Graphical Abstracts

Carbohydr. Res. **2003,** *338*, 813

Synthesis of L-trehalose and observations on isomer and by-product formation

Alan H. Haines

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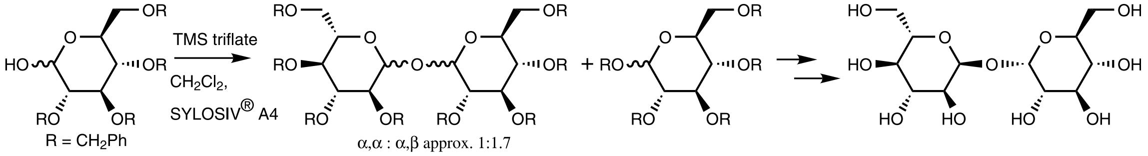
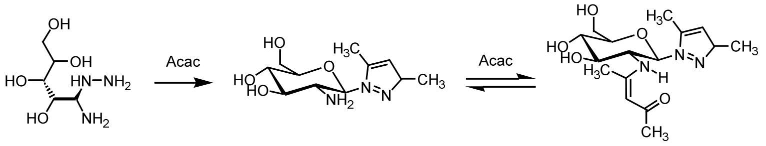


Carbohydr. Res. **2003,** *338*, 819

The reaction of acetylacetone with amino sugars: implications for the formation of glycosylpyrazole derivatives

Warren C. Kett

Department of Chemistry, Division of Environmental and Life Sciences, Macquarie University, North Ryde, NSW 2109, Australia



Carbohydr. Res. **2003,** *338*, 827

Synthesis of a typical *N*-acetylglucosamine-containing saponin, oleanolic acid 3-yl α-L-arabinopyranosyl-(1 → 2)-α-L-arabinopyranosyl-(1 → 6)-2-acetamido-2-deoxy-β-D-glucopyranoside

Jiansong Sun,[a] Xiuwen Han,[a] Biao Yu[b]

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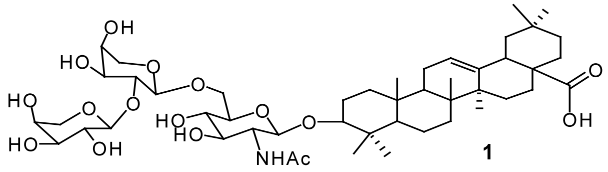
[b]*State Key Laboratory of Bio-organic and Natural Products Chemistry, Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai 200032, PR China*

A member of a small structurally conservative family of plant saponins **1** was synthesized employing glycosyl trifluoroacetimidates as key donors.



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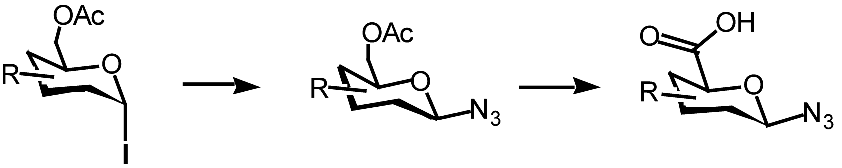
Carbohydr. Res. **2003,** *338*, 835

General methods for the synthesis of glycopyranosyluronic acid azides

Laiqiang Ying, Jacquelyn Gervay-Hague

Department of Chemistry, University of California, One Shields Avenue, Davis, CA 95616, USA



R = *O*-glycoside, OAc, NHAc

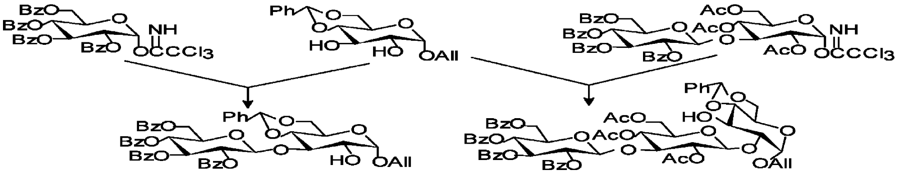
R = *O*-glycoside, OH, NHAc

Carbohydr. Res. **2003,** *338,* 843

Regioselective glycosylation of 4,6-*O*-benzylidenated glucopyranosides

Ying Zeng, Fanzuo Kong

Research Center for Eco-Environmental Sciences, Academia Sinica, Chinese Academy of Sciences, P.O. Box 2871, Beijing 100085, China



