



International Journal of PharmTech Research CODEN (USA): IJPRIF ISSN : 0974-4304 Vol.3, No.3,pp 1346-1349, July-Sept 2011

# Phytochemical and TLC Studies of Ethanolic Extract of *Sesbania grandiflora* (Fabaceae).

Avalaskar A.N.<sup>1\*</sup>, Itankar .P.R.<sup>2</sup>, Joshi V.S.<sup>1</sup>, Agrawal.M.<sup>2</sup>, Vyas J.<sup>2</sup>

<sup>1</sup>AISSMS College of Pharmacy, Kennedy Road Pune -01,(Maharashtra) India.

<sup>2</sup>University Department of Pharmaceutical Sciences, R.T.M Nagpur University, Nagpur-440033 (Maharashtra) India.

# Corres.author: amruta\_udps@rediffmail.com Phone.no : 09226191170

**Abstract:** The aerial parts (fresh leaves, pods, flowers) of the plant Sesbania grandiflora were collected powdered and the powder was initially defatted with petroleum ether (60-80°C). The marc was further macerated with ethanol for 72 hrs. The extract was preserved at room temperature for further studies.Preliminary Phytochemical screening was done which revealed the presence of sugars, tannins, polyphenols, flavonoids, aminoacids, triterpenoids, saponins, flavoniods.The TLC techniques were used for qualitative determination of possible number of components from the ethanolic extract . A solvent system was optimized in order to get maximum separation on plate and presence of various phytochemicals present was confirmed by the use of different spraying reagents **Keywords:** *Sesbania grandiflora, TLC of Sesbania grandiflora.* 

## Introduction

Sesbania grandiflora (Fabaceae), commonly known as Agati is a widely available, fast growing plant, generally popular for its animal fodder use <sup>1,2</sup>. Traditionally the plant has been used for the treatment of head ache, in fever, as a tonic, in catarrh, as an astringent etc<sup>3,4,5,6</sup>. The leaves of the plant have been reported to have anxiolytic and anticonvulsant effect while the flowers have been reported to have anti microbial activity<sup>7</sup>. It shows hypolipemic, anti ulcer and anti-inflammatory properties as well.

## **Experimental**

## Materials and Method:

The aerial parts (fresh leaves, pods, flowers) of the plant Sesbania grandiflora were collected from Nagpur

district; Maharashtra, India in the month of August-September (flowering season) and the plant was identified and authenticated from the botany department R.T.M Nagpur University, Nagpur. The voucher specimen of the plant (no.9088) has been kept in the department of botany for further references.

## **Ethanolic Extract:**

The powder was initially defatted with petroleum ether (60-80°C). The marc was further macerated with ethanol for 72 hrs. The extract was preserved at room temperature for further studies.

## **Preliminary Phytochemical Screening**

The plants may be considered as biosynthetic laboratory for multitude of compounds like alkaloids, glycosides, volatile oils, tannins, saponins, flavonoids etc. These compounds are termed as secondary metabolites and are responsible for therapeutic effects. To check the presence or absence of primary and secondary metabolites all the extracts were subjected to battery of chemical tests<sup>8</sup>.

#### Thin Layer Chromatography of Ethanolic extract :

Ethanolic extract of *Sesbania grandiflora* was subjected to thin layer chromatographic studies, to find out the probable number of compounds present in them.

#### **Preparation of the plates:**

The adsorbent used for thin layer chromatography was silica gel G. The precoated TLC plates (Merk, Germany) were heated in an oven for 30 minutes at 110°C for activation.  $5\mu$ l of the test sample (1mg/ml in alcohol) was applied in the form of bands using LINOMAT IV applicator. Four bands using different volumes in increasing order were applied.

#### **Developing solvent system**

A number of developing solvent systems were tried <sup>9,10</sup>, but the satisfactory resolution was obtained in the solvent systems mentioned in table. After development of plates, they were air-dried and numbers of spots were noted & Rf values were calculated. Spots were visualized by spraying with various spraying reagents to find different compounds present in the extract. Aluminum chloride(10 %in methanol) for flavonoids, ninhydrin solution (2% in methanol) for amino acids, amines and amino sugars, ferric chloride reagent, sulphuric acid reagent (5% in methanol)<sup>9</sup>.

