SUPPORTING INFORMATION

One-pot synthesis of fluorescein based *β*-aminoglycosylketones and their biological and material applications

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Experimental section

D-Glucose, butyraldehyde, resorcinol, potassium carbonate and other solvents were obtained from SRL, Chennai, Tamil Nadu, India. Column chromatography was performed on Silica Gel (100-200 mesh). Melting points were measured on Sigma micro melting point apparatus and are uncorrected. NMR spectra were recorded on Bruker DRX 300 MHz in $CDCl_3$ or DMSO-d_6 at University of Madras (Chennai,Tamil Nadu, India). TMS was used as the internal standard (δ = 0.00 ppm) and all the *J* values are given in hertz. Optical rotation was performed by using Rudolph-Autopol II digital polarimeter. Elemental analyses were performed using Perkin-Elmer 2400 elemental analyzer. FESEM images were recorded on a Hitachi SU-6600 instrument and HRTEM was recorded using a JEOL, JEM 3010 model (LaB6 filament). Thermal transitions for gelators and gels were determined on a NETZSCH DSC 204 instrument. Rheological studies were recorded in Gemini 2000 using pp40. X-ray diffractograms of the dried films were recorded on XRD RINT 2500 diffractometer using Ni filtered Cu Kα radiation.

In vitro antioxidant activity

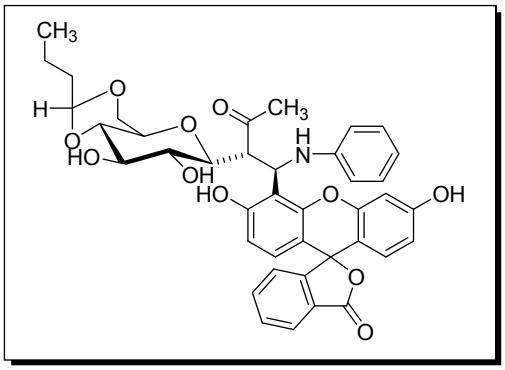
In vitro antioxidant activity for fluorescein based β-aminoglycosylketones **15-20** were evaluated by the DPPH radical scavenging method.[32] The principle of this assay is based on the measurement of the scavenging ability of the antioxidant towards the stable radical. The free radical of DPPH is reduced to the corresponding hydrazine when it reacts with hydrogen donors, and its stability is evaluated by the decolouration assay, which evaluates the decrease in absorbance at 517 nm produced by the addition of the antioxidant to a DPPH solution in ethanol. Assays were performed in 1.5 mL reaction mixtures containing 1 mL of 0.1 mM DPPH ethanol solution and 1 mL of different concentrations of fluorescein based β-aminoglycosylketones **15-20** (20-200 μg/mL)/0.5 mL of ethanol (as control). After 30 min of incubation at 37 °C in the dark, the absorbance of the reaction mixtures were measured at 517 nm. IC_{50} is the concentration of the sample required to scavenge 50% of the DPPH free radicals. The percentage of inhibition is calculated by subtracting the absorbance of the sample from the absorbance

of the control divided by absorbance of the control. The lower the IC_{50}, the higher is the antioxidant activity of the examined compound. From the difference in the absorbance of DPPH, the percentage of inhibition was calculated as a function of antioxidant activity.

General procedure for the synthesis of fluorescein based *β*-aminoglycosylketone derivatives (15-20)

To a solution of the fluorescein-monoaldehyde **7**, (1.0 mmol), aromatic amines **8-13** (1.0 mmol), 1-(4,6-O-butylidene-*β*-D-glucopyranosyl)propan-2-one **14**, (1.0 mmol) and dry MeOH (10 mL) were added potassium carbonate (0.1 mmol). After stirring at 50 ºC for a given period of time, the reaction mixture was evaporated under reduced pressure and extracted by chloroform-water. The chloroform layer was dried over anhyd.Na_2SO_4 and concentrated to dryness. The product was further purified by flash column chromatography.

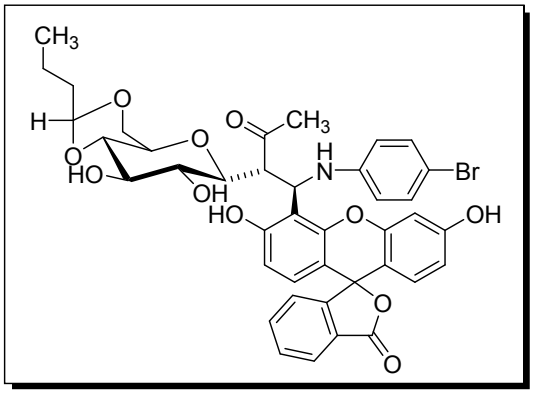
Physicochemical and spectral data for 3-(fluorescein)-2-(4,6-*O*-butylidene-β-D-glucopyranosyl)-3-(phenylamino)-butan-1-one (15)



Compound, **15** was obtained by the reaction of fluorescein-monoaldehyde **7**, (1.0 mmol, 0.36 g), aniline **8**, (1.0 mmol, 0.2 mL), 1-(4,6-*O*-butylidene-β-D-glucopyranosyl)-propan-2-one **14**, (1.0 mmol, 0.12 g) as pale yellow solid: Yield: 0.50 g (71%); mp 156-158 ^oC; $[\alpha]_D^{31}$ + 87.8 (c 0.1, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 0.92 (t, 3H, J = 7.3 Hz, -CH_3), 1.42 (q, 2H, J = 9.2 Hz, -CH_2), 1.62 (q, 2H, J = 9.0 Hz, -CH_2), 2.20 (s, 3H, -$COCH_3$), 2.67 (dd, 3H, J = 7.8 Hz, J = 7.8 Hz, Sac-H), 2.91 (d, 1H, J = 16.5 Hz, -CH), 3.22 (t, 1H, J = 9.0 Hz, Sac-H), 3.31-3.45 (m, 1H, Sac-H), 3.51 (d, 1H, J = 7.1 Hz, -CH), 3.69 (t, 1H, J = 8.4 Hz, Sac-H),

3.83 (s, 2H, Sac-OH), 4.13 (d, 1H, *J* = 7.2 Hz, Ano-H), 4.53 (t, 1H, *J* = 4.8 Hz, Sac-H), 6.59 (s, 1H, -NH), 6.77 (d, 2H, *J* = 8.4 Hz, Ar-H), 7.06 (d, 2H, *J* = 8.4 Hz, Ar-H), 7.14 (d, 2H, *J* = 7.2 Hz, Ar-H), 7.26 (t, 3H, *J* = 8.0 Hz, Ar-H), 7.34 (s, 2H, Ar-OH), 7.64-7.73 (m, 4H, Ar-H), 8.06 (d, 1H, *J* = 7.2 Hz, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 207.4, 169.0, 152.7, 151.1, 136.4, 135.5, 132.0, 130.2, 129.0, 125.8, 125.4, 124.7, 123.7, 117.4, 117.0, 110.6, 102.4, 81.2, 80.4, 76.0, 75.1, 74.2, 70.5, 68.2, 59.6, 36.2, 30.9, 28.0, 17.4, 13.9. ESI-MS: calc. for C40H39NO11, 709.74; m/z found, 710.64 $[M + H]^+$; elemental Anal. Found: C, 67.84; H, 5.74; N, 1.87. Calc. For $C_{40}H_{39}NO_{11}$: C, 67.82; H, 5.70; N, 1.81.