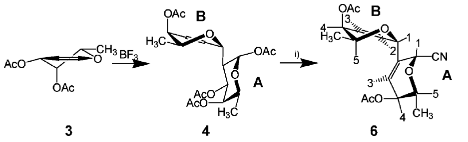
Carbohydr. Res. **2003,** *338,* 851

C–H-Deprotonation mediated by a remote *syn*-axial acetoxy group—an unprecedented double bond formation upon cyanation of the dimer from L-fucal

Andreas H. Franz,[a] Vyacheslav V. Samoshin,[a] Chris Myers,[b] Allen D. Hunter,[b] Paul H. Gross[a]

[a]*Department of Chemistry, University of the Pacific, 3601 Pacific Avenue, Stockton, CA 95211, USA*
[b]*Department of Chemistry, Youngstown State University, YSU Structure Center, 1 University Plaza, Youngstown, OH 44555, USA*

Replacement of the anomeric acetate by a cyanide group in the dimer of di-*O*-acetyl-L-fucal by the action of mild Lewis acid ($Hg(CN)_2$–$HgBr_2$–Me_3SiCN), resulted not only in the desired transformation but also in an additional double bond between C-2A and C-3A.

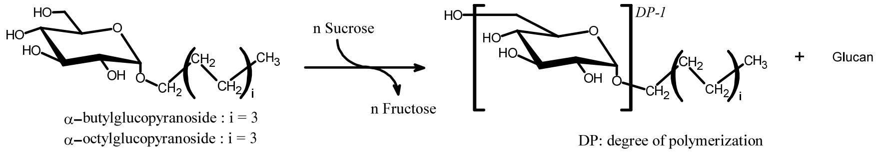


Carbohydr. Res. **2003,** *338,* 855

Glucosylation of α-butyl- and α-octyl-D-glucopyranosides by dextransucrase and alternansucrase from *Leuconostoc mesenteroides*

Gaëtan Richard, Sandrine Morel, René-Marc Willemot, Pierre Monsan, Magali Remaud-Simeon

Département de Génie Biochimique et Alimentaire, Centre de Bioingénierie Gilbert Durand, UMR CNRS 5504, UMR INRA 792, INSA, 135 Avenue de Rangueil, 31077 Toulouse 4, France



Carbohydr. Res. **2003,** *338,* 865

On the reaction pathways and determination of transition-state structures for retaining α-galactosyltransferases

Isabelle André,[a] Igor Tvaroška,[a,b] Jeremy P. Carver[a]

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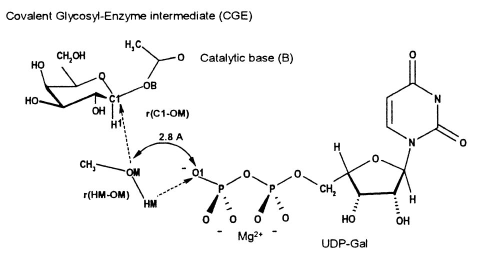
[b]*Institute of Chemistry, Slovak Academy of Sciences, Bratislava, Slovak Republic*



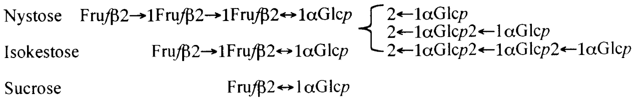
The catalytic mechanism of retaining glycosyltransferases via a double-displacement mechanism was investigated using high level ab initio calculations up to the DFT/B3LYP/6-311++G**//DFT/B3LYP/6-31G* level. Results show that a mechanism using UDP as a general base in the second step of the reaction appears to be the most consistent with experimental data.

