Supporting Information

Release of Ring Strain as Driving Force for Inversion of Stereochemistry; Application to the Synthesis of Ribopyranosides from Xylopyranosides.

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General experimental section

All moisture- and air-sensitive reactions were carried out under an atmosphere of dry nitrogen using over-dried glassware. Chromatographic separations were performed on Matrex silica gel (25-70 µm). Thin-layer chromatography was performed on precoated TLC glass plates with silica gel 60 F$_{254}$ 0.25 mm (Merck). Spots were visualized with UV light or by staining with a solution of $p$-methoxybenzaldehyde (26 mL), glacial acetic acid (11 mL), concentrated sulphuric acid (35 mL), and 95% ethanol (960 mL). NMR spectra were recorded on Bruker DRX 400 MHz spectrometer at 400 MHz ($^1$H) and at 100 MHz ($^{13}$C) using the residual solvent as internal standard. Coupling constant values are given in Hz. IR spectra was recorded on a Shimadzu 8300 FTIR spectrometer. Melting points were taken on a Sanyo Gallenkamp melting point apparatus and are uncorrected. Elemental analyses were performed by H. Kolbes Mikroanalytisches Laboratorium, Höhenweg 17, D-45470 Mülheim an der Ruhr. Mass spectra were recorded on Micromass Q-Tof micro™. Optical rotations were measured on Perkin Elmer instrument, Model 341 polarimeter at 20 °C and are given in 10$^{-1}$ deg cm$^2$ g$^{-1}$. All solvents were dried prior to use unless otherwise stated. Materials were obtained from commercial suppliers and were used without further purification unless otherwise stated. Preparative chromatography was performed with an automated Biotage™ Isolera One purification apparatus.
$1H$-NMR

2-Naphthyl 2,3-O-isopropylidene-6-$\delta$-D-xylopyranoside 6.
${}^{13}$C-NMR 2-Naphthyl 2,3-\(O\)-isopropylidene-\(\beta\)-D-xylopyranoside 6.
1H-NMR

2-Naphthyl 3,4-O-isopropylidene-\(\beta\)-D-xylopyranoside 7.

NAME  KIH-B114b
EXPNO  2
PROCNO  1
Date_  20130311
Time  15.17
INSTRUM  spect
PULPROG  5 mm FABBO BB/
PULPROG  ref30
TD  5600
SOLVENT  CDCl3
NS  64
DS  2
SWH  7211.539 Hz
FIDRES  0.125000 Hz
AQ  3.9999801 sec
RG  287
DW  69.233 usc
DE  6.00 usc
TE  294.3 K
DI  0.001000000 sec
TD0  1

--- CHANNEL1 ---

NUC1  1H
P1  10.20 usc
PL1  -4.00 dB
PL1W  21.492504898 W
SF01  400.1334011 MHz
SI  131.072
SF  400.13000097 MHz
WDW  EM
SSB  0
LB  0.30 Hz
GHR  0
PC  4.00
$^{13}$C-NMR of 2-Naphthyl 3,4-O-isopropylidene-β-D-xylopyranoside 7.
1H-NMR 2-Naphthyl 2,3-O-isopropylidene-o-L-arabinopyranoside 10.
$^{13}$C-NMR 2-Naphthyl 2,3-$O$-isopropylidene-$\alpha$-L-arabinopyranoside 10.
1H-NMR spectrum of 2-Naphthyl α-L-arabinopyranoside 12.
1H-NMR spectrum of 2-Naphthyl-β-D-ribofuranoside 13 from 6.
$^1$H-NMR 2-Naphthyl $\beta$-D-ribofuranoside 13 from 7.
$^{1}H$-NMR 2-Naphthyl $\beta$-d-ribofuranoside 13 (from mixture of 6 and 7).
$^1$H-NMR 2-Naphthyl 3,4-O-isopropylidene-β-D-lyxopyranoside 17.
$^{13}$C-NMR of 2-Naphthyl 3,4-O-isopropylidene-β-D-lyxopyranoside 17.
1H-NMR of 2-Naphthyl β-D-Lyxopyranoside 18.