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CHEMICAL EXAMINATION OF THE STEMS OF *PHASEOLUS TRILOBUS* AIT

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ABSTARCT

Phaseolus trilobus Ait. belongs to family Leguminosae which is commonly known as 'Mugani' in Hindi. Its fruit are used for the treatment of fever, inflammation, burning sensation,and piles. The juice of the plant is used for the treatment of rat-bite fever. The leaves are used in cataplasms for weak eyes. Chemical examination of the stems of the plant were found to consist of five sugars *viz* D-glucose, D-xylose , D-galactose, L-rhamnose and D- arabinose along with five amino acids β-Alanine, Alanine, Lucine, γ- Aminobutyric acid and Valine.

Key words: *Phaseolus trilobus* Ait**,** Leguminosae, Stems, Amino acids and Carbohydrates.

INTRODUCTION

Phaseolus trilobus Ait belongs to family Leguminosae, which is commonly known as 'Mugani' in Hindi[1-2]. Its fruits are used for the treatment of fever, inflammation, burning sensation, and piles. The juice of the plant is used for the treatment of rat-bite fever. The leaves are used in cataplasms for weak eyes.

EXPERIMENTAL

Plant material

The stems of the plant were collected locally around Sagar region and were taxonomically authenticated by taxonomist, Department of Botany, Dr. H. S. Gour Central University, Sagar (M.P.) India. A voucher specimen has been deposited in the Natural Products Laboratory, Department of Chemistry of this university.

Extraction and isolation

Air dried and powdered stems (2 Kg) of the plant were extracted with methanol in a Soxhlet apparatus for 76 hours. The methanolic extract of stems of the plant was concentrated and further successively partitioned with chloroform, ethyl acetate and acetone. The acetone soluble fraction was concentrated under reduced pressure to yield brown viscous mass (1.25 g), which was subjected to TLC examination using silica gel-G, gave two spots indicating it to be mixture of two compounds A and B, which were separated and purified by column chromatography over silica gel column using $CHCl_3$: MeOH as

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solvents. Compound B was found in very small quantity, therefore it was not possible to examine it further phytochemicaly. Compound A was crystallized from methanol and on acid hydrolysis with 10% ethanolic H_2SO_4 yielded aglycone and sugar moieties and filtered. The study of the aglycone is under process of investigation. The hydrosylate after removal of the solvent was neutralized with $BaCO_3$ and $BaSO_4$ was filtered off. The filtrate was concentrated under reduced pressure and subjected to paper chromatography examination on Whatman filter paper No. 1 using following solvent systems and aniline hydrogen phthalate as detecting agent.

(1) *n*-Butanol : Acetic acid : Water (4 : 1 : 5 v/v)[3]

(2) s-Collidine

The identity of test sugars were confirmed by comparision of their R_f values with those of authentic sugars, which are reported in Table 1 and 2.

Table 1: Solvent system (1): n Butanol : Acetic Acid : Water (4 : 1 : 5 v/v)

S. No.	Sugar	R_f reported[3]	R_f found
1	D-galactose	0.16	0.17
2	D-xylose	0.28	0.26
3	D-glucose	0.18	0.19
4	D-arabinose	0.21	0.22
5	L-rhamnose	0.37	0.35

Table 2: Solvent system (2): s-Collidine

S. No.	Sugar	R_f reported[3]	R_f found
1	D-galactose	0.34	0.33
2	D-xylose	0.50	0.51
3	D-glucose	0.39	0.38
4	D-arabinose	0.43	0.42
5	L-rhamnose	0.59	0.60

Identification of amino acids

For the identification of amino acid composition, the stem (2 Kg) of the plant material was refluxed with 6 N HCl for two days. The contents were cooled and filtered. The filtrate was concentrated to dryness till acid was removed and finally dissolved in 15% isopropanol. The solution thus obtained above was subjected to paper chromatography examination using solvent system *n* B : A : W (4 : 1 : 5) as solvent and Ninhydrin as detecting agent. The identity of amino acids was confirmed by co-chromatography with authentic samples. The results are reported in (Table 3).

Table 3:

S. No.	Amino acid	R_f reported	R_f observed
1	β - Alanine	0.32	0.30
2	Alanine	0.33	0.31

Cont…

S. No.	Amino acid	R_f reported	R_f observed
3	Lucine	0.68	0.66
4	γ-Aminobutyric acid	0.39	0.38
5	Valine	0.53	0.52

RESULTS AND DISCUSSION

The results reported in Table 1 and 2 showed that five sugars D-glucose, D-xylose and D-galactose, L-rhamnose, D-arabinose were found in *n* B : A : W (4 : 1 : 5) and *s*-collidine as solvents. The results reported in Table 3 revealed five amino acids β-Alanine, Alanine, Leucine, γ- Aminobutyric acid and Valine, which were found in the stems of the plant *Phaseolus trilobus* Ait.

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