Carbohydr. Res. **2003,** *338*, 879

Synthesis and structural analysis of five novel oligosaccharides prepared by glucosyltransfer from β-D-glucose 1-phosphate to isokestose and nystose using *Thermoanaerobacter brockii* kojibiose phosphorylase

Hideki Okada,[a] Eri Fukushi,[b] Shuichi Onodera,[a] Tomoyuki Nishimoto,[c] Jun Kawabata,[b]
Masanori Kikuchi,[a] Norio Shiomi[a]

[a]*Department of Food Production and Utility Development, Graduate School of Dairy Science Research, Rakuno Gakuen University, Ebetsu 069-8501, Japan*
[b]*Graduate School of Agriculture, Hokkaido University, Sapporo 060-8589, Japan*
[c]*Hayashibara Biochemical Laboratories, Inc., Okayama 700-0834, Japan*



Nystose Fru*f*β2→1Fru*f*β2→1Fru*f*β2↔1αGlc*p*
Isokestose Fru*f*β2→1Fru*f*β2↔1αGlc*p*
Sucrose Fru*f*β2↔1αGlc*p*

2←1αGlc*p*
2←1αGlc*p*2←1αGlc*p*
2←1αGlc*p*2←1αGlc*p*2←1αGlc*p*

Carbohydr. Res. **2003,** *338*, 887

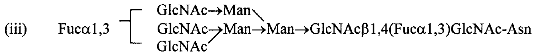
The binding characteristics and utilization of *Aleuria aurantia*, *Lens culinaris* and few other lectins in the elucidation of fucosyltransferase activities resembling cloned FT VI and apparently unique to colon cancer cells

E.V. Chandrasekaran, Ram Chawda, John M. Rhodes, Robert D. Locke, Conrad F. Piskorz,
Khushi L. Matta

Department of Molecular and Cellular Biophysics, Roswell Park Cancer Institute, Elm and Carlton Streets, Buffalo, NY 14263, USA

A unique α1,3-1-Fuc-Transferase expressed by human colon cancer cells resembled cloned FT VI and gave rise to the following:

(i) Galβ1,4(Fucα1,3)GlcNAcβ-O-R
(ii) GlcNAcβ1,4(Fucα1,3)GlcNAcβ-O-R



(iii) Fucα1,3 [GlcNAc→Man; GlcNAc→Man; GlcNAc] →Man→GlcNAcβ1,4(Fucα1,3)GlcNAc-Asn

$$\begin{array}{lll} & \text{GlcNAc}\to\text{Man}\searrow & \\ \text{Fuc}\alpha 1,3 & \text{GlcNAc}\to\text{Man}\to\text{Man}\to\text{GlcNAc}\beta 1,4(\text{Fuc}\alpha 1,3)\text{GlcNAc-Asn} & \\ & \text{GlcNAc}\nearrow & \end{array}$$

Carbohydr. Res. **2003,** *338*, 903

Isolation, structural characterization, and immunological evaluation of a high-molecular-weight exopolysaccharide from *Staphylococcus aureus*

Joseph G. Joyce,[a] Chitrananda Abeygunawardana,[a] Qiuwei Xu,[a] James C. Cook,[a] Robert Hepler,[a]
Craig T. Przysiecki,[a] Karen M. Grimm,[a] Keith Roper,[a] Charlotte C. Yu Ip,[a] Leslie Cope,[a]
Donna Montgomery,[a] Mason Chang,[a] Sherilyn Campie,[a] Martha Brown,[a] Tessie B. McNeely,[a]
Julie Zorman,[a] Tomas Maira-Litrán,[b] Gerald B. Pier,[b] Paul M. Keller,[a] Kathrin U. Jansen,[a]
George E. Mark III[a]

[a]*Departments of Virus and Cell Biology, Bioprocess and Bioanalytical Research, and Microbial Vaccine Research, Merck Research Laboratories, WP16-107, P.O. Box 4, West Point, PA 19486, USA*
[b]*Department of Medicine, Channing Laboratory, Brigham and Women's Hospital, Harvard Medical School Boston, Boston, MA 02115, USA*

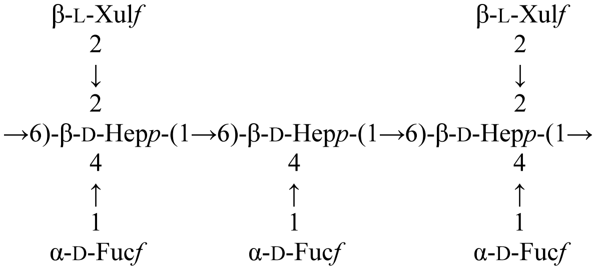
A β-(1 → 6)-linked glucosamine-containing exopolysaccharide isolated from *Staphylococcus aureus* MN8m ($M_r > 300{,}000$ Da) and shown to be essentially devoid of succinylate and containing 45–60% *N*-acetyl is active in hemagglutination assays and is immunogenic in mice when coupled to a protein carrier.

