THE OXIDATIVE CLEAVAGE OF ACETYLATED s-130 THE EXTRACELLULAR POLYSACCHARIDE ELABORATED BY ALCALIGENES ATCC 31555, USING LEAD TETRAACETATE

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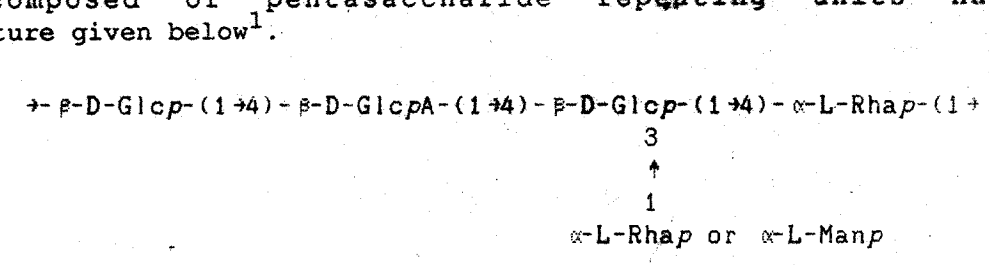
The polysaccharide (S-130) elaborated by Alcaligenes ATCC 31555, is composed of pentasaccharide repeating units having the structure given below[1].



The distribution of the terminal α-L-rhamnopyranosyl (α-Rhap) and α-L-mannopyranosyl (α-Manp) residues on the polymer chain could be either random or more regular, and has not been determined. We have attempted to obtain this information using oxidative decarboxylation with lead tetraacetate.

Oxidative decarboxylation with lead tetraacetate was developed by Kitagawa et.al.[2] for the selective removal of uronic acid residues from saponins. Aspinall et.al. extended this method for selective cleavage of glycosiduronic acid linkages permethylated glycuronans. We have now applied this method to the selective cleavage of a peracetylated glycuronan.

A sample of S-130 was subjected to repeated acetylation in pyridine at 100°C. The acetylated sample was treated with lead tetraacetate in anhydrous benzene and refluxed for 1 h. A short reaction time was used in order to achieve partial degradation of the polysaccharide. The reaction mixture after work up was reduced with sodium borohydride, deactylated and then fractionated by chromatography on Bio-Gel P-2. Two oligomeric fractions (OS1 and OS2) and one polymeric fraction (PS1) were separated. These fractions were subjected to sugar analysis, methylation analysis, and ^{1}H-NMR spectroscopy.

Results indicate that cleavage of the polymer chain has taken place under the conditions used. The two oligomeric samples were enriched in rhamnose suggesting that there may be blocks of repeating units in w3hich α-L-Rhap is the terminal sugar residue.

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3. Aspinall G.O., Fanous H.K., Kumar N.S., Puvanesarajah V. (1981) 59 935-940.