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The Chemical Studies of *Zizyphus jujuba*

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Zizyphus jujuba, Lamack, belonging to family Rhamnaceae and commonly known as 'Unab', is a cultivated deciduous tree growing upto 12 m in height [1]. Different parts of this plant have been used in indigenous system of medicine [2]. Although the fruit of this plant has been the subject of many studies in the past [3-10], it was interesting to note that no efforts have ever been made for the isolation and characterization of amino acids and proteins in the fruit. It was, therefore, thought worthwhile to investigate the fruit with this in mind. The present paper describes the chemical studies of aqueous extract of the fruit of *Z. jujuba* which afforded a number of sugars and amino acids. The separation of amino acids and sugars from the aqueous extract was achieved through cation exchange column chromatography (Amberlit IR-120 resin) and the presence of lactose, glucose, fructose and sucrose in the aqueous extract was revealed through descending paper chromatography. Asparagin monohydrochloride, methionin and glutamic acid were also indentified through the same technique. These amino acids are being reported for the first time in the fruit of *Z. jujuba*. The results are tabulated below.

Solvent system	R_f	R_f	Compounds identified
	Standard	Sample	
<i>n</i> -BuOH-EtOH-H ₂ O (4:1:5)	0.19	0.18	Lactose
	0.39	0.37	Sucrose
	0.49	0.47	Glucose
	0.55	0.55	Fructose
	0.25	0.25	Asparagin.HCl
	0.45	0.45	Methionin
	0.42	0.41	Glutamic acid

Furthermore, following vague hints in older literature that the fruit also contains 2.73–6.43% protein [11,12], the aqueous and ethanolic extracts were exhaustively studied to verify the presence of protein. The various techniques employed for this purpose included: (i) direct precipitation of proteins by the addition of salts (ammonium sulphate/sodium chloride), (ii) precipitation through complexing the proteins with heavy metals (barium chloride/lead carbonate), (iii) precipitation through the addition of organic solvents (acetone/alcohol), (iv) denaturation of proteins through change in pH of the extract (hydrochloric acid/sulphuric acid/phosotungstic acid) and (v) denaturation of proteins through repeated successive heating and cooling the aqueous and alcoholic extracts. However, all these attempts failed in revealing the presence of proteins. Thus, it is reasonable to conclude that the fruit lacks protein.

Key words: Rhamnaceae, *Z. jujuba*, Sugars, Amino acids.

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