Carbohydr. Res. **2003,** *338*, 923

The structure of the antigenic polysaccharide produced by *Eubactrium saburreum* T15

Naomi Sato,[a] Futoshi Nakazawa,[a] Teiichiro Ito,[a]
Tsutomu Hoshino,[b] Etsuro Hoshino[a]

[a]*Department of Oral Health Science, Division of Oral Ecology in Health and Infection, Course for Oral Life Science, Niigata University Graduate School of Medical and Dental Sciences Gakkocho-dori 2, Niigata 951-8514, Japan*
[b]*Department of Applied Biological Chemistry, Faculty of Agriculture, Niigata University, Ikarashi, Niigata 950-2181, Japan*



$$\begin{array}{ccc} \beta\text{-L-Xul}f & & \beta\text{-L-Xul}f \\ 2 & & 2 \\ \downarrow & & \downarrow \\ 2 & & 2 \\ \to 6)\text{-}\beta\text{-D-Hep}p\text{-}(1 & \to 6)\text{-}\beta\text{-D-Hep}p\text{-}(1 & \to 6)\text{-}\beta\text{-D-Hep}p\text{-}(1\to \\ 4 & 4 & 4 \\ \uparrow & \uparrow & \uparrow \\ 1 & 1 & 1 \\ \alpha\text{-D-Fuc}f & \alpha\text{-D-Fuc}f & \alpha\text{-D-Fuc}f \end{array}$$

Carbohydr. Res. **2003,** *338*, 931

Fungal chitin–glucan derivatives exert protective or damaging activity on plasmid DNA

Grigorij Kogan,[a] Peter Rauko,[b] Eva Machová[a]

[a] *Institute of Chemistry, Slovak Academy of Sciences, 845 38 Bratislava, Slovakia*
[b] *Cancer Research Institute, Slovak Academy of Sciences, 833 91 Bratislava, Slovakia*

Using carboxymethylation, sulfoethylation, and subsequent ultrasonic treatment, lower molecular weight water-soluble derivatives of crude fungal chitin–glucan complex were prepared and evaluated for their effects on DNA strand breakage.

Carbohydr. Res. **2003,** *338*, 937

Surface modification of chitosan films

Effects of hydrophobicity on protein adsorption

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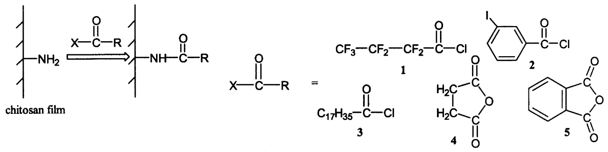
[a] *Department of Chemistry, Organic Synthesis Research Unit, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand*
[b] *Center for Chitin/Chitosan Biomaterials, Chulalongkorn University, Bangkok 10330, Thailand*



Carbohydr. Res. **2003,** *338*, 943

Unusual structures in the polysaccharides from the red seaweed *Pterocladiella capillacea* (Gelidiaceae, Gelidiales)

María I. Errea, María C. Matulewicz

Departamento de Química Orgánica, CIHIDECAR-CONICET, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires, Pabellón 2-Ciudad Universitaria, 1428 Buenos Aires, Argentina

Sequential extraction of *Pterocladiella capillacea* with water at room temperature and then at 50 °C gave two products, which by thorough fractionation and further structural analysis, afforded evidence of the presence of 3-substituted, 4-linked D-galactopyranosyl units in polysaccharides from this seaweed.