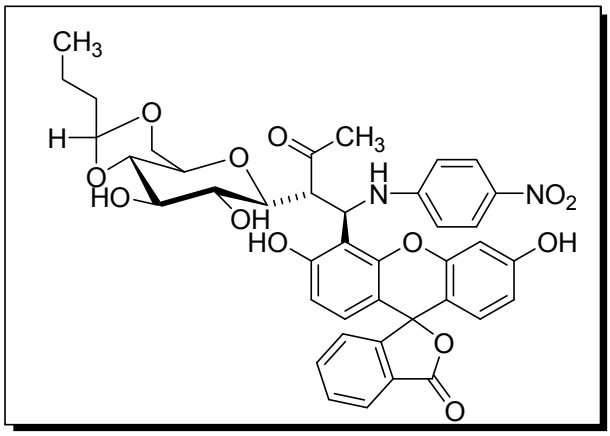
Physicochemical and spectral data for 3-(fluorescein)-2-(4,6-*O*-butylidene-β-D-glucopyranosyl)-3-(4-bromophenylamino)-butan-1-one (16)



Compound, **16** was obtained by the reaction of fluorescein-monoaldehyde **7**, (1.0 mmol, 0.36 g), 4-bromoaniline **9**, (1.0 mmol, 0.17 g), 1-(4,6-*O*-butylidene-β-D-glucopyranosyl)-propan-2-one **14**, (1.0 mmol, 0.12 g) as brown solid: Yield: 0.48 g (62%); mp 162-164 ^{o}C; $[\alpha]_D^{31}$ + 58.5 (c 0.1, $CHCl_3$); ^{1}H NMR (300 MHz, $CDCl_3$): δ 0.92 (t, 3H, *J* = 7.4 Hz, -CH_3), 1.42 (q, 2H, *J* = 11.0 Hz, -CH_2), 1.62 (q, 2H, *J* = 9.1 Hz, -CH_2), 2.19 (s, 3H, -$COCH_3$), 2.54-2.67 (m, 1H, Sac-H), 2.90 (d, 1H, *J* = 11.2 Hz, -CH), 3.19-3.45 (m, 4H, Sac-H), 3.52 (d, 1H, *J* = 6.7 Hz, -CH), 3.67 (t, 1H, *J* = 8.7 Hz, Sac-H), 3.80 (d, 1H, *J* = 7.5 Hz, Ano-H), 4.12 (d, 1H, *J* = 3.6 Hz, Sac-H), 4.52 (t, 2H, *J* = 4.8 Hz, Sac-OH), 6.71 (s, 1H, -NH), 6.77 (t, 3H, *J* = 6.8 Hz, Ar-H), 7.05 (dd, 2H, *J* = 8.4 Hz, *J* = 8.4 Hz, Ar-H), 7.14 (t, 4H, *J* = 7.5 Hz, Ar-H), 7.34 (s, 2H, Ar-OH), 7.63-7.73 (m, 3H, Ar-H), 8.06 (d, 1H, *J* = 7.2 Hz, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 207.3, 169.1, 152.8, 151.2, 145.7, 136.4, 135.5,

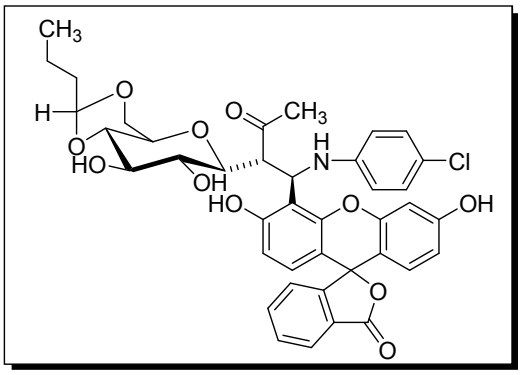
130.3, 129.0, 125.8, 125.4, 124.7, 123.7, 119.0, 117.4, 115.5, 102.5, 81.2, 80.5, 77.5, 77.0, 76.6, 76.0, 75.1, 74.2, 70.5, 68.2, 59.7, 36.2, 30.9, 29.5, 17.4, 13.9. ESI-MS: calc. for C40H38BrNO11, 788.63; m/z found, 789.42 $[M + H]^+$; elemental anal. Found: C, 60.72; H, 4.76; N, 1.88. Calc. for $C_{40}H_{38}BrNO_{11}$: C, 60.79; H, 4.71; N, 1.82.

Physicochemical and spectral data for 3-(fluorescein)-2-(4,6-*O*-butylidene-β-D-glucopyranosyl)-3-(4-nitrophenylamino)-butan-1-one (17)



