

## CARBOHYDRATE RESEARCH VOL. 203 (1990)

## SUBJECT INDEX

- Affinity purification of dextransucrase, from *Streptococcus sanguis* ATCC 10558, 156
- Allyl  $\beta$ -glycosylation in the presence of a benzyl protective group, using boron trifluoride etherate, a facile, 341
- 2-Amino-2-deoxy-D-glucose and -D-galactose, synthesis of derivatives of, as intermediates for oligosaccharide synthesis, 319
- Amyloglucosidase, selective action on O-(carboxymethyl)starch, 265
- 3,4-Anhydropyranose system, studies of the ring conformations in the, using X-ray diffractometry, 195
- Anomeric ethyl 2-(4,6-di-O-benzyl-2,3-dideoxy-D-erythro-hex-2-enopyranosyl)acetates and their structural characterization, synthesis of the, 148
- Antibody to a polysaccharide, capability for reading internal epitopes of its antigen, 253
- Arabinogalactan, of cell wall of *Mycobacterium smegmatis*, isolation and analysis of, by reductive-cleavage method, 79
- Aspergillus* sp. K-27, alteration of properties of a glucoamylase from, upon limited proteolysis with subtilisin, 129
- Biological repeating unit of the O-antigen of *Hafnia alvei* 039, the structure of the, 219
- Biosynthesis of poly-N-acetyllactosamine chains occurs preferentially on complex multiantennary asparagine-linked oligosaccharides, 109
- Carbohydrates oxidation of by alkaline hydrogen peroxide in the presence and in the absence of ferrous ion, 287
- 2-C,1-N-Carbonyl-2-deoxy- $\alpha$ -D-glycopyranosylamines, conformation of, 183
- O-(Carboxymethyl)starch, selective susceptibility to amyloglucosidase activity, 265
- Cell-wall arabinogalactan of *Mycobacterium smegmatis*, isolation and analysis of, by reductive-cleavage method, 79
- Chito-oligosaccharides, enzymic synthesis of useful utilizing, transglycosylation by chitinolytic enzymes in a buffer, 65
- Complexation of calcium by 2,3-dicarboxy derivatives of  $\beta$ -cyclodextrin (cyclomaltoheptaose), amylose, and cellulose, structural and conformational effects on the, 19
- Conformation of 2-C,1-N-carbonyl-2-deoxy- $\alpha$ -D-glycopyranosylamines, 183
- Conformation of oligosaccharides, uncertainties in structural determinations of the, using measurements of nuclear Overhauser effects, 13
- Crystal and molecular structure of methyl 3,4-anhydro- $\alpha$ -DL-allopyranoside: ring conformations in the 3,4-anhydropyranose system, 195
- $\beta$ -Cyclodextrin (cyclomaltoheptaose), amylose, and cellulose, structural and conformational effects on the complexation of calcium by 2,3-dicarboxy derivatives of, 19
- 4-Deoxy-4-fluoro-D-glucose, metabolism of, in *Pseudomonas putida*, 271
- 1-Deoxynojirimycin (1,5-dideoxy-1,5-imino-D-galactitol), synthesis of D-galacto-, starting from 1-deoxynojirimycin, 314
- 1-Deoxynojirimycin, synthesis of 2-acetamido-1,2-dideoxy-D-galacto-nojirimycin (2-acetamido-1,2,5-trideoxy-1,5-imino-D-galactitol) from, 308
- Dextrans and (1 $\rightarrow$ 3)- $\alpha$ -D-glucans, enzymic and methylation analysis of, 229
- Dextransucrase, from *Streptococcus sanguis* ATCC 10558, affinity purification of, 156
- Enzymic and methylation analysis of dextrans and (1 $\rightarrow$ 3)- $\alpha$ -D-glucans, 229
- Enzymic synthesis of useful chito-oligosaccharides utilizing transglycosylation by chitinolytic enzymes in a buffer containing ammonium sulfate, 65
- Ethyl 2-(4,6-di-O-benzyl)-2,3-dideoxy-D-erythro-hex-2-enopyranosyl)acetates, synthesis of the anomeric, and their structural characterization, 148
- Facile allyl  $\beta$ -glycosylation in the presence of benzyl protective group, using boron trifluoride etherate, a, 341
- Fructose 2,6-bisphosphate, two-dimensional  $^1\text{H}$ -,  $^{13}\text{C}$ - and  $^{31}\text{P}$ -nuclear magnetic resonance and molecular-mechanics investigation of D-, 173
- (1 $\rightarrow$ 3)- $\alpha$ -L-Fucosyltransferase, synthesis of potential trisaccharide acceptors for, 139
- $\beta$ -D-Galp-(1 $\rightarrow$ 4)- $\beta$ -D-Glcp NAc(1 $\rightarrow$ 3)- $\beta$ -D-Galp OC<sub>6</sub>H<sub>4</sub>-4-NO<sub>2</sub> synthesis of, 139

