PATNA WOMEN'S COLLEGE 1940

IRIS
Journal for Young Scientists
ISSN 2278 – 618X **(Print)**
ISSN 2278 – 6384 **(Online)**

http://www.patnawomenscollege.in/journal

Phenol profile in *Tephrosia purpurea* and their possible pharmacognistic implication

• **Aditi** • **Ghousia Karim**
• **Isha Gaurav**

Received : November 2014
Accepted : March 2015
Corresponding Author : Isha Gaurav

Abstract : *Tephrosia purpurea is a common weed constituting several phytochemicals of great significance. This preliminary study conducted to study presence of phenol as an important phytochemical compound having pharmacognstic implication has been carried out Chromatographic paper separation has been done to observe phenol profiling. The different coloured spot observed confirms presence of phenol. The Rf value of the sample matched the standard Rf values of Phenolic compound. The profile detected has been found to be Coumarin, Flavonoid glycoside and Phenolic glycoside. Based on this result it can suggested that Tephrosia purpurea is a common weed with pharmacognstic potential and can be an ideal test system for further studies.*

Keywords: *Tephrosia purpurea, Coumarin, Flavonoid glycoside, Phenolic glycoside.*

Aditi
B.Sc. III year, Botany (Hons.),
Session : 2012-2015, Patna Women's College,
Patna University, Patna, Bihar, India

Ghousia Karim
B.Sc. III year, Botany (Hons.),
Session : 2012-2015, Patna Women's College,
Patna University, Patna, Bihar, India

Isha Gaurav
Lecturer, Deptt. of Botany,
Patna Women's College, Bailey Road,
Patna – 800 001, Bihar, India.
E-mail :

Introduction:

Phenol. also known as carbolic acid, is an aromatic organic compound with the molecular formula C_6H_5OH. It is a white crystalline solid which is volatile. The molecule consists of a phenyl group ($-C_6H_s$) bonded to a hydroxyl group (-OH) (Smith and March, 2007). *Tephrosia purpurea* is a small shrub that grows up to 1.5 meters tall. It has bi-pinnate leaves with 7 to 15 leaflets, the terminal leaflet being solitary. The leaflets are 10 to 32 mm long and 5 to 11 mm wide (Dal Wadi et al., 2014). Recent studies in Ayurveda have reported that the plant is digestible, anthelmintic, alexiteric, antipyretic and cures diseases of liver, spleen, heart, blood, tumours, ulcers, leprosy, and asthma, Sharma (1983). According to Unani system of medicine, its root is diuretic, enriches blood, cures diarrhoea, useful in bronchitis, asthma, liver disorders, and in spleen diseases (Arnold and Harry, 1968). Leaves are tonic for intestines and used as an appetizer. It is used in the treatment of piles, syphilis and gonorrhea. Leaves are also used as fodder.

Materials and Methods:

Leaves of *Tephrosia purpurea* were collected from Walmi, Phulwari Sharif, Patna .About 100 gms of the leaves were macerated with methanol and

distilled water in 1: 1 to make a methanolic extract. Extract was heated with a pinch of bone charcoal in it for separation of pigments from it. Chromatographic separation was done in chromatography chamber. Two solvents were used for this separation. The composition of the solvent is described below:

1. **n-Butanol + Acetic acid +Water : Composition :**

   Volume of 500 ml was made in 4:1:5

   n – Butanol = 200 ml

   Acetic acid = 50 ml

   Distilled water = 250 ml

2. **15% acetic acid + BAW :**

   Composition: Volume was made for 250 ml

   For 15% Acetic acid:

   Acetic acid = 37.5 ml

   Distilled water = 212.5 ml

BAW was made in same volume as of mentioned earlier.

Two different chambers were saturated with above mentioned solvents for 12 -18 hours. Strips were cut out of chromatography paper of particular size. Extracts were loaded with 3 cm above the initial point of the strip. Both the chambers were left undisturbed for 4 to 5 hours. After 5 hours, strips were taken out and different coloured spots were marked. Rf values were taken from it and were compared to that of standard values of phenolic compounds to determine. Such observations were observed with spots when seen in Ultraviolet cabinet and Ammonia vapour.

Results and Discussion:

The present study shows following results

Detection of definite spots on paper :

Different spots were marked on paper has been shown in Fig 1.

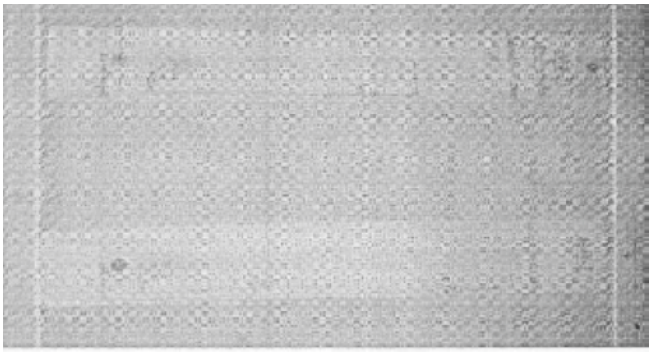

Fig 1. Detection of phenolic spots on paper

The details of different coloured spots A, B, and C has been presented in Table 1, Table 2 and Table 3.

Table 1. Types of colour of the spots separated with BAW Solvent

Sl. No.	Spot No.	Colour			
		Visible light	U.V light		Ammonia vapour
			Short wavelength	Long wavelength	
1.	A	Brown	Dull brown	yellow	Bright yellow
2.	B	Brown	Dull brown	Yellow	Pale yellow green
3.	C	Dull brown	Brown	Dull brown	Unchanged

(Bright yellow indicated Coumarin, Pale yellow indicated Flavonoid glycoside, Unchanged indicated Phenolic glycoside).

Table 2. Colour change of spots separated with 15% Acetic acid & BAW

Sl. No.	Spot No.	Colour		
		Visible light	U.V light	Ammonium vapour
1.	A	Brown	Green	Pale Yellow green
2.	B	Yellow	Brown	Pale yellow green

(Bright yellow indicated Coumarin, Pale yellow indicated Flavonoid glycoside, Unchanged indicated Phenolic glycoside).

Table 3. Comparison showing standard Rf values and the phenol spots

Phenol profile	Standard Rf value	Observed Rf value
Coumarin	0.2	0.115
Flavonoid glycoside	0.6	0.447
Phenolic glycoside	0.9	0.815

On scanning of data described above it appeared that phenolic separation was more prevalent in the BAW solvent compared to other solvents.

Conclusion:

The study revealed that the plant *Tephrosia purpurea* contains biologically active compounds. These compounds may have pharmacological significance which is yet to be investigated.

Acknowledgements:

We are grateful to Dr. Sister Doris D'Souza A.C., former Principal, Patna Women's College and the Research committee for providing facilities and financial support under the Basic Scientific Research (BSR) scheme.

References:

Arnold, M.D. and Harry L. (1968). *Poisonous Plant of Hawaii*. Tokyo, Japan: Charles E. Tuttle Co. pp. 57-58.

Dalwadi P.P., Patel J.L. and Patani P.V. (2014). *Tephrosia purpurea* Linn (Sharpunkha, Wild Indigo) : A Review on Phytochemistry and Pharmacological Studies. *India J. Pharma. Biol. Res*. 2(1) : 108-121.

Sharma P.V. (1983). *Dravya Guna Vigayana*, 2:554-556.

Smith B.M., March J. (2007). *Advanced Organic Chemistry Reaction, Mechanisms and Structure.* (6th Edition), Wiley-Interscience A John Wiley and Sons, INC., Publication, p.2190.