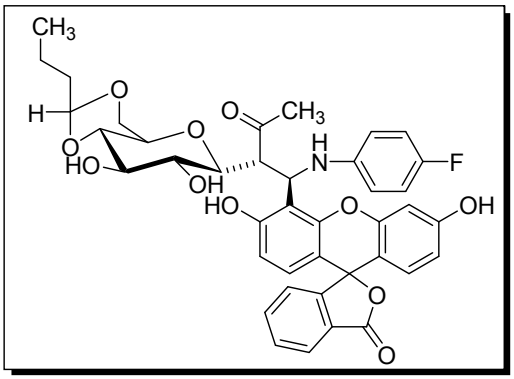
Compound, **17** was obtained by the reaction of fluorescein-monoaldehyde **7**, (1.0 mmol, 0.36 g), 4-nitroaniline **10**, (1.0 mmol, 0.13 g), 1-(4,6-O-butylidene-β-D-glucopyranosyl)-propan-2-one **14**, (1.0 mmol, 0.12 g) as pale yellow solid: Yield: 0.46 g (61%); mp 170-172 ^oC; $[\alpha]_D^{31}$ + 77.2 (c 0.1, $CHCl_3$); ^1H NMR (300 MHz, $CDCl_3$): δ 0.91 (t, 3H, J = 7.2 Hz, -CH_3), 1.42 (q, 2H, J = 9.8 Hz, -CH_2), 1.60 (q, 2H, J = 9.0 Hz, -CH_2), 2.19 (s, 3H, -$COCH_3$), 2.65 (dd, 1H, J = 6.7 Hz, J = 6.6 Hz, Sac-H), 2.88 (d, 1H, J =11.5 Hz, -CH), 3.19-3.45 (m, 5H, Sac-H), 3.52 (d, 1H, J = 6.9 Hz, -CH), 4.12 (q, 2H, J = 3.6 Hz, Sac-H), 4.52 (d, 2H, J = 8.7 Hz, Ano-H), 6.62 (s, 1H, -NH), 6.77 (d, 2H, J = 8.4 Hz, Ar-H), 7.05 (d, 2H, J = 8.4 Hz, Ar-H), 7.15 (d, 4H, J = 6.9 Hz, Ar-H), 7.34 (s, 2H, Ar-OH), 7.64-7.73 (m, 2H, Ar-H), 8.06 (d, 3H, J = 8.7 Hz, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 207.3, 169.2, 152.9, 152.6, 151.2, 138.7, 136.4, 135.6, 130.3, 129.0, 126.3, 125.8, 125.4, 124.7, 123.7, 117.4, 117.3, 113.3, 102.4, 81.3, 80.4, 77.5, 75.2, 74.3, 70.5, 68.2, 59.6, 36.2, 30.9, 29.8, 17.5, 13.9. Elemental Anal. Found: C, 63.56; H, 5.37; N, 3.61**.** Calc. for $C_{40}H_{38}N_2O_{13}$: C, 63.51; H, 5.32; N, 3.66.

Physicochemical and spectral data for 3-(fluorescein)-2-(4,6-*O*-butylidene-β-D-glucopyranosyl)-3-(4-chlorophenylamino)-butan-1-one (18)



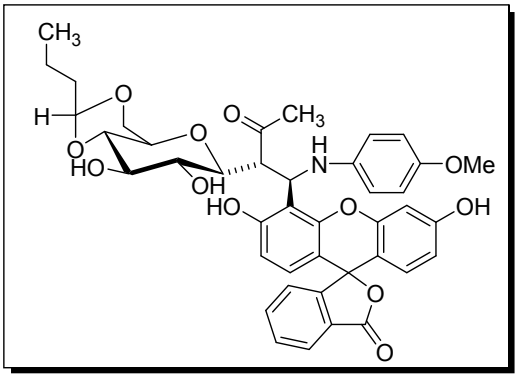
Compound, **18** was obtained by the reaction of fluorescein-monoaldehyde **7**, (1.0 mmol, 0.36 g), 4-chloroaniline **11**, (1.0 mmol, 0.12 g), 1-(4,6-*O*-butylidene-β-D-glucopyranosyl)-propan-2-one **14**, (1.0 mmol, 0.12 g) as pale yellow solid: Yield: 0.40 g (54%); mp 148-150 ^{o}C; $[\alpha]_D^{31}$ + 56.8 (c 0.1, $CHCl_3$); ^{1}H NMR (300 MHz, $CDCl_3$): δ 0.92 (t, 3H, J = 7.2 Hz, -CH_3), 1.43 (q, 2H, J = 9.0 Hz, -CH_2), 1.63 (q, 2H, J = 5.2 Hz, -CH_2), 2.20 (s, 3H, -$COCH_3$), 2.65 (dd, 1H, J = 8.1 Hz, J = 8.1 Hz, Sac-H), 2.90 (d, 1H, J = 11.2 Hz, -CH), 3.22 (t, 1H, J = 9.0 Hz, Sac-H), 3.28-3.45 (m, 4H, Sac-H), 3.57 (d, 1H, J = 6.9 Hz, -CH), 3.69 (t, 1H, J = 8.7 Hz, Sac-H), 3.82 (d, 1H, J = 2.7 Hz, Sac-H), 4.12 (d, 1H, J = 8.7 Hz, Ano-H), 4.52 (t, 1H, J = 7.8 Hz, Sac-OH), 6.48 (t, 2H, J = 7.8 Hz, Ar-H), 6.77 (q, 4H, J = 7.4 Hz, Ar-H), 7.05 (s, 1H, -NH), 7.15 (q, 2H, J = 7.2 Hz, Ar-H), 7.34 (s, 2H, Ar-OH), 7.67 (q, 4H, J = 9.6 Hz, Ar-H), 8.06 (d, 1H, J = 7.2 Hz, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 207.1, 169.0, 152.8, 151.2, 146.7, 138.9, 135.5, 130.3, 129.0, 125.4, 124.7, 123.7, 119.9, 117.4, 114.7, 102.5, 84.2, 81.2, 80.4, 77.5, 77.0, 76.6, 75.9, 75.2, 74.3, 70.6, 68.2, 60.7, 36.2, 30.9, 28.9, 17.5, 13.9. ESI-MS: calc. for C40H38ClNO11, 743.21; m/z found, 744.39 $[M + H]^+$; elemental Anal. Found: C, 64.76; H, 5.25; N, 1.68. Calc. for $C_{40}H_{38}ClNO_{11}$: C, 64.71; H, 5.29; N, 1.63.

Physicochemical and spectral data for 3-(fluorescein)-2-(4,6-*O*-butylidene-β-D-glucopyranosyl)-3-(4-fluorophenylamino)-butan-1-one (19)



