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Study of Amino Acids and Carbohydrates from The leaves and seeds of of Leuceana Leucocephala

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ABSTRACT

An Indian Traditional medicinal plant leuceana leucocephala, its Roxb. Commonly called subaboora belongs to mfamily leguminosace. Ail Parts of the Plant are medicinally important. They are uned in dropsy, anasaraca, urticaria, cholera, dysentery, etc. Detection of amino acids from two different extracts was carried out using paper chormatorgraphic technique. Both extracts showed presence of different amino acids. These were compared with the standards. Presence of carbohydrates was performed using paper chromatographic techniques and compared with the standers.

Keywords: Leucaena Leucocephala, Amino Acids, Carbohydrates, Paper Chromatography, Solvent.

I. INTRODUCTION

In Ayurveda, the Indian indigenous system of medicine, has been an integral part of Indian calture. For raising Ayurvedic system of herbal medicine[1] to world, it is essential that each component or the factor of the system should be critically studied and made perfect. The Treatments ofr various diseases are reported in Ayurvedic system[2] of medicine. Medicinally important natural products are of immense use[2].

Leucaena leucocephala in pronounced as lossan – Naa and lockaeena means colored flowers L. leucocephala is commonly called as Subaboore plant flower is yellow in long peduncle. Small plant glowbose head identified by national botanical survey, Allahabad having long comprised covering brown seeds occur in leguminosace family seeds used as medicine such as contraception and abortion[3]. Crussed seeds have been found to have galactomannan type of carbohydrate[4]. The presence of amino acids and carbohydrates have been studied and compared with the standards by using paper chromatographic techniques with different mobile phases.

Authentication of Leucana lecucocephala was done compering the herbarioum form national botanical survey of india Allahabad by NBSI/W/Tech/1987/185.

Determination of amino acids: Air shade dried material of leaves was used for experiment. Extracts were prepared by using different solvents such as acetone, ethanol and water. Whatmann filter paper No. I was used for ascending paper chromatography.

Various solvent systems were tried to screen out the best mobile phase for separation of the amino acids present in the plant material by paper chromatographic technique. Pyridine: isopropy alcohol : acetic acid : water (8:8:1:3) solvent system was found the suitable one and 11:6:3 isopropanol acetones and water in also gives good result.

The extracts were spotted on the chromatographic paper along with standard samples. The mobile phase was allowed to run to a certain height and the chromate-gram was dried at room temperature. Ninhydrine, a spraying reagent, (1.75 g of ninhydrine in 15 mL acetone) was sprayed on the chromatographic paper and dried at room temperature. The R_f values of the amino acids of the experimental samples were determined and compared with the standards (Table-1).

TABLE-1

PYRIDINE : ISOPROPYL ALCOHOL : ACETIC ACID : WATER (8:8:1:3)

Name of amino acids	**R_F Value for standard**	**R_f Value of plant extract**
	Amino acids	
B1	**B2**	
Butyric acid		0.570
0.580	0.570	
Ornithine		0.258
0.030	-	
Cysteine		0.550
0.540	-	
Histidine		0.570
0.600	-	
Arginine	0.140	-
0.150		
Serine		0.170
0.160	-	
Hydroxy proline		0.460
0.440	-	
Glutamic acid		0.230
0.240	-	
Proline		0.590
0.580	-	
Lysin		0.110
0.120	-	
Tryptamine	0.930	-
0.930		

B1 = Amino acids detected in water extract;

B2= Amino acids detected in acetone extract.

Determination of carbohydrates: The air shade dried powdered material of Leuceana Leucocephala (5g) was mixed with fixed quantity of calcium carbonate in distilled water (40 mL) and heated on twater bath for 2 h. The aqueous extract was separated by decantation and the powder was further heated three times with distilled water on water bath. The aqueous filtrate was combined and 1% w/v solution of lead acetate was added till the precipitate obtained. The solution was filtered, small quantity of ammonia was then added to the filtrate and then H_2S gas was bubbled through the filtrate in order to remove lead ~~acetate as lead sulfide was remove~~d by filtration. The neutral solution fo filtrate obtained was concen-trated over water bath under reduced pressure to a gummy mass of carbohydrates[3] .

Whatmann filter paper No. I was used for ascending paper chromatograph. Various solvent systems were tried to screen out the best mobile phase for separation of the carbo-hydrateds present in the plant material by paper chromatographic technique. Isopropy I alcohol: Pyridine : acetic acid: water (8:8:1:3) [3,4] solvent system was found the suitable. Spraying reagent in anilinhydrogen phthalate.

The extracts were spotted on the chromatographic paper along with standard simples. The mobile phase was allowed to run to a cartain height and the chromate-gram was dried at room temperature. The

specific spraying reagent, aniline-hydrogen phthalate[5] was used to develop the chromatogram. The R_f values of authentic sugars (Table-2).

TABLE-2

ISOPROPANOL : PYRIDINE: ACETIC ACID : WATER (8:8:1:3)

Carbohydrates	R_f Value for Standard
R_f value for plant sample	
Mannose	0.15
0.19	
Galactose	0.17
0.18	
Glucose	0.14
0.15	

Study of plant species for different medicinal resources is creating a measuring impact on today's era. The rapid development of different analytical techniques in recent years had enabled investigators to talk some of the most challenging and fundamental problems in plant study and herbal medicines.

The amino acids are basis units of proteins and therefore their presence was detected in Leaves of Leuceana Leucocephala were found to be a rich source fo various amino acids[6] .The amino acid study showed the presence of butyric acid, ornithine, cysteine histidine, argentine, serine, hy droxy proliin, prolin, glutamic acid, lysine and tryptamine.

The detection of carbohydrate[7] showed the presence of glucose, galactose and mannose.

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