The details of fertilization and embryogeny in this species could not be studied due to non-availability of fertilized flowers and viable fruits.

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PECTIC SUBSTANCES FROM MESTA (*HIBISCUS CANNABINUS*) AND ROSELLE (*HIBISCUS SABDARIFFA*) PLANTS

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MESTA and roselle fibres occur in the bark of the plants as cemented together with the pectic and mucilaginous substances. The fibres are isolated from the plants by retting process which involves the decomposition of pectic substances by micro-organisms.

Fibres may also be isolated by chemical retting in which the pectic substances are dissolved by chemical process without decomposition. Thus Henglein and Leicht[1] described a method of isolation of pectin of flax straw, from ammonium oxalate extract after treatment of the fibre with water, dil. hydrochloric acid etc. Mazumdar and Day[2] isolated pectin and jute fibre from jute plant ribbons, by treatment with a solution containing ammonium oxalate as retting agent.

During the course of microbiol or chemical-retting experiments, dried jute ribbons were difficult to ret compared to mesta ribbons presumably because the cementing materials holding the fibres of different plants have certain differences. The pectin substances removed from the bast fibre during retting are collected by the chemical retting procedure and are studied thoroughly to find out the difference, if any, between them. The analysis of the pectic substances from different bast fibres will certainly add to the knowledge of the plant material as a whole and help draw up methods of retting procedure for different fibres. This report deals with the preliminary study of the pectic substances from mesta and roselle plants. Mesta and reselle contain about 9–10% pectic substances on the dry wt of the ribbons, and the ones which are of good quality are considered suitable for industrial use.

Mesta and roselle plants of 90 days age were obtained from Jute Agricultural Research Institute, Baracckpore. Ribbons were extracted by hand and pectic substances were isolated by the procedure[2] used in the case of jute.

The dry pectin was analyzed for ash, uronic anhydride[3], pentosan[4], and methoxyl[5]. The ash showed the presence of calcium and magnesium.

To determine the neutral sugars associated with pectin, the pectin samples were hydrolysed by the method of Saeman *et al*[6]. Galacturonic acid appeared in the hydrolysate mainly with acidic sugar as detected by paper chromtography. The neutral sugars were estimated as their alditol acetate by GLC. A Hewlet Packard Gas Chromatograph (Model 5830A) with FID was used. Resolution was performed in stainless steel column (15 × 1/20 cm) containing 3% ECNSS-M on Supelcoport Q (80–180 mesh) with nitrogen as carrier gas (20 ml/min) and injection temperature 230° C, FID temperature 250° C and column temperature 190° 2C. Paper chromatography was performed on Whatmann No. 1 filter paper with the following solvent system: (a) butyl acetate: pyridine: ethanol: water (8:2:2:2) and (b) ethyl acetate: acetic acid: water (9:2:2). Saturated solution of aniline oxalate was used as the spraying reagent. Authentic reference compounds were used for comparison in the GLC and paper chromatography.

The yield of pectin was 9% and 10% from mesta and roselle ribbons respectively. Chemical constituents of isolated pectin samples are given in table 1.

TABLE 1

Chemical constituents of Mesta and Roselle pectin (present on oven dry wt.)

Constituents (%)	Mesta	Roselle
Ash	8.4	7.04
Uronic anhydride	63.24	64.51
Methoxyl	5.7	4.7
Pentosan	32.5	36.1

The mole percent of neutral sugars associated with pectins from mesta and roselle ribbons are given in table 2.

TABLE 2

Compositions of neutral sugars associated with pectin.

Composition (mole percent)	Mesta	Roselle
Galactose	25.1	30.4
Glucose	7.7	2.5
Arabinose	53.5	54.4
Xylose	—	2.1
Rhamnose	13.7	10.6

From the analytical figures it appears that the composition of isolated pectins from mesta and roselle ribbons are more or less similar. The galacturonic acid content of pectin materials was 63–64.5% which is partially esterified and exist mainly as Ca-or Mg-salts.

The polysaccharides associated with pectin, contain mainly arabinose, galactose and rhamnose. Glucose is present to some extent in mesta pectin but xylose which constitutes the main hemicellulose component of the fibre, is more less absent.

Table 3 shows the differences between isolated pectin from jute ribbon and that from mesta and roselle ribbons.

TABLE 3

Differences between pectin from jute, mesta and roselle

Components	Jute	Mesta	Roselle
Yield	8	9	10
Uronic anhydride	59	63.2	64.5
Methoxyl	3	5.7	4.7
Ash	8	8.4	7.0
Associated—Polysaccharide content	30	22.7	23.8
Sugar components of associated polysaccharide			
Galactose	6.7	5.7	7.2
Glucose	1.9	1.7	0.6
Arabinose	17.6	12.1	12.9
Xylose	0.5		0.5
Rhamnose	3.4	3.1	2.5

Preliminary study of the pectin material from the ribbons of jute, mesta and roselle showed that the uronic anhydride content of mesta and roselle pectin is higher than that of jute. Jute pectin contains a higher amount of associated polysaccharide and that in turn contains a higher proportion of arabinose. These differences in the composition of isolated pectins from jute, mesta and roselle may explain their difference in the retting behaviour of the plants but further studies is necessary in the direction.

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INHIBITION OF ROOT GROWTH BY GIBBERELLIC ACID AND ITS REVERSAL BY THIAMINE IN GREEN GRAM SEEDLINGS (*VIGNA RADIATA* L. WILCZEK)

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ALTHOUGH gibberellin-like substances have been isolated from growing root tissues[1], it has not yet been clearly demonstrated whether gibberellins actually regulate root growth. Gibberellic acid at high concentrations (5 ppm and above) usually decreases root growth[2]. The role of vitamins of the B group, thiamine in particular, in the control of root growth is well established[3]. Synergism of auxin and vitamins has been reported by Scheuremann[4]. The nature of interaction of vitamins with gibberellic acid is not known except for the work of Artamonov[5] who studied the