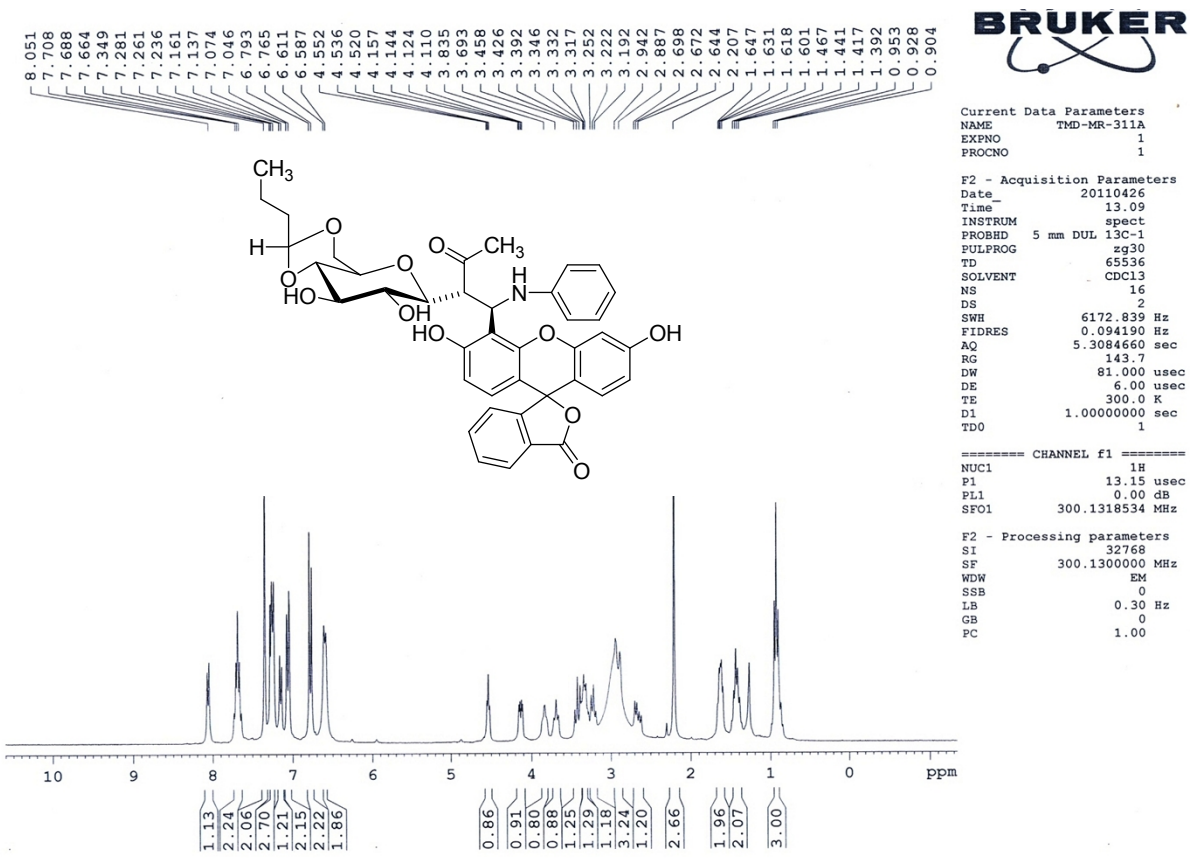
Compound, **19** was obtained by the reaction of fluorescein-monoaldehyde **7**, (1.0 mmol, 0.36 g), 4-fluoroaniline **12**, (1.0 mmol, 0.2 mL), 1-(4,6-O-butylidene-β-D-glucopyranosyl)-propan-2-one **14**, (1.0 mmol, 0.12 g) as pale yellow solid: Yield: 0.38 g (52%); mp 166-168 ^{o}C; $[\alpha]_D^{31}$ + 34.7 (c 0.1, $CHCl_3$); ^{1}H NMR (300 MHz, $CDCl_3$): δ 0.92 (t, 3H, J = 7.2 Hz, -CH_3), 1.42 (q, 2H, J = 9.2 Hz, -CH_2), 1.62 (q, 2H, J = 8.5 Hz, -CH_2), 2.19 (s, 3H, -$COCH_3$), 2.64 (q, 1H, J = 8.1 Hz, Sac-H), 2.91 (d, 1H, J = 10.2 Hz, -CH), 3.19-3.45 (m, 4H, Sac-H), 3.52 (d, 1H, J = 6.6 Hz, -CH), 3.69 (t, 1H, J = 8.7 Hz, Sac-H), 3.81 (d, 1H, J = 8.1 Hz, Ano-H), 4.12 (d, 1H, J = 5.7 Hz, Sac-H), 4.53 (t, 2H, J = 4.5 Hz, Sac-OH), 6.76 (s, 1H, -NH), 7.04 (d, 3H, J = 7.5 Hz, Ar-H), 7.14 (d, 4H, J = 7.2 Hz, Ar-H), 7.34 (s, 2H, Ar-OH), 7.64-7.73 (m, 5H, Ar-H), 8.05 (d, 1H, J = 7.2 Hz, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 207.3, 169.1, 152.8, 151.2, 136.4, 135.5, 130.3, 130.2, 129.0, 126.9, 125.8, 125.5, 124.7, 123.6, 119.4, 117.4, 115.6, 102.5, 81.2, 80.4, 75.2, 74.3, 70.5, 68.2, 58.5, 36.2, 32.0, 30.9, 17.4, 17.3, 13.9. Elemental Anal. Found: C, 66.27; H, 5.46; N, 1.72. Calc. for $C_{40}H_{38}FNO_{11}$: C, 66.22; H, 5.42; N, 1.77.

Physicochemical and spectral data for 3-(fluorescein)-2-(4,6-*O*-butylidene-β-D-glucopyranosyl)-3-(4-methoxy phenylamino)-butan-1-one (20)

