

NOTE

Analysis of Carbohydrates from *Ficus benghalensis* (Linn.)

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Ficus benghalensis (L.) is a medicinal plant. In Ayurveda its use in diabetes is mentioned. The aerial root of the plant is used as a drug. Therefore the analysis of carbohydrates of aerial roots has been carried out using the technique of paper chromatography. This data provided some interesting results.

Key Words: *Ficus benghalensis*, Sorbose, Arabinose, Rhamnose, Glucose.

Ficus benghalensis or *F. indica* is an unusually shaped tree of the fig genus in the mulberry family (Moraceae) native to tropical Asia. *Ficus benghalensis* reaches a height up to 30 metres and spreads laterally indefinitely¹.

The genus *Ficus* belongs to the family Moraceae, is predominantly distributed in the tropics and subtropics. *Ficus benghalensis* L. is an ornamental plant named in Arabic "Teen Benghaly". It is useful in biliousness, ulcers, vomiting and vaginal complaints¹. The leaves are used in treatment of ulcers while the milky juice is aphrodisiac and tonic². The root is useful in gonorrhoea and syphilis². The *Ficus* compounds showed significant antioxidant effects which may be attributed to their polyphenolic nature. *Ficus benghalensis* bark has an antidiabetic action³⁻⁵.

Two solvent phases as mentioned below were tried for detection of carbohydrates using paper chromatographic technique. Solvent phase-2, i.e., iso-propyl alcohol, pyridine, distilled water and acetic acid was found to be more sensitive. It showed the presence of various sugars such as sorbose, arabinose, rhamnose, glucose, galactose, maltose and fructose.

The aerial roots were collected in the months of August-September and were shed dried. Powdered aerial roots (2 kg) were mixed with small quantity of CaCO₃ in distilled water (500 mL). It was refluxed for 2 h and decanted. The same procedure was repeated three times. The combined aqueous filtrate was treated with cold 10% w/v solution of lead acetate, till the precipitate was obtained. The solution was filtered and made alkaline using liquid NH₃. H₂S gas was bubbled through the filtrate in order to precipitate lead acetate in the form of lead sulphide. It was removed by filtration. The neutral solution of filtrate obtained was concentrated on a water bath under reduced pressure. A gummy mass was obtained, i.e., carbohydrate⁶.

Whatmann filter paper no. 1 was used for paper chromatography.

Solvent phase 1: *n*-butanol: Acetic acid : dist. H₂O (4 : 1 : 5)⁷

Solvent phase 2: Isopropyl alcohol : Pyridine : distilled H₂O : Acetic acid (8 : 8 : 4 : 1)⁸.

The paper was sprayed with aniline hydrogen phthalate reagent⁹ and heated to 100°C.

The aerial roots of *Ficus benghalensis* were found to be a rich source of various sugars. Almost all the sugars were found to be present by the paper chromatographic technique. It was observed that solvent phase 2 was more effective in detecting and separating sugar residues, but phase 1 and phase 2 showed the presence of different sugars. Phase 1 showed the presence of lactose, raffinose, sorbose, rhamnose and fructose while phase 2 showed the presence of sorbose, arabinose, rhamnose, glucose, galactose, maltose, fructose (Table-1).

TABLE-1

Sugars	Phase 1 Standard	Phase 1 Sample :: Aerial roots	Phase 2 Standard	Phase 2 Sample :: Aerial roots
D-Lactose	0.09	0.07	0.46	0.00
D-Raffinose	0.05	0.05	0.45	0.00
L-Sorbose	0.20	0.27	0.68	0.67
D-Arabinose	0.14	—	0.31	0.29
L-Rhamnose	0.37	0.35	0.32	0.36
D-Glucose	0.18	—	0.64	0.70
D-Galactose	0.16	—	0.62	0.57
Maltose	0.11	—	0.58	0.56
D-Fructose	0.23	0.29	0.68	0.66

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