels is higher (43.35 %). And The medium sixed (23.45) vessels were less frequency. The average diameter of vessel element is 21 mu.

Lateral wall thickening :-

Simple pitted thickeninings were common, pits alternate.

Tail :-

Vessel with long pointed, long blunt, short pointed short blunt were observed.

PreforationPlate :-

In the vessel only simple perforation plates were present.

Orientation :-

The vessels with oval, oblique and transverse perforation plates were observed.

Shape of perforation plate :-

More commonly vesels have oval or lenticular perforation plate.

Root fibres : -

The length of root fibre is 173-360 mu and the average length is 290 mu. The diameter of fibre is between 18.1-27 mu. and the average diameter is 19.8. all the fibres are pointed at both the ends.

Tracheids :-

The length of tracheids element 225-345 mu and the average length is 268.72 mu.The width of tracheid element in between 19-24mu. the average diameter 22.32 mu. the shape of tracheids is spindle shaped.

Vessele element of stem (Table No.02Plate No.)

Dimensions :-

Very short vessels (class B) moderately short vessels (class C) and medium size (class D) vessels were observed. The frequency of medium sized (45.20) (class D) was higher and moderately short vessel (class C) were less frequent 18.50 mu.

Shape :-

The shape of vessel element is cylindrical, linear.

Lateral wall thickning :-

Simple pitted thickenings were common, pits alternate.

Tail :-

With long blunt, short blunt were commonly observed.

Perforation Plate :-

In the vessel, only simple perforation plates were observed.

Orientation :-

The vessels with oblique and transverse perforation plates were observed.

Shape of perforation plate :-

More commonly vessels have perforation plate oval in shape.

Stem fibers :-

The length of stem fibres is between 275-380 mu. and the average length is 294 mu. the diameter of fibres is between 18.5- 32 mu and average diameter is 22.5 mu. All the fibres are pointed at both end rarely blunted.

Tracheid's :-

The Length of tracheid elements is between 268-395 mu. and average lenth is 298 mu. and the diameter is between 18.5-20mu.and the average diamater is 19 mu, all the tracheids are blunt at tip.

Classification (After Radford etal) and relative frequency (%) of different classes of vessel element in the root and stem of*Euphorbia barnhartii* croizat, Euph.

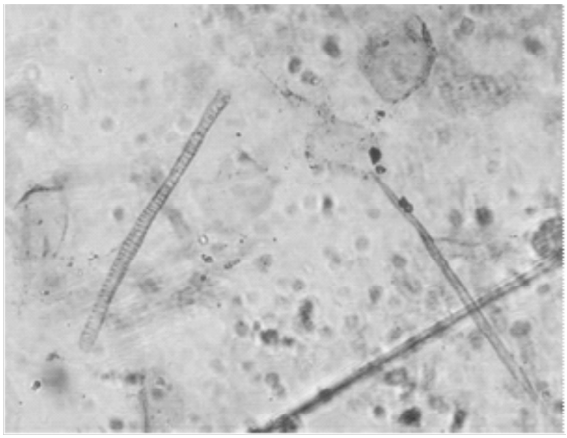
Table no 1 :- Vessel element of root.

Class B		Class C		Class D	
Percentage (%)	Range of Length(mu)	Percentage (%)	Range of Length(mu)	Percentage (%)	Range of Length(mu)
43.35	185 to 235	33.20	190 to 335	23.45	380 to 427

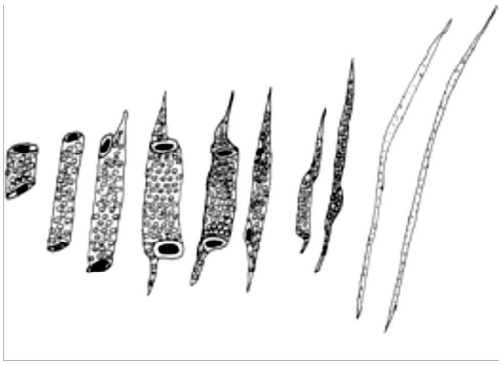
Table no 2 :- Vessel element of stem.

Class B		Class C		Class D	
Percentage (%)	Range of Length(mu)	Percentage (%)	Range of Length(mu)	Percentage (%)	Range of Length(mu)
36.30	178 to 245	18.50	255 to 330	45.20	355 to 490

A - Vessel element of Stem.



B- Vessel element of Root.



a. *Euphorbia barnhartii*Croizat.

b - Vessel element of Stem.
A) Tail less Vessel.
B) Vessel with tail at one end.
C) Vessel tail at both end.
D) Tracheid

E) Fibers

c - Vessel element of root.
A) Tail less Vessel.
B) Vessal with tail at one end.
C) Vessal tail at both end.
D) Tracheid
E) Fibre

CONCLUSION

Classification (After Radford etal) and relative frequency (%) of different classes of vessel element and their other characters likesize , wall thickening, shape, tail and characters of perforation plate like number, orientation and shape in the root and stem are use for identification of plant drugs or may be used for distinguish them from each other.

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