

Morpho and Leaf Architecture Diversity in Three Medicinal Species of *Spilanthes* (Asteraceae)

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Abstract: *Asteraceae* (compositae) is widely distributed family of high economic importance. Many plants are medicinal like *Spilanthes*. In present work, morphological and leaf architectural diversity of *Spilanthes calva* DC. , *Spilanthes acmella* Murr. and *Spilanthes radicans* Jacq. has been studied. Leaf architecture now considered as one of the significant aspect in taxonomy and helps in identification of genera and species even in absence of flowers. This aspect is found very useful in authentication of crude drugs and detection of adulterants. Distinct morphological variations are observed in colour of capitulum and leaf margin. Detail of the leaf architecture has been studied of all these species. Where in those major venation pattern is similar they can be seperated on the basis of minor architectural features.

Keywords: *Spilanthes*, leaf architecture, *Asteraceae*, major venation, diversity.

1. INTRODUCTION

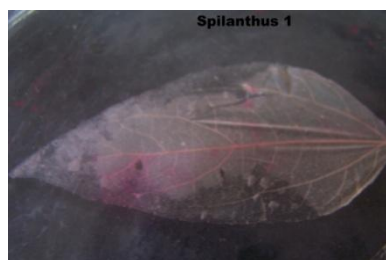
Present study mainly based on the comparative leaf architectural study of **three** Species of *Spilanthes* viz. *Spilanthes calva* DC. ,*Spilanthes acmella* Murr. And *Spilanthes radicans*. The classification of plants is mainly based on morphological and anatomical concepts. Camparative anatomical studies of angiosperms have achieved a remarkable record as anatomical characters have been employed with great success to solution of difficult taxonomic problems.

2. MATERIALS AND METHOD

Leaves are cleared with aq. NaOH treatment followed by acetic acid stained in Saffranine. Major photographs are taken in Kodak digital camera and minor photographs are taken in Labomed Trinocular Digital microscope .Terminology used acc. to Hickey.

3. OBSERVATION

In minor leaf architecture feature, it is observed that tertiary vein in *Spilanthes culva* is random reticulate and remaining two having admedial ramified while in tooth architecture, origin of vein is deflected in *Spilanthes acmella* while direct in remaining two species.



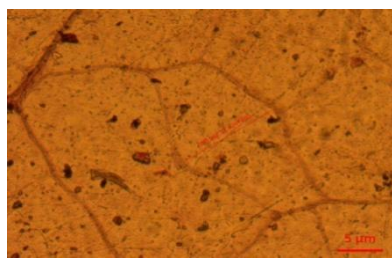
Spilanthes calva DC.



Spilanthes acmella Murr.



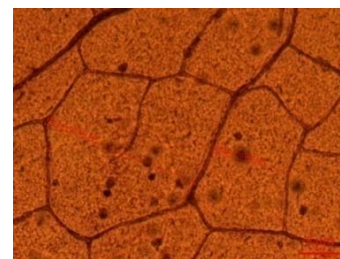
Spilanthes radicans Jacq.



S. calva leaf through middle portion



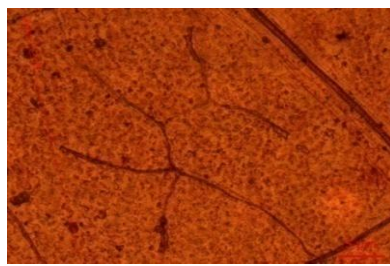
S. calva DC. Margin



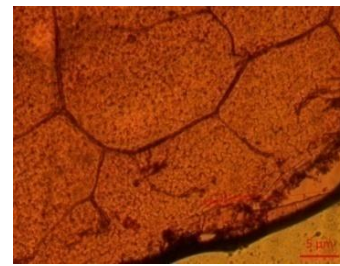
S. acmella Murr. middle portion



S. acmella margin



S. radicans Jacq. Leaf middle portion



S. radicans Jacq. Leaf margin.

Details of major leaf architectural features												
	Lamina				Margin	Major venation pattern	Gl. position	Pri. vein	Sec. vein	Angle of divergence	Intersecondary vein	
	Length & width	Shape	Apex	Base								
1. <i>Spilanthus calva</i> DC.	6-8*3-4cm.	Ovate	Acute	Acute	Central regular	Pinnate simple craspedodromous	Absent	Massive	Moderate straight	Acute nearly uniform	Absent	
2. <i>Spilanthus acmella</i> Murr	4-6*2-3cm.	Ovate	Acute	Obtuse	Serrate regular	Pinnate simple craspedodromous	Absent	Massive	Moderate straight	Acute nearly uniform	Absent	
3. <i>S. acmella</i> Murr. middle portion	3-6*2-3cm.	Ovate	Acute	Acute	Entire	Pinnate simple craspedodromous	Absent	Massive	Moderate straight	Acute nearly uniform	Absent	

	Tertiary vein	Predominant origin angle	Higher order of venation	Quaternary vein	Quinary vein	Areoles			Veinlet	Element	Apical	Pri. Vein
						Dev.	Shape	Arrangement				
1. <i>Spilanthus calva</i> DC.	Random reticulate	AA (Acute)	7*	Thick orthogonal	Thick	Well developed	Quadrangular pentagonal	Random medium	Simple Linear branched	N. glandular	Setaceous	Cen. Direct
2. <i>Spilanthus acmella</i> Murr	Admedial ramified	AA (Acute)	7*	Thick orthogonal	Thick	Well developed	Quadrangular pentagonal	Random medium	Simple Linear Curved branched	N. glandular	Setaceous	Cen. Deflected
3. <i>S. acmella</i> Murr. middle portion	Admedial ramified	AA (Acute)	7*	Thick orthogonal	Thick	Well developed	Quadrangular pentagonal	Random medium	Simple Linear branched	N.Gl.	Setaceous	Cen. Direct

4. RESULT AND DISCUSSION

Even in absence of flower, though major venation is similar, species can identified by minor venation.

5. CONCLUSION

The investigated species can be diagnosed and separated on the basis of shape of the lamina, basic venation pattern, nature of primary vein, sec. vein patterns and it's divergence angle, angle of origin of tertiary veins, presence and absence of per current and their arrangement, quarternary veins, highest vein order, areole development and tooth architectural features.

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