

## NOTES

**Chemical Study of the Seeds of *Dolichos biflorus***

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Chemical study of the seeds of *Dolichos biflorus* has been made. Various sugars and amino acids were separated and identified using modern techniques.

*Dolichos biflorus* Linn<sup>1</sup> (N.O. Leguminosae) is also known as horse gram and *kulthi* in Hindi. It is a native of Southeast Asia, throughout the tropics, India, Malaysia, and West Indies. Fruits contain 5–7 seeds, 3–6 mm long, brown, red or black in colour. Seed extract seems to be useful for the patients suffering from urinary or kidney troubles. Seeds are also used as conc. food for the cattle and horses.

The defatted seeds were found to have around 23–24% proteins which on hydrolysis gave glycine, alanine, serine, histidine, aspartic acid and cystine. Water-soluble fraction of the seeds on paper chromatography revealed the presence of D-glucose, D-galactose, L-rhamnose, D-arabinose and L-ascorbic acid.

**Part I**

The seeds of *Dolichos biflorus* were macerated with 10% sodium chloride solution when the proteins precipitated out and separated by filtration. It was hydrolysed with 6N HCl for ca. 18–20 h at 140°C and the content passed over a column of animal charcoal and evaporated to dryness. Residue was dissolved in 10% isopropanol and subjected to paper chromatography using:

- (i) *n*-butanol containing NH<sub>3</sub>,
- (ii) phenol containing NH<sub>3</sub>.

Observations are given in Table-1.

TABLE-1  
SOLVENT SYSTEM

S. No.	<i>n</i> -butanol containing NH <sub>3</sub>		Phenol containing NH <sub>3</sub>		Amino acids identified
	R <sub>f</sub> reported <sup>2</sup>	R <sub>f</sub> found	R <sub>f</sub> reported <sup>2</sup>	R <sub>f</sub> found	
1.	0.410	0.420	0.400	0.421	Glycine
2.	0.550	0.541	0.540	0.531	Alanine
3.	0.350	0.340	0.330	0.332	Serine
4.	0.700	0.710	0.680	0.682	Histidine
5.	0.130	0.124	0.240	0.240	Cystine
6.	0.120	0.122	0.020	0.190	Aspartic acid

## Part II

The defatted seeds were extracted with water and concentrated to dark brown mass. It was found to respond to positive tests for sugars which were identified by paper chromatography using (i) *n*-butanol : acetic acid (g) : water (ii) *n*-butanol : ethanol : water : ammonia as solvent system and aniline hydrogen phthalate as spraying reagent. Observations are given in Table-2:

TABLE-2  
SOLVENT SYSTEM

S. No.	<i>n</i> -butanol : acetic-acid : water (4 : 1 : 5)		<i>n</i> -butanol : ethanol : water : Ammonia (45 : 5 : 49 : 1)		Sugars identified
	R <sub>f</sub> reported <sup>3</sup>	R <sub>f</sub> found	R <sub>f</sub> reported <sup>3</sup>	R <sub>f</sub> found	
1.	0.180	0.182	0.105	0.110	D-Glucose
2.	0.160	0.154	0.090	0.101	D-Galactose
3.	0.370	0.380	2.285	0.282	L-Rhamnose
4.	0.210	0.220	—	—	D. Arabinose
5.	0.380	0.382	—	—	L-Ascorbic acid

Chemical study of the seeds of *Dolichos biflorus* by using various techniques reveals the presence of the amino acids *viz.*, glycine, alanine, serine, cystine and aspartic acid as well as the various sugars like D-glucose, D-galactose, L-rhamnose, D-arabinose and ascorbic acid. Identification of the amino acids could be also made through TLC using *n*-butanol : acetic acid : water (6 : 2 : 2) and 96% ethanol : water (63 : 37). Total amino acids were estimated by following Lee *et al.* method.<sup>4</sup>

## ACKNOWLEDGEMENT

Authors are thankful to the Deptt. of Chemistry of the R.D. Govt. P.G. College, Mandla for providing necessary facilities.

## REFERENCES

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(Received: 11 August 1997; Accepted: 22 September 1997)

AJC-1364