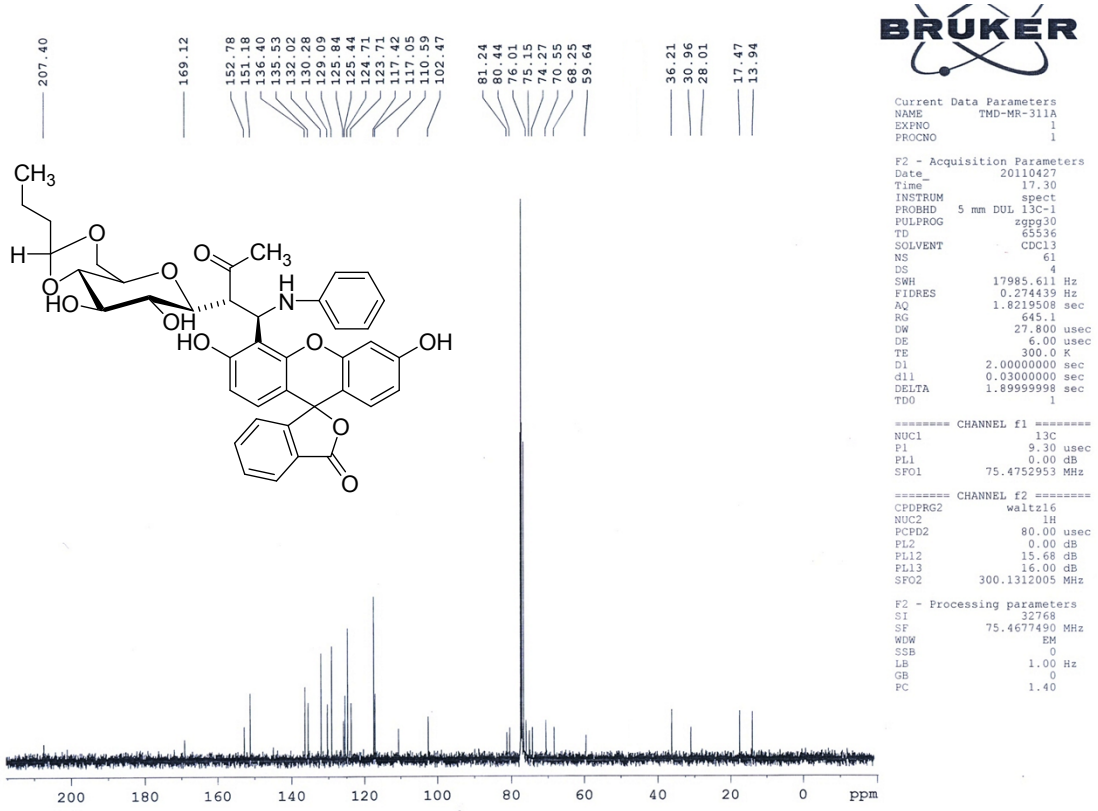


Compound, **20** was obtained by the reaction of fluorescein-monoaldehyde **7**, (1.0 mmol, 0.36 g), 4-methoxyaniline **13**, (1.0 mmol, 0.12 g), 1-(4,6-*O*-butylidene-β-D-glucopyranosyl)-propan-2-one **14**, (1.0 mmol, 0.12 g) as brown solid: Yield: 0.50 g (68%); mp 160-162 ^{o}C; $[\alpha]_D^{31}$ + 23.6 (c 0.1, $CHCl_3$); ^{1}H NMR (300 MHz, $CDCl_3$): δ 0.91 (t, 3H, J = 7.3 Hz, -CH_3), 1.45 (q, 2H, J = 9.4 Hz, -CH_2), 1.65 (q, 2H, J = 9.4 Hz, -CH_2), 2.19 (s, 3H, -$COCH_3$), 2.55-2.66 (m, 1H, Sac-H), 2.87 (d, 1H, J = 11.7 Hz, -CH), 3.18-3.40 (m, 6H, Sac-H), 3.44 (s, 2H, Sac-OH), 3.75 (s, 3H, -OCH_3), 4.12 (d, 1H, J = 7.2 Hz, Ano-H), 4.52 (t, 1H, J = 7.9 Hz, Sac-H), 6.70 (s, 1H, -NH), 6.77 (d, 5H, J = 8.4 Hz, Ar-H), 7.06 (d, 2H, J = 8.4 Hz, Ar-H), 7.14 (d, 3H, J = 6.9 Hz, Ar-H), 7.34 (s, 2H, Ar-OH), 7.63-7.72 (m, 2H, Ar-H), 8.06 (d, 1H, J = 9.0 Hz, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 207.3, 169.0, 153.3, 152.8, 151.2, 138.8, 136.3, 135.4, 130.2, 129.0, 125.9, 125.4, 124.7, 123.7, 117.0, 114.8, 102.5, 81.4, 80.4, 75.2, 74.3, 70.5, 68.2, 60.0, 55.7, 36.2, 32.0, 30.9, 17.4, 13.9. Elemental Anal. Found: C, 66.87; H, 5.49; N, 1.69. Calc. for $C_{41}H_{41}NO_{12}$: C, 66.81; H, 5.44; N, 1.62

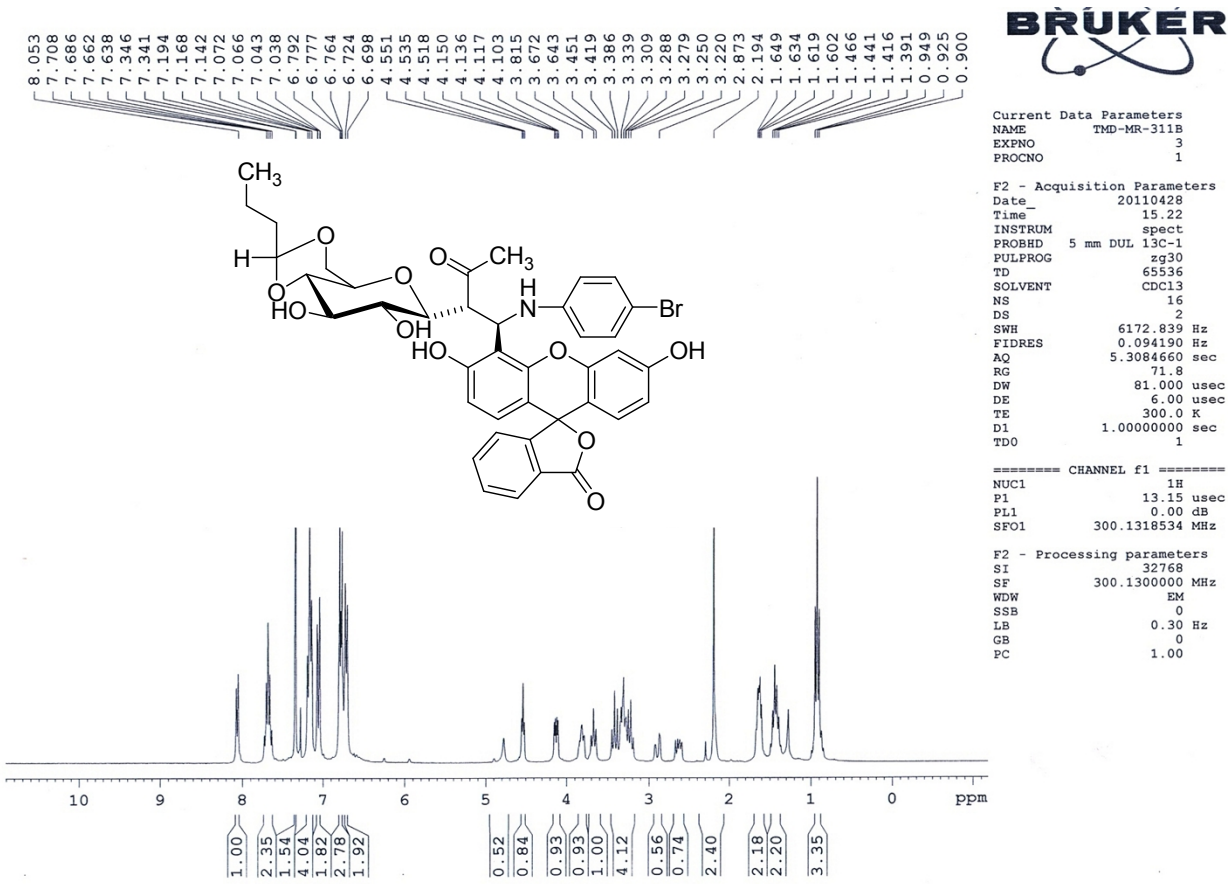
S1. ^{1}H NMR spectrum of compound **15**



