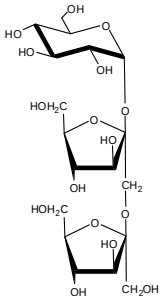
ELICITYL Glycoproducts for life sciences *Engineering and Manufacturing*

Natural carbohydrates: polysaccharides, oligosaccharides mixture and separated DP*

*DP = degree of polymerization characterizes the length of the item

Fructan

Inulins are composed of β(2-1) linked fructose units having a typical terminal glucose but no reducing end group. Native inulin encompasses a family of linear structures varying in degree of polymerization (DP) from 3 to 60 (average DP=10). Inulin doesn't belong to the family of polysaccharide.



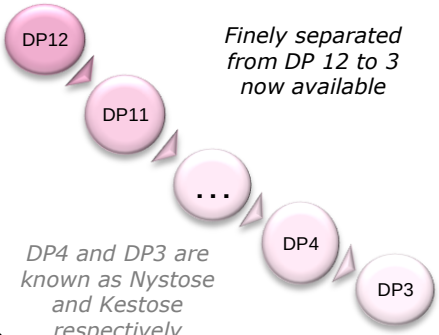
1-kestose

Fructo oligo-saccharides
Fruβ(2-1)-[Fruβ(2-1)]$_n$ -α(1-1)Glc

(Cut-off < 10kDa)

Extracted from Jerusalem artichoke

Fructan:



Finely separated from DP 12 to 3 now available

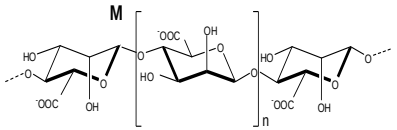
DP4 and DP3 are known as Nystose and Kestose respectively

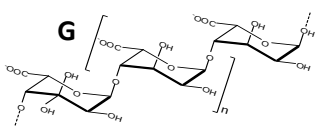
Alginate

Alginic acid (algin, alginate) is a polysaccharide that is abundant in the cell walls of brown algae (Pheophyceae, mainly laminariales and fucales) and in specific bacteria (acetylated form). Chemically, it is a linear copolymer with homopolymeric blocks of (1-4)-linked β-D-mannuronate (M) and its C-5 epimer α(1-4)-L-guluronate (G) residues, covalently linked together in different sequences or blocks.

Alginates polysaccharides from:
Laminaria Japonica, Fucus vesiculosus, Ascophyllum nodosum, Chorda filum, Durvillaea Antarctica

As oligosaccharides, alginates may be separated in **mannuronates** and **guluronates** forms

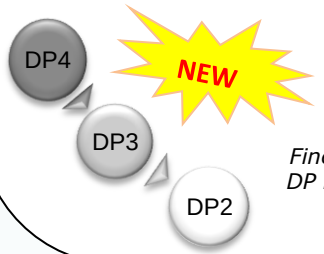




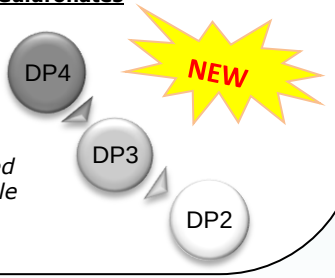
Mannuronates Oligosaccharides
(beta1,4ManA) **:**
Average DP of: 20, 10, 5 and 3

Guluronates Oligosaccharides
(alpha1,4 GulA) :
Average DP of: 20, 10, 5 and 3

Mannuronates



Guluronates



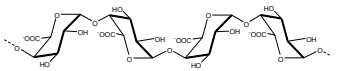
Finely separated DP now available

Galacturonan

Pectins consist of three major structural elements: galacturonan, rhamnogalacturonan I, and the complex rhamnogalacturonan II (RG II). Attached to a backbone of 8–10 galacturonic acid residues (alpha 1-4), rhamnogalacturonan II contains four side chains with rare and diagnostic sugars: 2-O-methyl fucose, 2-O-methyl xylose, apiose, 3-C-carboxy-5-deoxy-L-xylose (aceric acid), 3-deoxy-D-lyxo-2-heptulosaric acid (DHA), and 3-deoxy-D-manno-2-octulosonic acid (KDO).

-**Galacturonate polysaccharides** low and high methylated from: apple and citrus

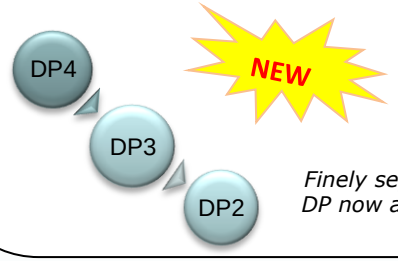
-**Rhamnogalacturonan polysaccharide** from gombo



***Galacturonate polysaccharide LM** from apple*

-**Galacturonan oligosaccharides block**
(average DP=50-70)
-**Galacturonan oligosaccharides**
(mixture DP7 and 8)
-**Galacturonan oligosaccharides**
(mixture DP3 and 4)

Galacturonan (alpha 1,4 GalA)



Finely separated DP now available

Contact us for any technical information and quote request
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Avril 2014 – V1