Carbohydr. Res. **2003,** *338*, 955

NMR and modelling studies of disaccharide conformation

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[a] *School of Chemical Sciences, The University of New South Wales, Sydney 2052, Australia*
[b] *NMR Facility, School of Chemical Sciences, The University of New South Wales, Sydney 2052, Australia*

Multiple ^{13}C site-selective excitation experiments using ^{1}H decoupling in conjunction with pulsed field gradient-enhanced spectroscopy were used to determine $^{3}J_{C,H}$ values across disaccharide glycosidic linkages. These were compared with couplings calculated from molecular dynamics simulations with the explicit inclusion of water.

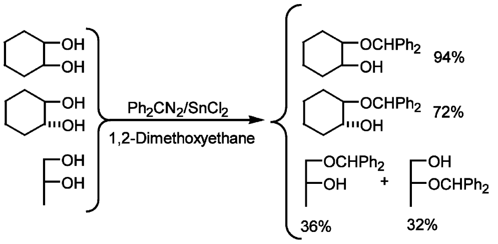
Carbohydr. Res. **2003,** *338,* 963

Tin(II) chloride catalyzed reactions of diazodiphenylmethane with vicinal diols in an aprotic solvent

The reactions with *cis*- and *trans*-1,2-cyclohexanediols and 1,2-propanediol

Sigthor Petursson

Faculty of Natural Resource Sciences, University of Akureyri,
600 Akureyri, Iceland

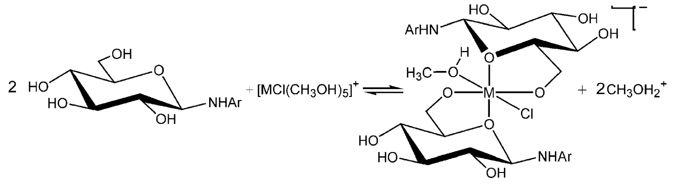


Carbohydr. Res. **2003,** *338,* 969

Mechanism of the transition-metal-catalyzed mutarotation reaction of *N*-(*p*-chlorophenyl)-β-D-glucopyranosylamine in methanol

Kazimiera Smiataczowa, Jarosław Kosmalski, Teresa Widernik, Zygmunt Warnke

Faculty of Chemistry, University of Gdańsk, Sobieskiego 18, PL-80-952 Gdańsk, Poland

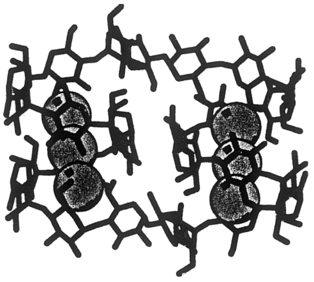


Carbohydr. Res. **2003,** *338,* 977

X-ray structure of the cyclomaltohexaicosaose triiodide inclusion complex provides a model for amylose–iodine at atomic resolution

O. Nimz,[a] K. Geßler,[a] I. Usón,[b] S. Laettig,[c] H. Welfle,[c] G.M. Sheldrick,[b] W. Saenger[a]

[a]*Institut für Kristallographie, Freie Universität Berlin, Takustrasse 6, D-14195 Berlin, Germany*
[b]*Institut für Anorganische Chemie, Universität Göttingen, Tammannstrasse 4, D-37077 Göttingen, Germany*
[c]*Max-Delbrück-Centrum für Molekulare Medizin, Robert-Rössle-Str. 10, D-13092 Berlin-Buch, Germany*



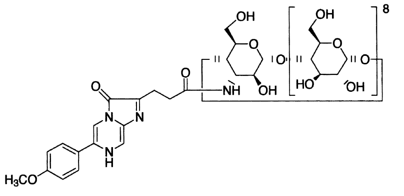
The V-amylose channels of cycloamylose 26 accommodate linear I_3^- chains as guest molecules and I^- in interstices. C–H···I contacts are the dominant interaction of the I_3^- polyiodide subunits with the carbohydrate.