- Ganglioside GM<sub>3</sub>, an efficient synthesis of, using highly stereocontrolled glycosylations by use of auxiliaries, 205
- $\beta$ -D-Glucan from *Pediococcus* sp., structure of, 103
- Glucan that coats the seeds of *Helipterum eximium*, a highly substituted, 336
- $\beta$ -D-Glucanase L-IV from *Spisula sachalinensis*, transglycosylation and multiple attack of endo-(1 $\rightarrow$ 3)-, 119
- Glucans, enzymic and methylation analysis of dextrans and (1 $\rightarrow$ 3)- $\alpha$ -D-, 229
- Glucoamylase, from *Aspergillus* sp. K-27, alteration of properties of, upon limited proteolysis with subtilisin, 129
- Glycopyranosylamines, conformation of 2C:1N-carbonyl-2-deoxy- $\alpha$ -D-, 183
- N-Glycosyl collidinium salts, formation during high-pressure glycosylations of unreactive alcohols, 47
- S-Glycosyl donors of sialic acid, synthesis and O-glycosylation of, 57
- Glycosylation, highly stereocontrolled by use of auxiliaries, in synthesis of ganglioside GM<sub>3</sub>, 205
- Glycosylation of mono- and di-saccharides via organotin derivatives, regioselective, 296
- Glycosylation of unreactive alcohols under high pressure, 47
- Goat's milk, purification of two fucose-containing pentasaccharides from, by high performance liquid chromatography, and characterization by high-field <sup>1</sup>H-n.m.r. spectroscopy, 91
- Guluronate dihydrate, solution and solid-state <sup>1</sup>H- and <sup>13</sup>C-n.m.r. spectroscopy of sodium  $\alpha$ -L-, 281
- Hafnia alvei* 039, the structure of the biological repeating unit of the O-antigen of, 219
- Heptasaccharide Gal ( $\beta$ 1-3)Gal( $\beta$ 1-3)Gal( $\beta$ 1-6)Gal( $\beta$ 1-6)Gal( $\beta$ 1-6)Gal( $\beta$ )-OMe, synthesis and study of binding to antigalactan antibodies, 253
- High-performance anion-exchange chromatography, use for separation of yeast asparagine-linked oligosaccharides, 1
- High-pressure glycosylations of unreactive alcohols and the formation of N-glycosyl collidinium salts, 47
- Hydrogen peroxide in the presence and in the absence of ferrous ion, oxidation of carbohydrates by alkaline, 287
- 1,5-Imino-D-galactitol (D-galacto-1-deoxynojirimycin), synthesis of 1,5-dideoxy, starting from 1-deoxynojirimycin, 314
- 1,5-Imino-D-galactitol, synthesis of 2-acetamido-1,2,5-trideoxy-, from 1-deoxynojirimycin, 308
