Stem Anatomical Study of Some Plant Species Belonging to Family Asteraceae (Compositae)

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doi.org/10.64643/IJIRTV12I9-195971-459

***Abstract*—Stem Anatomy has helped to a great extent in clarifying confusions which arose in the systems deviced by classical taxonomy. Considering the importance of morphological and anatomical studies, 5 species of Asteraceae were selected for the present work, in order to document stem characters which are significant in taxonomy, a detailed microscopic study on stem of the selected taxa The plant species were *Blumea lacera, Eclipta alba, Lagascea mollis, Spilanthes calva, Vernonia cinerea*. in present work, comparative stem anatomy, seems supportive to classical taxonomists.**

***Index Terms*—Anatomy, classical, comparative, taxanomy.**

I.INTRODUCTION

Anatomy is a vital field and comparative anatomical studies of angiosperms have achieved a remarkable record as anatomical characters have been employed with great success to the solution of difficult taxonomic problem. Anatomical structures are most likely to provide evidences concerning the interrelationships of larger groups such as families and also helping to establish real affinities of their uncertain taxonornic status. The value of characters is measured for its constancy. The more constant the character, the greater is the reliability that can be placed upon it. Anatornical characters are more fixed than other. There are large numbers of anatornical characters of systematic importance but as pointed out by Metcalfe and Chalk (1950), the systematic anatomist must rely upon those characters, which are less plastic. They further suggested that conclusions supported by combinations of characters are more reliable than those rests on single character.

Table No. 1 List of the Plants selected for present study from Asteraceae family

Sr. No.	Name of Taxa	Tribe
1	*Blumea lacera* (Burm. f.) DC.	Inuloideae
2	*Eclipta alba* (L.) Hassk.	Helianthoideae
3	*Lagascea molliscav.*	Helianthoideae
4	*Spilanthes calva DC.*	Helianthoideae
5	*Vernonia cinerea*. (L.)	Vernonieae

II. MATERIALS AND METHODS

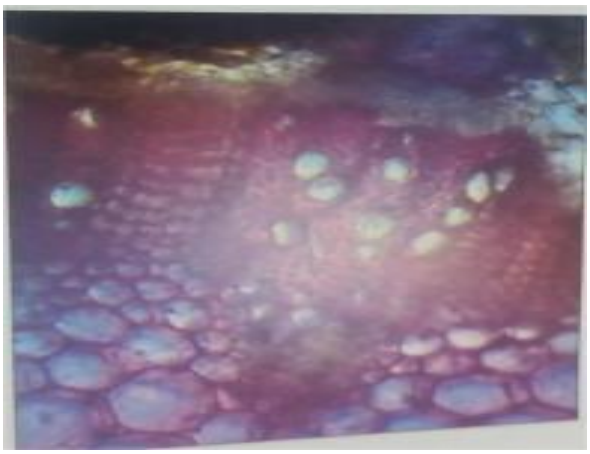
Plant collection and Authentication:
The plant materials for the present study were collected from different habitats in Amravati, district (Maharashtra). The collection was made in accordance with the flowering seasons to enable the collection of the flowering materials and proper diagnosis. Herbarium specimens of collected plants were made and, macro characters were studied in the field. The investigatory vegetative characters of the species were carried out in the laboratory by using dissecting and binocular microscope. The plants were identified with the help of the standard floras (Naik, 1979). Photographs were taken.

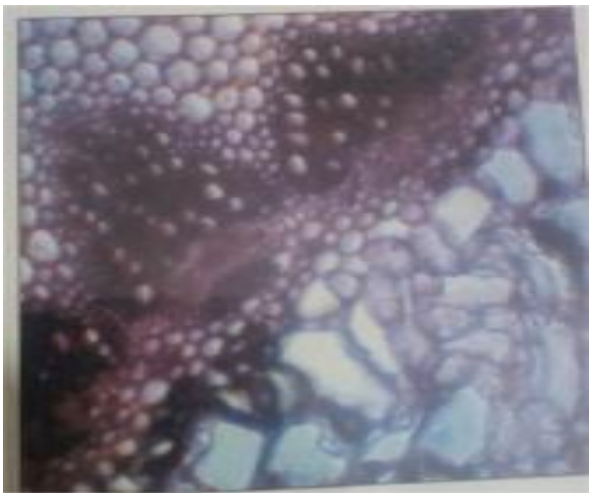
Morphological Analysis:
Macroscopic observations of the plants for morphogical characters were carried out. The shape, size, surface characters, texture, colour, odour, taste were noted.