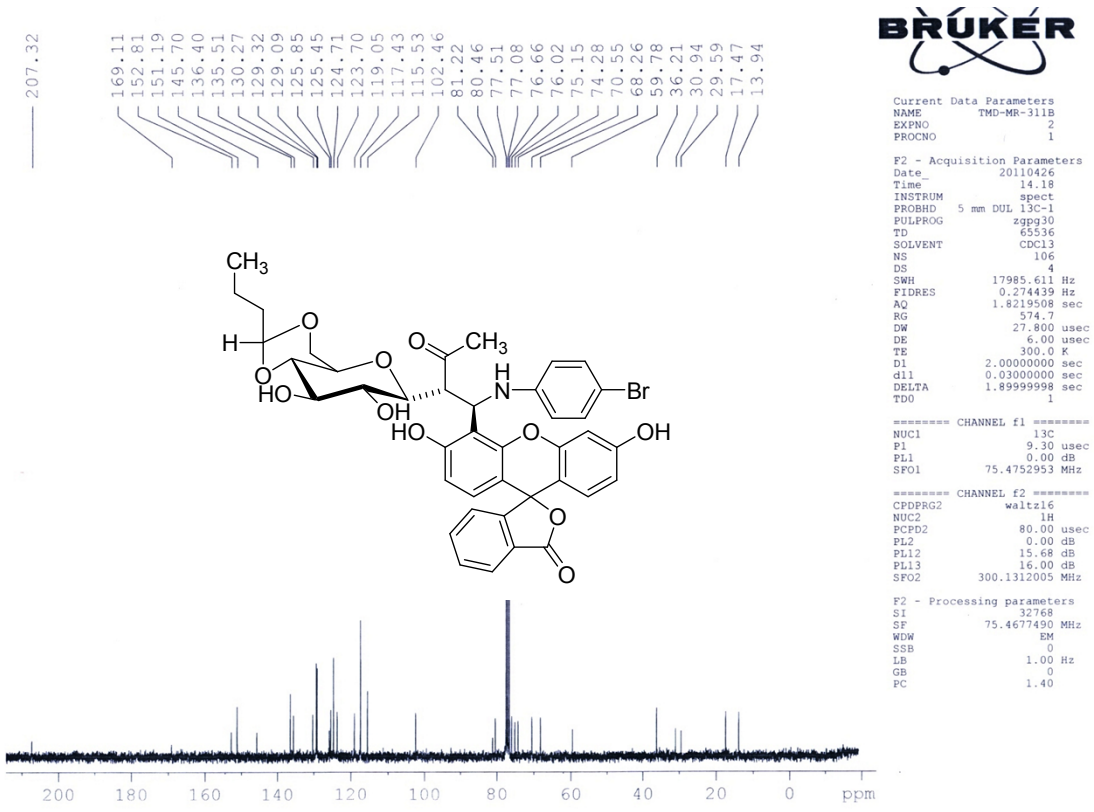
S2. ^{13}C NMR spectrum of compound **15**



S3. ^{1}H NMR spectrum of compound **16**



S4. ^{13}C NMR spectrum of compound **16**



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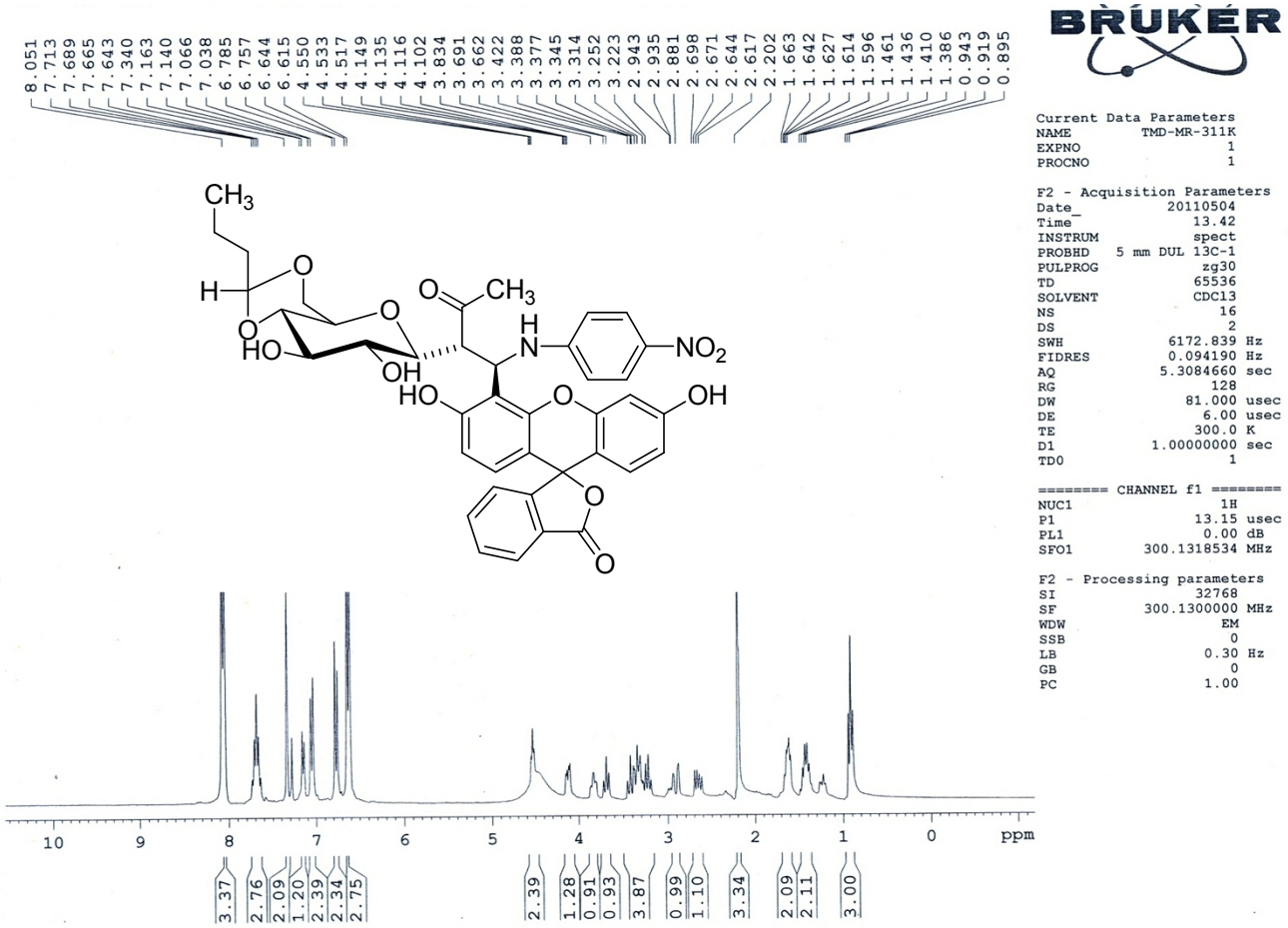
S5. ^{1}H NMR spectrum of compound **17**



