

NOTE**Chemical Investigations of Pods of *Acacia concinna* DC**

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In the present work, the chemical investigations of pods of *Acacia concinna* DC is reported.

*Acacia concinna*¹⁻³ DC belongs to the natural order Leguminosae which is commonly known as "Ritha" in Hindi. It is found abundantly in tropical jungles throughout India, especially in the Deccan. The pods are aperient, expectorant and emetic. It is extensively used as detergent. The leaves are used in biliousness. The present paper deals with chemical examinations of the fat, carbohydrate and amino acids of the pods of the plant and found to contain palmitic, stearic, linoleic, oleic acid as fatty acids, D-arabinose, L-rhamnose, lactose, raffinose, D-galactose, maltose, D-fructose and D-glucose as sugars and alanine, lycine, valine, aspartic acid, glycine, leucine, glutamine and cysteine as amino acids.

About 2 kg of air-dried and powdered pods of this plant were exhaustively extracted with petroleum ether (60°–80°C) in a Soxhlet extractor for 65–70 h. The petroleum ether extract (3 L) was concentrated under reduced pressure and then kept in refrigerator overnight. Fat (12 g) obtained from petroleum ether (60°–80°C) extract of this plant was completely saponified by refluxing with alcoholic potassium hydroxide and the soap so obtained was dissolved in water. The unsaponified matter was separated by shaking (soap solution) continuously with ether. Solvent was distilled off, when a green compound (I) was obtained, which was separated and studied separately.

Examination of Fatty Acid: Fatty acids were separated from soap solution by addition of conc. H₂SO₄ and extracted with ether. The mixed fatty acids (10.00 g), S.V. 204.2, S.E. 270.6, I.V. 28.80, obtained by distillation of ether, were separated into solid and liquid fatty acids by Twitchell's lead salt alcohol process⁴ as modified by Hilditch and co-workers⁵. Methyl esters of solid acids (8.00 g), I.V. 4.79, S.V. 196.00, S.E. 195.9, and liquid acids (5.98 gms), I.V. 65.79, S.V. 177.02, S.E. 319.3, were prepared in the usual way. Methyl esters were fractionally distilled and identified by their saponification values and iodine values. The identity of these methyl esters was further confirmed by determining their melting points and mixed melting points along with their co-PC and co-TLC with authentic samples. Results are recorded in the following table:

Acid	Weight of methyl ester	Weight of acid	% of acids in mixed acid
Palmitic	6.39	5.11	28.00
Stearic	9.78	8.49	44.17
Linoleic	5.89	5.25	26.99
Oleic	0.60	0.48	2.46

Study of Compound (I): The compound (I) was refluxed with a small quantity of calcium carbonate in distilled water (150 mL) for 6–7 h on a water bath. The reaction mixture was decanted. This process was repeated several times with distilled water. The solution of lead tetraacetate (10%) was added to complete the precipitation of the combined aqueous extract obtained after decantation. The solution was filtered and made alkaline with ammonia and H₂S gas bubbled through the filtrate to remove the excess of lead acetate as lead sulphide. The neutral solution of the filtrate obtained above was concentrated under reduced pressure to give a viscous mass, which was subjected to paper chromatography examination on Whatmann filter paper no. 1 using B : A : W (4 : 1 : 5) as solvent system and aniline hydrogen phthalate as detecting reagent. The following sugars were confirmed by comparison of their R_f values with those of authentic sugars which are recorded in Table-1.

TABLE-1
SOLVENT SYSTEM (I) n-BUTANOL : ACETIC ACID : WATER⁶ [4 : 1 : 5 v/v]

S. No.	Sugar	R _f found	R _f reported
1.	D-Arabinose	0.19	0.21
2.	L-Rhamnose	0.35	0.37
3.	Lactose	0.07	0.09
4.	Raffinose	0.03	0.05
5.	D-Galactose	0.14	0.16
6.	Maltose	0.10	0.11
7.	D-Fructose	0.24	0.23
8.	D-Glucose	0.17	0.18

Identification of Amino Acids: For determining the amino acid composition the pods (20 g) of the plant were hydrolysed with 6 N HCl for about 30 h at 115°C. The hydrolysate was diluted with 50 mL water, filtered and concentrated to dryness. The excess of acid was removed by repeated evaporation. The solution was subjected to PC and co-PC with authentic specimen to confirm the identity of amino acids. The results were recorded in Table-2.

TABLE-2

S.No.	Amino acid identified	R _f reported ^{7, 8}	R _f observed
1.	Alanine	0.61	0.62
2.	Lysine	0.48	0.47
3.	Valine	0.41	0.43
4.	Aspartic Acid	0.44	0.42
5.	Glycine	0.55	0.56
6.	Leucine	0.76	0.78
7.	Histidine	0.79	0.80
8.	Glutamine	0.51	0.52
9.	Cysteine	0.28	0.30

The quantitative estimations of amino acids were carried out by photometric method⁷. The results were recorded in Table-3.

TABLE-3

S.No.	Amino acid identified	Quantity (expressed in mg)
1.	Alanine	1.36
2.	Lysine	2.52
3.	Valine	2.88
4.	Aspartic Acid	2.31
5.	Glycine	2.78
6.	Leucine	1.54
7.	Histidine	0.97
8.	Glutamine	1.83
9.	Cysteine	1.62

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