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Research Article

Chemical Examination of the Seeds of *Pongamia pinnata* (L.) Pierre

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ABSTARCT

The present paper deals with chemical examination of defatted seeds of the plant *Pongamia pinnata* (L.) Pierre. Which has been found to consist of five sugars viz D-mannose , D-glucose, D-xylose , Raffinose , L-fructose along with five amino acids, Alanine, Phenylalanine, Tyrosine acid , Tryptophane, and Threonine .

Keywords: *Pongamia pinnata* (L.) Pierre, Leguminosae, seeds, amino acids and sugars.

INTRODUCTION

Pongamia pinnata (L.) Pierre. synonyms *Pongamia glabra* Vent., *Millettia pinnata* commonly known as 'Karanj' in Hindi.It belongs to family Leguminosae it is found in India and widely distributed along Southeast Asia to the West Pacific and North Australia[1-5].On the basis of traditional systems of medicines, such as Ayurveda and Unani, it is used for anti-inflammatory, anti-plasmodial , anti-lipidperoxidative[6], hypoglycemic[7], anti-hyperammonemic[8] ,anti-diarrhoeal[9],and antioxidant[10] activity,. Its oil from seeds is used for the treatment of skin diseases, herpes, scabies, rheumatism, cutaneous affections. Fresh barks of this plant is used internally in bleeding piles. The juices of the roots is used for closing fistulous sores and for cleaning foul ulcers and given internally with equal quantities of coconut milk and lime water for gonor. The leaves are used in form of a poultice applied to ulcers infested with worms[11].

EXPERIMENTAL

Plant Material: The seeds 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 (Bot/Her/B/2657) has been deposited in the Natural Products Laboratory, Department of Chemistry of this university.

Extraction and isolation*:* Air dried and powdered seeds (2.5Kg) of the plant were extracted with petroleum ether in a Soxhlet apparatus for 74 hours. The defatted plant material was successively partitioned with chloroform, ethyl acetate and acetone and methanol.

The acetone soluble fraction was concentrated under reduced pressure to give 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 solvents. Compound B was found in very small quantity, therefore it was not possible to examine it further phytochemically. 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.

- n-Butanol : Acetic acid : Water (4 : 1 : 5 v/v)
- *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.

Identification of Amino Acids: For the identification of amino acid composition, the defatted seeds (2.5 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 *s*-Collidine 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 1: Solvent system (1): n Butanol : Acetic Acid : Water (4 : 1 : 5 v/v)

S. No.	Sugar	R_f reported[12]	R_f found
1	D-glucose	0.18	0.19
2	D-xylose	0.28	0.26
3	D-mannose	0.20	0.21
4	Raffinose	0.05	0.06
5	L-fructose	0.27	0.26

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

S. No.	Sugar	R_f reported[12]	R_f found
1	D-glucose	0.39	0.38
2	D-xylose	0.50	0.52
3	D-mannose	0.46	0.47
4	Raffinose	0.20	0.22
5	L-fructose	0.44	0.45

Table: 3

S. No.	Amino acid	R_f reported[12]	R_f observed
1	Alanine	0.29	0.30
2	Tyrosine	0.64	0.65
3	Phenylalanine	0.58	0.59
4	Threonine	0.30	0.29
5	Tryptophane	0.65	0.64

RESULTS AND DISCUSSION

The results reported in Table 1 and 2 showed that five sugars *D-mannose, D-glucose, D-xylose, Raffinose, L-fructose* 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 *Alanine, Phenylalanine, Tyrosine acid and Tryptophane, Threonine*, which were found in the seeds of the plant *Pongamia pinnata* (L.) Pierre.

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