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Note

Some structural features of an arabinoglucan from the fruits of *Cordia dichotoma* Forst

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The purified polysaccharide from the fruits of *Cordia dichotoma* (Boraginaceae family) was fractionated into fractions I (23%) and II (77%) by gel filtration on Sephadex G-100 in 0.1M sodium chloride–0.1M sodium hydroxide. Some structural aspects of fraction II, an arabinoglucan, have been reported[1]. Fraction I (polysaccharide content[2], 97%) had $[\alpha]_D^{22}$ +75° (*c* 0.24, 0.1M sodium hydroxide), moved as a single spot in high-voltage electrophoresis, and was eluted as a single component from columns of Sephadex G-200 or DEAE-Cellulose. Hydrolysis (M sulfuric acid, 18 h, 100°, sealed tube) of fraction I gave (p.c.) glucose and arabinose, and g.l.c. of the alditol acetates indicated the percentages to be glucose 67.2% and arabinose 32.3%. The identities of these sugars were confirmed by g.l.c.–m.s.[3]. Thus, fraction I is also an arabinoglucan.

Fraction I was methylated by the Hakomori method[4], and hydrolysis of the product gave 2,3,4-tri-*O*-methylarabinose (3 mol), 3,5-di-*O*-methylarabinose (4 mol), 2,4,6-tri-*O*-methylglucose (2 mol), 2,3,6-tri-*O*-methylglucose (4 mol), 2,3,4-tri-*O*-methylglucose (4 mol), and 2,3-di-*O*-methylglucose (3 mol). The methylated sugars were identified by g.l.c.[5] and g.l.c.–m.s.[3,5,6].

These data indicate that arabinopyranose is present at the non-reducing terminals, and that the interior part contains glucopyranosyl residues variously linked (1→3), (1→4), (1→6), and (1→4,6), and arabinofuranosyl residues linked (1→2).

Fraction I consumed[7,8] 1.05 mol of periodate per "anhydrohexose" residue during 26 h, in accord with the results of linkage analysis based on the methylation data. Periodate oxidation of fraction I followed by borohydride reduction and hydrolysis of the product revealed that 64% of the arabinose and 34% of the glucose had remained intact. After a second Smith-degradation, arabinose (98%) survived together with only a trace of glucose.

On chromium trioxide oxidation[9], fraction I was found to contain both α- and

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β-glucose residues with the former preponderating. The configuration of the arabinose residues could not be established. However, the ease of hydrolysis of some of the arabinosyl linkages (as apparent from the release of arabinose during the early stages of hydrolysis) indicates that they were present in both furanose and pyranose forms with either α or β configuration.

An end-group analysis[10] of fraction I gave an average d.p. of 195.

Both the polysaccharide fractions (I and II) have some structural similarities, although fraction I is unique in possessing (1→4)-linked glucopyranosyl residues. The abundance of arabinose residues in fraction I is greater than that of fraction II, and the $\overline{\text{d.p.}}$ of the former is higher.

EXPERIMENTAL

The experimental methods were those described previously[1].

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