Test extract : *Sesbania grandiflor*a ethanolic extract Solvent system : Ethyl acetate: Methanol: Water (5 : 1.1 : 1)

#### **HPTLC study:**

HPTLC precoated, silica gel G 60 F25 (Merck, Germany) plates were used for application of sample.

A small quantity of extract was dissolved in methanol and sample was applied in precoated plate with the help of Linomat IV applicator. Solvent system optimized for TLC study was chosen for HPTLC study.

#### **Chromatographic conditions:**

Following are the chromatographic conditions required to get an effective resolutions by selected mobile phase.

Stationary phase	:	HPTLC			
precoated, silica gel G 60 F <sub>254</sub> (Merck, Germany)					
Size	:	10 x 10 cm			
Developing chamber	:	Twin trough glass			
chamber					
Mode of application	:	Band			
Band size	:	5 mm			
Separation technique	:	Ascending			
Temperature	:	$20 \pm 5^{\circ}C$			
Saturation time	:	30 min			
Scanning wavelength	:	254 nm / 366 nm			
Scanning mode	: Absorbance/Reflectance				

## **Result and Discussion**

The preliminary phytochemical screening of the etanolic extract revealed the presence of chemical constituents like Steroids, Tannins, Flavonoids, Carbohydrates, Saponins, Amino acids which was confirmed by performing TLC separation technique and different spraying reagents. Presence of sterols and triterpenoids was detected visually by spraying with 5% Sulphuric acid in methanol, Tannins showed color reaction by ferric chloride solution where as flavonoids were confirmed by yellow fluorescence on spraying with aluminium trichloride solution. Amino acids were confirmed purple color on spraying with ninhydrin solution.

Sr.	. Plant Test/Reagent		S.grandiflora		
No.	constituent	i est Keagent	Pet ether extract	Ethanolic extract	
1.	Steroids	Salkowski reaction Liebermann-Burchard test	+ _	+ +	
2.	Alkaloids	Dragendorff's reagent Mayer's reagent Hager's reagent Wagner's reagent	- - - -	_ _ _ _	
3.	Tannins	Ferric chloride test Lead acetate test		+ +	
4.	Flavonoids	Shinoda test	-	+	
5.	Carbohydrates	Molish's test Fehling's test	+ _	+ +	
6.	Amino acids	Ninhydrin test	_	+	
7.	Saponins	Foam test	_	+	

Test extract	Solvent system	Number of Spots	Rf values
For S. grandiflora alcoholic extract	Ethyl acetate: Methanol: Water 5: 1.1 : 1	12	0.09, 0.18, 0.29, 0.36, 0.47, 0.52, 0.58, 0.66, 0.75,0.79, 0.84, 0.91.

Sulphuric acid

UV light at 366 nm

Aluminum chloride

Ferric chloride











m at 256 nm

Chromatogram at 366 nm

## **References:**

- Indian Medicinal Plants Vaidyaratnam P.S Varier's Arya Vaidya Sala, Kottakal, 1996, Vol.5 p.116 – 117.
- 2. The Wealth of India, Council of Scientific and Industrial Research, New Delhi, Vol IX, p.295-298.
- 3. Chopra R.N., Nayar S.L., Chopra J.C., "Glossary of Indian Medicinal Plants", p. 226
- Kirtikar K.R., Basu B.D., "Indian Medicinal Plants", Periodical experts, Delhi, 1998, Vol. III p.1905.
- 5. Ugemuge N.R., "Flora of Nagpur District", First Edition, p. 283.

- 6. V.N. Naik & Associates, "Flora of Maharashtra", 1<sup>st</sup> edition, Vol III, p.668.
- Krasaekoopt W. and Kongkarchanatip A., "Antimicrobial properties of Thai Traditional Flower Vegetable Extracts", A.U J.T. 9(2): 71 – 74 (Oct – 2005).
- 8. Khandelwal K., "Practical Pharmacognosy", Nirali Publication, 2<sup>nd</sup> edition, p. 183–184.
- Stahl E., "Thin Layer Chromatography, A Laboratory Handbook", Spring International Student Edition, 1969, p. 855 – 858, 883, 889, 904.
- Mukherjee P. K., "Quality control of Herbal Drugs, An approach to evaluation of Botanicals, 2002, p. 555-558.

\*\*\*\*