Carbohydr. Res. **2003,** *338,* 987

Enhanced chemiluminescence of 6-(4-methoxyphenyl)-imidazo[1,2-*a*]pyrazin-3(7*H*)-one by attachment of a cyclomaltooligosaccharide (cyclodextrin). Attachment of cyclomaltononaose (δ-cyclodextrin)

Katsunori Teranishi,[a] Tatsuya Nishiguchi,[a] Haruhisa Ueda[b]

[a]*Faculty of Bioresources, Mie University, 1515 Kamihama, Tsu, Mie 514-8507, Japan*
[b]*Faculty of Pharmaceutical Sciences, Hoshi University, 4-41, Ebara 2-chome, Shinagawa-ku, Tokyo 142-8501, Japan*



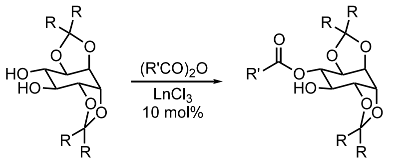
Carbohydr. Res. **2003,** *338,* 995

Monoesterification of di-*O*-isopropylidene and di-*O*-cyclohexylidene *chiro*-inositols

Ghislaine Cousins,[a] Andrew Falshaw,[b] John O. Hoberg[a]

[a]*School of Chemical and Physical Sciences, Victoria University of Wellington, Box 600, Wellington, New Zealand*
[b]*Industrial Research Limited, PO Box 31-310, Lower Hutt, New Zealand*

Monoesterification of D- or L-*chiro*-inositols protected as diacetals proceeds in excellent selectivity and yields. The metal-catalyzed, one-step reaction proceeds at room temperature under an air atmosphere and has been developed using a range of examples.

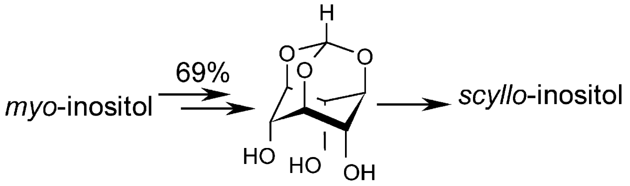


Carbohydr. Res. **2003,** *338,* 999

Sulfonate protecting groups. Improved synthesis of *scyllo*-inositol and its orthoformate from *myo*-inositol

Manash P. Sarmah, Mysore S. Shashidhar

National Chemical Laboratory, Division of Organic Synthesis, Pune 411 008, India



Carbohydr. Res. **2003,** *338,* 1003

Fungal β-*N*-acetylhexosaminidases with high β-*N*-acetylgalactosaminidase activity and their use for synthesis of β-GalNAc-containing oligosaccharides

Lenka Weignerová,[a] Petra Vavrušková,[a] Andrea Pišvejcová,[a] Joachim Thiem,[b] Vladimír Křen[a]

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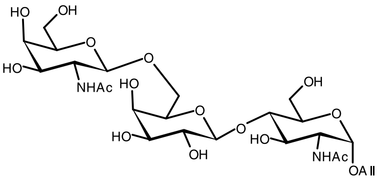
Czech Republic
[b]*Institute of Organic Chemistry, University of Hamburg,*
Martin-Luther-King-Platz 6, D 20146 Hamburg, Germany



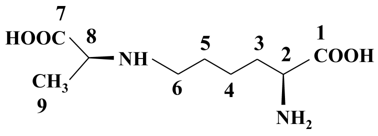
Carbohydr. Res. **2003,** *338,* 1009

Structure of the O-specific polysaccharide of *Providencia rustigianii* O14 containing N^{ε}-[(*S*)-1-carboxyethyl]-N^{α}-(D-galacturonoyl)-L-lysine

Nina A. Kocharova,[a] George V. Zatonsky,[a] Agnieszka Torzewska,[b] Zuzanna Macieja,[b]
Olga V. Bystrova,[a] Aleksander S. Shashkov,[a] Yuriy A. Knirel,[a] Antoni Rozalski[b]

[a]*N.D. Zelinsky Institute of Organic Chemistry, Russian Academy of Sciences, Leninsky Prospekt 47, 119991 Moscow, GSP-1, Russia*
[b]*Department of Immunobiology of Bacteria, Institute of Microbiology and Immunology,*
University of Lodz, Banacha 12/16, 90-237 Lodz, Poland

The O-specific polysaccharide of *Providencia rustigianii* O14 was obtained by mild acid degradation of the LPS and studied by chemical methods and NMR spectroscopy, including 2D ^{1}H,^{1}H COSY, TOCSY, NOESY, and ^{1}H,^{13}C HSQC experiments.



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