- Lipopolysaccharide of the reference strain for *Serratia marcescens* serogroup O22, structure of a neutral glycan isolated from the, 247
- 2-O-Me- $\beta$ -D-Galp-(1 $\rightarrow$ 3)- $\beta$ -D-GlcpNAc-(1 $\rightarrow$ 3)- $\beta$ -D-GalpOMe, synthesis of, 33
- 2-O-Me- $\beta$ -D-Galp-(1 $\rightarrow$ 3)- $\beta$ -D-GlcpNAc-(1 $\rightarrow$ 3)- $\beta$ -D-Galp-(1 $\rightarrow$ 4)-D-Glc, synthesis of, 33
- 2-O-Me- $\beta$ -D-Galp-(1 $\rightarrow$ 3)- $\beta$ -D-GlcpNAcOBzl, synthesis of, 33
- 2-O-Me- $\beta$ -D-Galp-(1 $\rightarrow$ 4)- $\beta$ -D-GlcpNAc-(1 $\rightarrow$ 3)- $\beta$ -D-GalpOMe, synthesis of, 139
- Mechanistic study of the reaction of phenyl isocyanate with methyl 2,3,4-tri-O-acetyl- $\alpha$ -D-glucopyranoside, 290
- Metabolism of 4-deoxy-4-fluoro-D-glucose in *Pseudomonas putida*, 271
- Method for the synthesis of ureido sugars, a new, 302
- Methyl 2,3,4-tri-O-acetyl- $\alpha$ -D-glucopyranoside, mechanistic study of the reaction of phenyl isocyanate with, 290
- Methyl 3,4-anhydro- $\alpha$ -DL-allopyranoside, crystal and molecular structure, 195
- Milk, goat's, purification of two fucose-containing pentasaccharides from, by high performance liquid chromatography, and characterization by high-field <sup>1</sup>H-n.m.r. spectroscopy, 91
- Molecular-mechanics investigation of D-fructose 2,6-bisphosphate, two-dimensional <sup>1</sup>H-, <sup>13</sup>C-, and <sup>31</sup>P-nuclear magnetic resonance and, 173
- Monoclonal antibody to a polysaccharide, capability for reading internal epitopes of its antigen, 253
- Multiple attack by enzymes on polysaccharides, a new approach to the evaluation of the degree of, 119
- Mycobacterium smegmatis*, arabinogalactan of cell wall, isolation and analysis of linkage and ring forms, by reductive-cleavage method, 79
- N.m.r. spectroscopy of sodium  $\alpha$ -L-guluronate dihydrate, solutions and solid-state <sup>1</sup>H- and <sup>13</sup>C-, 281
- <sup>1</sup>H-Nuclear magnetic resonance spectroscopy of reducing-residue anomeric protons of pertrifluoroacetylated carbohydrates, 163
- Nucleoside precursors: alternative routes to 3-(alditol-1-yl)-1,2,4-triazolo[3,4-a]phthalazines, synthesis of C-, 330
- Nucleoside synthesis, transient protection in, using trityl groups, 324
- Oligosaccharide conformation, uncertainties in structural determinations of, using measurements of nuclear Overhauser effects, 13