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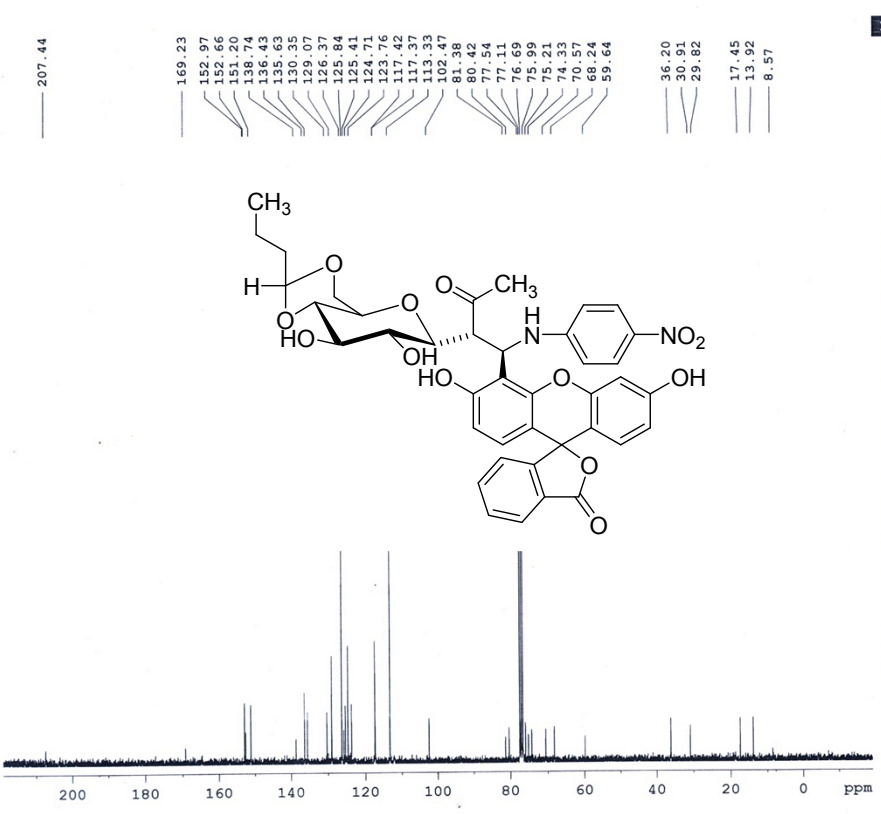
S6. ^{13}C NMR spectrum of compound **17**



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TE                 300.0 K
D1             2.00000000 sec
d11            0.03000000 sec
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TD0                    1

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P1                 9.30 usec
PL1                0.00 dB
SFO1          75.4752953 MHz

======== CHANNEL f2 ========
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NUC2                  1H
PCPD2             80.00 usec
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PL13              16.00 dB
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F2 - Processing parameters
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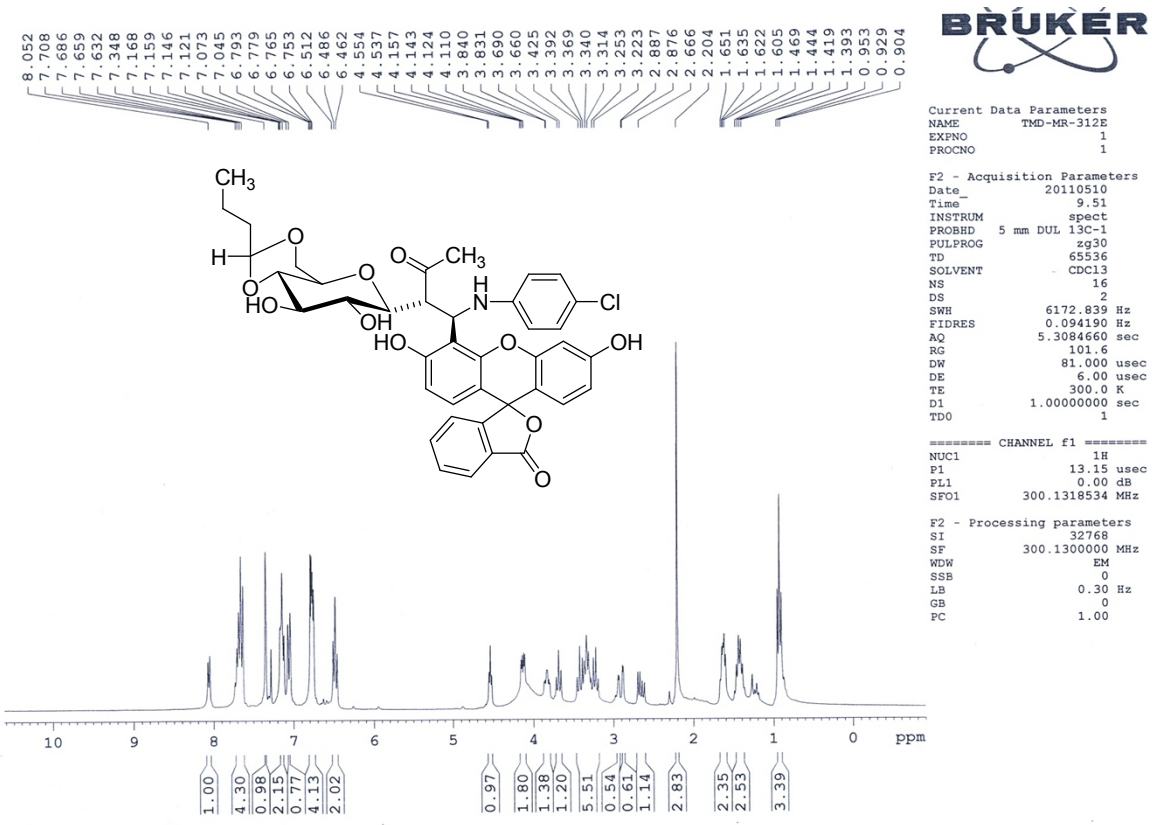
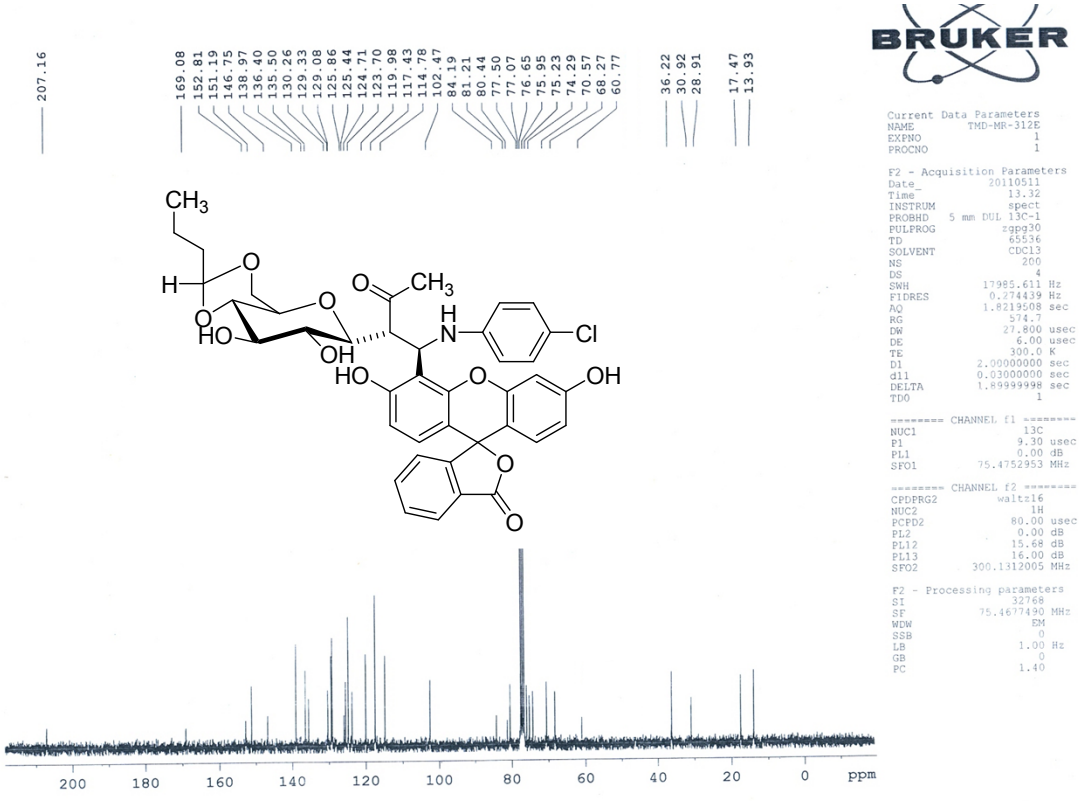
S7. ^{1}H NMR spectrum of compound **18**