Anatomical Analysis:
For the anatomical studies, the fresh as well as fixed material in F.A.A. was used. Present study is based mostly on free hand sections, macerations and peelings of fresh and preserved materials.

III. OBSERVATIONS

Stem Anatomy: The transactional outline in most of the taxa was observed rounded in B*oltonia aseroides* FilterL‟Her, *Spilanthes calva* DC. Cuticle in majority of taxa was moderate thin and trichomes were present in most of the taxa. The epidermis was commonly 1-layered. Variations were observed in outer and inner walls of epidermal cells, mostly rounded.





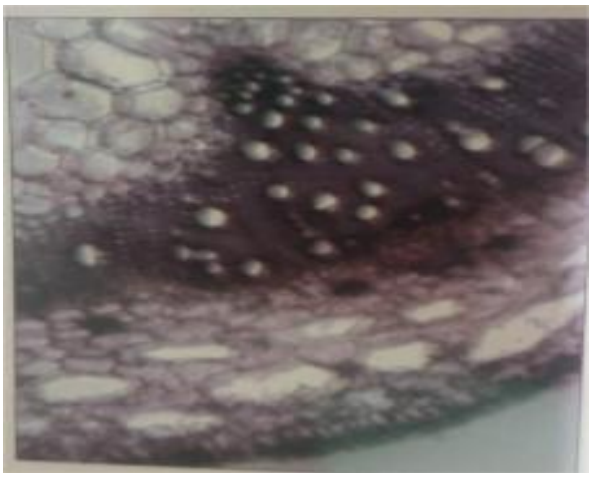


Table no .2 Comparative Anatomical Characters of Young stem in transaction

Sr.No.	Name of Taxa	Epiderml Cells	Vascular Cylinder	Pith
1	*Blumea lacera* (Burm. f.) DC.	Rounded Slightly Curved	7-8 layered high in radial multiples of 6-7, few paired (predominantly solitary)	homogeneous, wide, cells bigger, parenchymatous, rounded, polygonal.
2	*Eclipta alba* (L.) Hassk.	Rounded	7-8 layered high in radial multiples 2-3, solitary, few in pairs (predominantly solitary)	Homogeneous, wide, cells parenchymatous, thin walled, loosely arranged with intercellular spaces.
3	*Lagascea molliscav.*	Rounded	4-5 layered high in radial multiples 2-3, solitary, few in pairs (predominantly solitary)	Homogeneous, very wide, cells uneven, parenchymatous, outer cells polygonal, inner cells oval, compactly arranged with few intercellular spaces.
4	*Spilanthes calva DC.*	Rounded	3-4 layered high in radial multiples 5-6, solitary, few in pairs (predominantly radial multiples)	Homogeneous, wide, cells parenchymatous, even compactly arranged with few intercellular spaces
5	*Vernonia cinerea*. (L.)	Rounded	2-3 layered high in radial multiples 3-4, (predominantly solitary)	Homogeneous, wide, cells parenchymatous, uneven, thin walled, polygonal, compactly arranged

IV. RESULT AND CONCLUSION

The present study found as significant contribution towards the taxonomic and anatomical study of this family i.e., variations were noticed regarding root, stem, petiole, leaf anatomical features, vessel elements of root and stem, leaf architecture trichome types on stem, petiole and leaf, stomatal types, nature of epidermal cells etc. Data obtained from present work, will be useful as a contribution for coming to the discrete final conclusions regarding taxonomic problems. Regarding correlations, of characters studied, which makes distinctivess of that genus and species in particular tribe. It also indicates that the further study of the anatomical characters of all the members of Asteraceae as it is very large family, along

with embryological, cytological, palynologicalm, chemotaxomic data even to molecular level which will throw clear light in solving some of the problems of systematics of this family. Taxa studied in present work, distributed among 4 tribes of Asteraceae, it was also found that there are similarities and differences in many of characters studied in taxa taken for present study. It seems the present work supports morphological classification of tribes and also as there is sharing of some characters in taxa belonging to different tribes, suggestive of some affinity among these tribes. Some of the taxa studied in present work regarding anatomical characters also found supportive to their habitat adaptability which reflects adaptiveness of this family.

ACKNOWLEDGEMENT

I am greatly indebted to my mentor Dr. S. N. Ingole

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