



Chemical Study of Natural Product Obtained from Very Important medicinal plant *Chrotolaria alata*

Pramod Kumar Singh

* Anand Kumar Singh, Hanumant Singh chemical Laboratory of Carbohydrate Research, Department of Chemistry Kamla Nehru Institute of Physical & Social Science, Sultanpur- 228001, India.

* Professor Chemistry Dept.

** Research Scholar Dept. of Chemistry

Email ID- pksinghknichemistry@gmail.com

Abstract:-

A water-soluble and non-ionic D-galactomannan has been isolated from the seeds of *Chrotolaria alata* of Indian origin, containing D-galactose and D-Mannose in 8:2 molar ratio. Acid catalyzed fragmentation, periodate oxidation, methylation and enzyme hydrolysis showed that the mucilage has a branched structure consisting of a linear chain of β -D-(1 → 4) linked mannopyranosy units, some of which are substituted at (1 → 6) by α -D-galactopyranosyl units, glycosidically. This galactomannan have similarity with ghee gaur plants gum.



Key words: Oligosaccharides, Mucilage,

Introduction:-

Polysaccharides are polymer obtained by stracts of seets of chroloraria alata sucking in Acoh overnight. A water soluble and non- ionic D-galactomann has been isolated from the seed of *Chrotolaria alata* of Indian origin¹. Polysaccharide was

conveniently extracted from the crushed, defatted and decolorized seeds by extracting with 1% aqueous acetic acid and by repeated precipitation² from its solution therein with ethanol. It was purified and tested for homogeneity by usual methods. The white amorphous polysaccharide had $[\alpha]_D^{25} + 68^\circ$ (in water), an ash content³ of (0.8%) and a negligible percentage of methoxy, acetyl and uronic acid contents.

Experiment and analysis:-

after complete acid-hydrolysis the polysaccharide yielded (D-galactose and D-mannose 1:2.7 molar ratio). Graded acid hydrolysis resulted in the preferential removal of α -linked D-galactose units⁴ on the periphery as end groups. To determine the position of linkages between the building units of the galactomannan⁵, it was exhaustively methylated by Haworth-Purdie method^{6,7}, to afford a brown, semisolid glassy mass and had $[\alpha]_D^{25} + 41^\circ$ (chloroform). Hydrolysis of the methylated seed-gum gave 2,3,4,6-tetra-O-methyl-D-galactose⁸ (4 mol), 2,3,6-tri-O-methyl-D-mannose⁹ (5 mol) and 2,3-di-O-methyl-D mannose¹⁰ (3 mol).

The identity of these methylated monosaccharides¹¹ was established on the basis of their R_{TMG} values, optical rotations and crystalline derivatives. The percentage of end groups calculated from methylation studies was 24.9%. Oxidation of the mucilage with sodium metaperiodate consumed 945 mM of the oxidant with the liberation of 283 mm of formic acid per 100g of the polysaccharide indicating 25.5% end-groups (*cf.* methylation).

Conclusion and Result:-

Acid catalyzed partial hydrolysis of the mucilage gave, two disaccharides: α -D-Galp (1 → 6)-D-Manp, β -D-Manp (1 → 4)-D-Manp¹² and two disaccharides α -D-Galp (1 → 6)- β -D-Manp (1 → 4)-D-Manp¹³ and β -D-Manp (1 → 4)- β -D-Manp along with the component sugars. All of the oligosaccharides were characterized. These results corroborated in the earlier findings. The foregoing data accord with the following structure. 1:6 attested galactose and mannose 1:4 attested mannose and mannose in main chain.

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α -D-Galp

1



6

 α -D-Galp

1



6



Paper chromatography¹⁴ was conducted on Whatmann filter paper no. 1 and 3 mm papers by descending technique using the following systems (v/v). A-1-butanol-ethanol-water (5:1:4), B-1-butanol-isopropanol-water¹⁵ (11:6:3), C-ethylecetate-pyridine-water (2:1:2).

Solution were concentrated at diminished pressure and at low temperature. All residues were dried in vacuo over anhydrous CaCl_2 melting points are uncorrected and $[\alpha]_D$ values are for equilibria.

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