- Oligosaccharides, complex multiantennary asparagine-linked, biosynthesis of poly-*N*-acetyl-lactosamine chains occurs preferentially on, 109
- Oligosaccharides of yeast, asparagine-linked, separation by high-performance anion-exchange chromatography, 1
- Oligosaccharides (pentasaccharides) from goat's milk, two fucose-containing, purification by high-performance liquid chromatography, and characterization by high-field  $^1\text{H}$ -n.m.r. spectroscopy, 91
- Organotin derivatives, regioselective glycosylation of mono- and di-saccharides *via*, 296
- Oxidation of carbohydrates by alkaline hydrogen peroxide in the presence and in the absence of ferrous ion, 287
- Pediococcus* sp., structure of  $\beta$ -D-glucan from, 103
- Pentasaccharides from goat's milk, two fucose-containing, purification by high-performance liquid chromatography, and characterization by high-field  $^1\text{H}$ -n.m.r. spectroscopy, 91
- Phenyl isocyanate with methyl 2,3,4-tri-*O*-acetyl- $\alpha$ -D-glucopyranoside, mechanistic study of the reaction of, 290
- Phthalazines, synthesis of *C*-nucleoside precursors: alternative routes to 3-(alditol-1-yl)-1,2,4-triazolo[3,4-*a*], 330
- Poly-*N*-acetyl-lactosamine chain biosynthesis occurs preferentially on complex multiantennary asparagine-linked oligosaccharides, 109
- Proteolysis with subtilisin, alteration of properties of a glucoamylase from *Aspergillus* sp. K-27, 129
- Pseudomonas putida*, metabolism of 4-deoxy-4-fluoro-D-glucose in, 271
- Reductive-cleavage method, analysis of linkage positions and ring forms of the cell-wall arabinogalactan of *Mycobacterium smegmatis*, 79
- Regioselective glycosylation of mono- and di-saccharides *via* organotin derivatives, 296
- Seeds of *Helipterum eximium*, a highly substituted glucan that coats the, 336
- Serratia marcescens* serogroup O22, structure of a neutral glycan isolated from the lipopolysaccharide of the reference strain for, 247
- Separation of yeast asparagine-linked oligosaccharides by high-performance anion-exchange chromatography, 1
- Sialic acid, synthesis and *O*-glycosylation with *S*-glycosyl donors of, 57
- Sialosyl-2,6-lactose and sialosylcholesterol, synthesis of, 57
- Solution and solid-state  $^1\text{H}$ - and  $^{13}\text{C}$ -n.m.r. spectroscopy of sodium  $\alpha$ -L-gulonate dihydrate, 281
- "Standardized intermediates" for oligosaccharide synthesis: convenient preparation of 2-amino-2-deoxy-D-glucose derivatives and their conversion into the D-galactose analogues, 319
- Structural and conformational effects on the complexation of calcium by 2,3-dicarboxy derivatives of  $\beta$ -cyclodextrin (cyclomaltoheptaose), amylose, and cellulose, 19
- Structure of a neutral glycan isolated from the lipopolysaccharide of the reference strain for *Serratia marcescens* serogroup O22, 247
- Structure of the biological repeating unit of the O-antigen of *Hafnia alvei* O39, 219
- Subtilisin, proteolysis with, alteration of properties of a glucoamylase from *Aspergillus* sp. K-27, 129
- Substituted glucan that coats the seeds of *Helipterum eximium*, a highly, 336
- Synthesis of 2-acetamido-1,2-dideoxy-D-galactonojirimycin (2-acetamido-1,2,5-trideoxy-1,5-imino-D-galactitol) from 1-deoxynojirimycin, 308
- Synthesis of *C*-nucleoside precursors: alternative routes to 3-(alditol-1-yl)-1,2,4-triazolo[3,4-*a*]phthalazines, 330
- Synthesis of D-galacto-1-deoxynojirimycin (1,5-dideoxy-1,5-imino-D-galactitol) starting from 1-deoxynojirimycin, 314
- Synthesis of derivatives of 2-amino-2-deoxy-D-glucose and -D-galactose as intermediates for oligosaccharide synthesis, 319
- Synthesis of ganglioside GM<sub>3</sub>, using highly stereocontrolled glycosylations by use of auxiliaries, 205
- Synthesis of the anomeric ethyl 2-(4,6-di-*O*-benzyl-2,3-dideoxy-D-erythro-hex-2-enopyranosyl)acetates and their structural characterization, 148
- Synthesis of ureido sugars, a new method for the, 302
- Transglycosylation and multiple attack of endo-(1 $\rightarrow$ 3)- $\beta$ -D-glucanase L-IV from *Spisula sachalinensis*: a new approach to the evaluation of the degree of multiple attack on polysaccharides, 119
- Transglycosylation by chitinolytic enzymes in a buffer, enzymic synthesis of useful chito-oligosaccharides utilizing, 65
- Transient protection in nucleoside synthesis using trityl groups: is it necessary to block hydroxyl groups? 324
- Trityl groups, transient protection in nucleoside synthesis, using, 324
- Two-dimensional  $^1\text{H}$ -,  $^{13}\text{C}$ -, and  $^{31}\text{P}$ -nuclear mag-

netic resonance and molecular-mechanics investigation of D-fructose 2,6-bisphosphate, 173

Uncertainties in structural determinations of oligosaccharide conformation using measurements of nuclear Overhauser effects, 13

Ureido sugars, a new method for the synthesis of, 302

Wines, R. P., structure of  $\beta$ -D-glucan isolated from lactic bacterium of, 103