

## Structural studies on glucuronan oligosaccharides synthesized by a strain of *Gluconacetobacter hansenii*

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### Abstract

Polysaccharides, including glucuronan, which contain carboxyl groups, are valuable compounds because their enveloping and/or resolving activity makes them suitable as carriers for various active substances, and as solvents, stabilizers, binders, swelling agents, and so on. Recently, a cellulose-producing strain, identified as *Gluconacetobacter hansenii*, has been isolated from rotten apples<sup>1</sup>. This bacterium was tested and found capable of producing water-soluble polysaccharides in the defined medium<sup>2</sup>.

The current study was undertaken to characterize the water soluble oligosaccharides produced by *Gluconacetobacter hansenii* PJK from the basal medium in a 5-L jar fermenter equipped with a 6 flat-blade turbine impeller at 30°C, 500 rpm and an aeration rate of 1 vvm. These oligosaccharides were hydrolyzed and the hydrolysates were studied for monosaccharides composition using HPLC, which showed that the presence of only of one sugar, glucuronic acid. The structure of the native sugar was investigated using various modern spectroscopic techniques including FT-IR, MALDI-TOF MS and <sup>1</sup>H-, and <sup>13</sup>C-NMR. These studies revealed that the product is a mixture of oligomers with the  $\alpha$ -glucuronic acid as building blocks. The possible structure of the major glucuronan oligosaccharide in the mixture has been deduced.

### References

1. Park, J. K., Park, Y. H., Jung, J. Y. *Biotechnol. Bioprocess Eng.* 2003, 8, 83-88.
2. Jung, J.Y., Park, J.K., Chang, H.N. *Enzyme Microb. Technol.* 2005, 37, 347-354.