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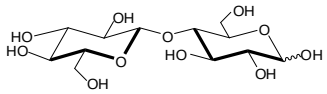
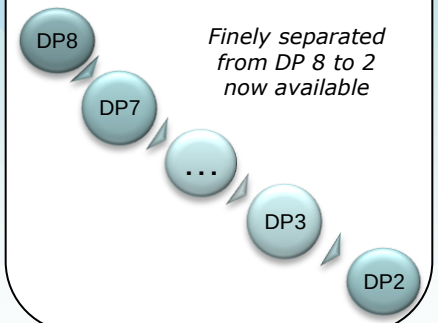
Cellodextrin

Cellodextrins *are glucose polymers of two or more glucose monomers resulting from the breakdown of cellulose (from cotton linters as raw material).*
Cellodextrins consist of repeating β(1-4) linked D-glucose monomers



Cello-Oligosaccharides mixtures
β(1-4) linked D-glucose
Mixture containing 20% DP9 & 40% DP8
Or DP average = 2-7 (HPAEC analysis)

Cellodextrin

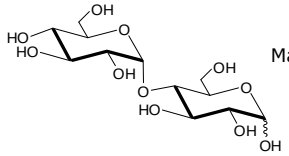


Finely separated from DP 8 to 2 now available

Maltodextrin

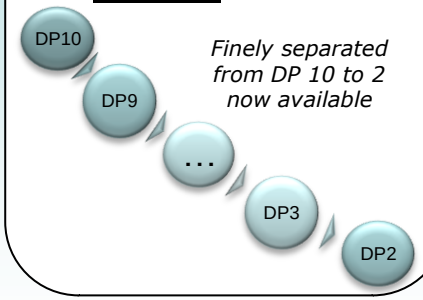
Maltodextrins *are a group of low-molecular-weight sugar produced by the hydrolysis of starch. Maltodextrins are a linear α(1-4) linked D-glucose polymer.*

Industrial production is, in general, performed by acidic hydrolysis of potato starch



Maltodextrin Oligosaccharides mixtures
α(1-4) linked D-glucose / α(1-6) branching
Observed DP: 2 to 15 or 10 to 40, α(1-6) branching degree determined by ^{1}H NMR

Maltodextrin



Finely separated from DP 10 to 2 now available

Chitin

Chitin *is an unbranched chain of β(1-4) N-acetyl-D-glucosamine units.*

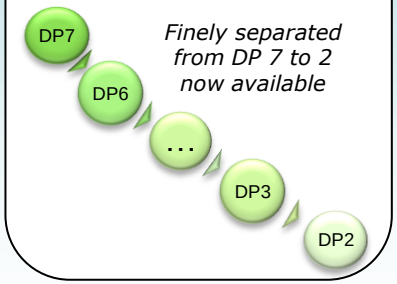
Chitin is analogous in chemical structure to cellulose, in which the hydroxyl groups of the second carbon of each glucose unit have been replaced with acetamido (-NH(C=O)-CH$_3$) groups. The degree of acetylation (DA) is generally over 90%.

Chitin polysaccharides
β(1-4) linked N-acetyl-D-glucosamine Polymer

Colloidal Chitin polysaccharide Suitable for enzyme assay (chitinases, …)

Chitin oligosaccharides
Average DP of 2-7

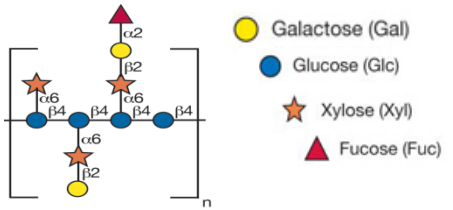
Chitin



Finely separated from DP 7 to 2 now available

Fucosylated Xyloglucan

Xyloglucans *are hemicellulosic polysaccharides present in the primary cell walls of all types of higher plants.*
Xyloglucans consist of a β-D-(1-4) glucan backbone with α-D-xylosyl residues attached to the 6-position of approximatively 75% of the glucosyl residues of the backbone.

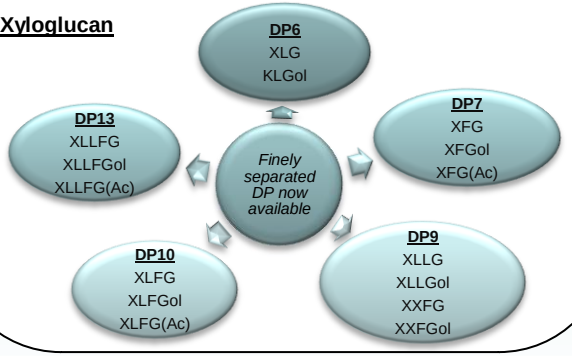


Repeating subunits found in xyloglucan

Fucosylated* Xyloglucan oligosaccharides
100% xyloglucan oligosaccharides extracted and purified from apple. Obtained through enzymatic clivage and Solid Phase Extraction Chromatography.

*only few items are not fucosylated

Xyloglucan



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Mars 2014 – V1