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NOTE

Study of Carbohydrates from the Seeds, Leaves and Kernel of *Sterculia guttata* Roxb.

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Carbohydrate analysis of the seeds, leaves and kernel of *Sterculia guttata* showed the presence of D-lactose, L-sorbose, D-arabinose, L-rhamnose, D-glucose, maltose and D-fructose, whereas L-rhamnose and D-fructose are common in all three parts of the plant, *i.e.*, seeds, leaves and kernel.

Key words: *Sterculia guttata*, carbohydrate, L-Rhamnose, D-Fructose.

Sterculia guttata Roxb. commonly called 'Kokrus' belongs to Sterculiaceae family[1]. The seeds are eaten raw or roasted by tribals, especially in times of scarcity[2]. The stem bark along with water and Phangli (*Pogostemon benghalensis*) leaves are crushed; the juice obtained is given internally to cure fever and diarrhoea.

These trees are large, deciduous, generally found in the Western Ghats, from Konkan to Kerala, hills of south India and in Assam, ascending to an altitude of 600 m[2, 3]. It is occasionally cultivated in gardens and can be easily raised from seeds[3]. Bark is greyish white to brownish[3], leaves are oval and oblong[4]. Flowers are yellowish purple with coilfowl smell. Seeds are oval in shape having a kernel[2]. Seeds have sedative effect.

The shade-dried powders of seeds, leaves and kernel (10 g each) of *Sterculia guttata* were mixed separately with 100 mg of calcium carbonate in distilled water (50 mL) and refluxed on a water bath for 2 h. The aqueous extract was separated by decantation and the powder was further refluxed three times with distilled water. The aqueous filtrates were combined and 10% (w/v) solution of lead acetate added till the precipitate was 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. The neutral solution of filtrate obtained was concentrated over a water bath under reduced pressure to a gummy mass of carbohydrates[5].

Paper chromatography of the gummy mass of test samples was carried out on Whatmann No. 1 for identification of sugars. The spots were compared with authentic sugar samples. Two different phases were tried for detection of carbohydrates using paper chromatography technique:

(1) *n*-Butanol : Acetic acid : Water (4 : 1 : 5 v/v)[5, 6].

(2) *Iso*-propanol : Pyridine : Water : Acetic acid (8 : 8 : 4 : 1 v/v)[5, 7].

The developed chromatograms were dried in air and the paper was sprayed with aniline hydrogen phthalate reagent[5, 8] and kept at 105°C for 5 min in an oven to develop the colour. The R_f values of the test sugars were confirmed by comparing with the R_f values of authentic sugars (Tables 1 and 2).

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

Sugars	R_f			
	Reported	Seeds	Leaves	Kernel
D-Lactose	0.09	0.09	—	0.07
D-Raffinose	0.05	—	—	—
L-Sorbose	0.20	0.21	—	—
D-Arabinose	0.14	—	—	0.14
L-Rhamnose	0.37	0.36	0.38	0.29
D-Glucose	0.18	—	0.18	—
D-Galactose	0.16	—	—	—
Maltose	0.11	—	0.11	—
D-Fructose	0.23	0.26	0.26	0.22

TABLE-2
Iso-propanol : Pyridine : Water : Acetic acid (8 : 8 : 4 : 1 v/v)

Sugars	R_f			
	Reported	Seeds	Leaves	Kernel
D-Lactose	0.46	0.46	—	0.51
D-Raffinose	0.45	—	0.42	—
L-Sorbose	0.68	0.65	—	—
D-Arabinose	0.31	0.28	0.27	—
L-Rhamnose	0.82	0.88	0.85	0.83
D-Glucose	0.64	0.65	0.68	—
D-Galactose	0.62	—	—	—
Maltose	0.58	0.57	0.59	0.58
D-Fructose	0.68	0.71	0.76	0.70

Seeds and leaves of *Sterculia guttata* Roxb. were found to be a rich source of various sugars. The presence of L-rhamnose and D-fructose was detected in all test samples, *i.e.*, seeds, leaves and kernel. These two sugars were detected in both solvent phases. D-Lactose was detected in seeds and kernel. It was confirmed by both solvent phases. D-Raffinose was detected only in leaves by solvent phase 2, while L-sorbose was detected only in seeds by both solvent phases. The presence of D-arabinose was shown by solvent phase 1, in kernel, while in seeds and leaves by solvent phase 2. Seeds and leaves comprised of D-glucose, which was shown by both solvent phases. Solvent phases 1 showed presence of maltose in all test samples. Solvent phase 2 was found to be more proper than solvent phase 1 for the study of this plant as it was showing more separation of sugars.

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