

**RESEARCH ARTICLE****ANATOMICAL PROTOCOL FOR BOTANICAL DIAGNOSIS OF A TIME-RENOUNDED INDIAN  
HERBAL ..SPHAERANTHUS AMARANTHOIDES BURM.F. (ASTERACEAE)****Subhashini S. and Poonguzhali T. V**

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Compositae (Asteraceae) is the largest family of flowering plants and highly evolved taxon among gamopetalous families, some years back. Compositae was not given the due accent, because it was supposed to of little economic values. Research in recent years beckoned the industrial and pharmaceutical efficacies of the family. Now we have better knowledge of many almost discharged folk remedies as well as hither to uninvestigated plants of Compositae. In order to distinguish *S. amaranthoides* from other species of the genus, the present pharmacognostic investigations have been carried. Employing customary microtechnical procedures, paraffin embedded sections were prepared and stained with Toluidine blue with the help of photomicrographs, the following data were retrieved. Dorsiventral lamina with fairly thick single stranded vascular bundle and epidermal glandular trichomes located within wide abaxial and adaxial cavities and actinocytic stomata, long winged petiole with aerenchymatous ground tissue, with circle of multistrand vascular bundles accompanied by a pair of winged bundles, thick circular system having aerenchymatous cortex, thick wide hollow vascular bundle of secondary growth and roots with aerenchymatous cortex, solid dense central core of xylem with radial multiples of vessels. The afore said microscopic feature may be claimed to be a protocol of diagnostic feature for the identification of *S. amaranthoides* and distinguish it from from other congeneric taxa.

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**INTRODUCTION**

*Sphaeranthusamaranthoides* (Tam :Sivakaranthai) has been viewed as a highly potential herbal in the Indian systems of medicine. *S. amaranthoides* coexists with *Sphaeranthus indicus* and some other weeds which simulate the original drug. The present study aims at proposing microscopic characters of *S. amaranthoides* which can be employed as protocol for identification of the original drug.

**Previous Study**

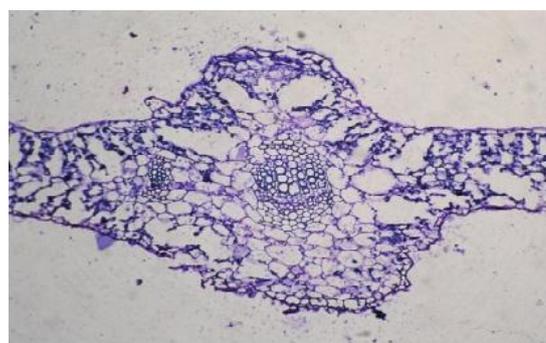
Some phytochemical and pharmacological studies have been carried out and reported in some medicinal plants monographs (Yoganarasimhan, 2000). No microscopic parameters have been studied for *S. amaranthoides*. For botanical identification of the herbal, the present study is being carried out to highlight the microscopic profile of *S. amaranthoides*.

**MATERIAL AND METHODS**

The material for the present study collected from Thirunelveli region of Tamil Nadu and authenticated by Prof. P. Jayaraman, Plant Anatomy Research Center, Chennai – 45. Various parts of the plants were processed through customary technique and procedure for microtome serial sections (Sass, 1940) Sections stained with 0.01% Toluidine blue (O'Brien et al; 1964). Microphotograph prepared with Nikon Trinocular microscope and Nikon digital camera.

**Observation****Leaf**

The leaf is distinctly dorsiventral with thick conical midrib having single collateral vascular bundle Fig: 1. Lamina exhibits adaxial zone of palisade cells and abaxial zone of spongy parenchyma cells. Petiole circular with long thin wings

**Fig. 1**

Petiole has aerenchymatous cortex with wide air chambers and reticulate partitions. Vascular system includes a circle of discrete collateral vascular bundle and two wing bundles Fig: 2

**Stem**

There is wide aerenchymatous cortex with air chambers and partitions filaments. The vascular cylinder is circular and continuous comprising several wedge shape collateral vascular bundles and wide parenchymatous pith Fig: 3



Fig. 2

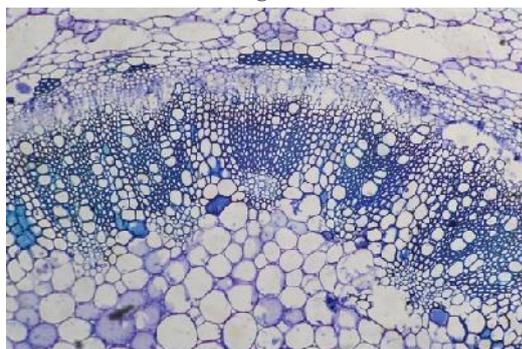


Fig. 3

#### Root

Thin root has single radially oblong ring of air chamber and central solid cylinder of vascular tissues with thin radial arms of vessel elements Fig: 4.



Fig. 4

Thick root has compressed cortical tissue and phloem cylinder and wide dense secondary xylem with diffuse, wide, thin wall vessels and thick walled xylem fibres Fig: 5

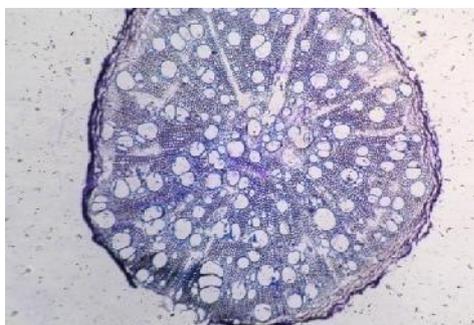


Fig. 5

#### Venation

Venation densely reticulate with well defined vein islets and vein termination. Stomata actinocytic and epidermal cells thin

and amoeboid in outline. Laticiferous canals found running along the venation system of the lamina Fig: 6

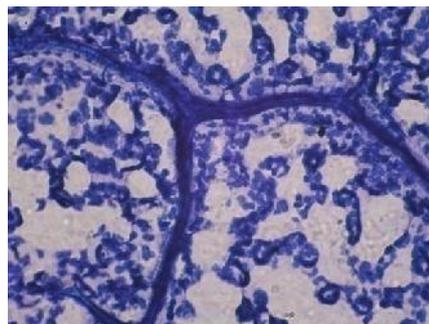


Fig. 6

#### DISCUSSION

*S. amaranthoides* can be distinguished with the help of certain anatomical parameters which are specific for this species. Hydromorphic structure with air chambers divided by uniseriate partition filaments is characteristic in the petiole, stem and root. Single stranded collateral vascular bundle in the conical midrib is another specific feature of the leaf. The xylem elements are characterized by highly wide fairly thick wall vessel element.

The present study contributes certain microscopic guidelines for botanical identification of *S. amaranthoides*, especially in fragments.

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