S8. ^{13}C NMR spectrum of compound **18**



BRUKER

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PROCNO 1

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PL1 0.00 dB
SFO1 75.4752953 MHz

======== CHANNEL f2 ========
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NUC2 1H
PCPD2 80.00 usec
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PL13 16.00 dB
SFO2 300.1312005 MHz

F2 - Processing parameters
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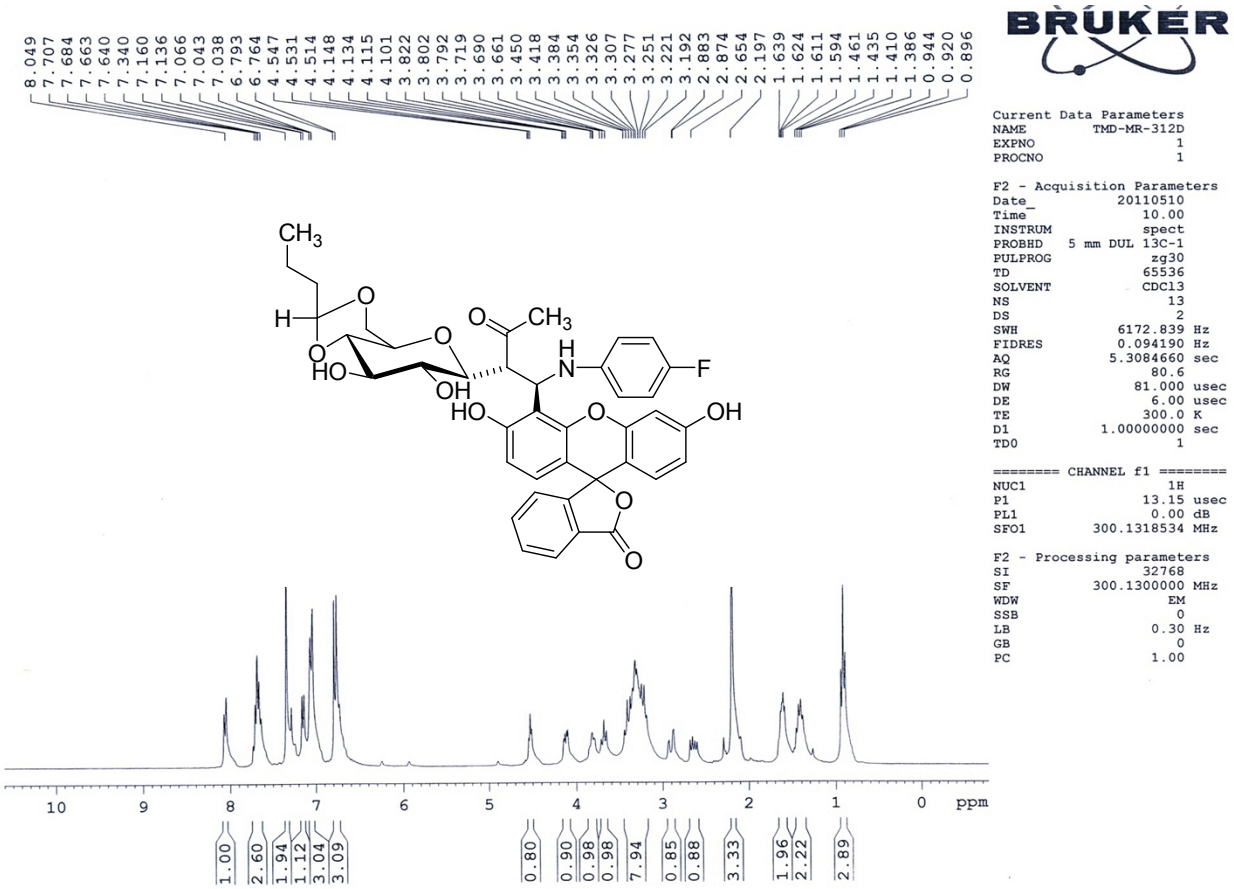
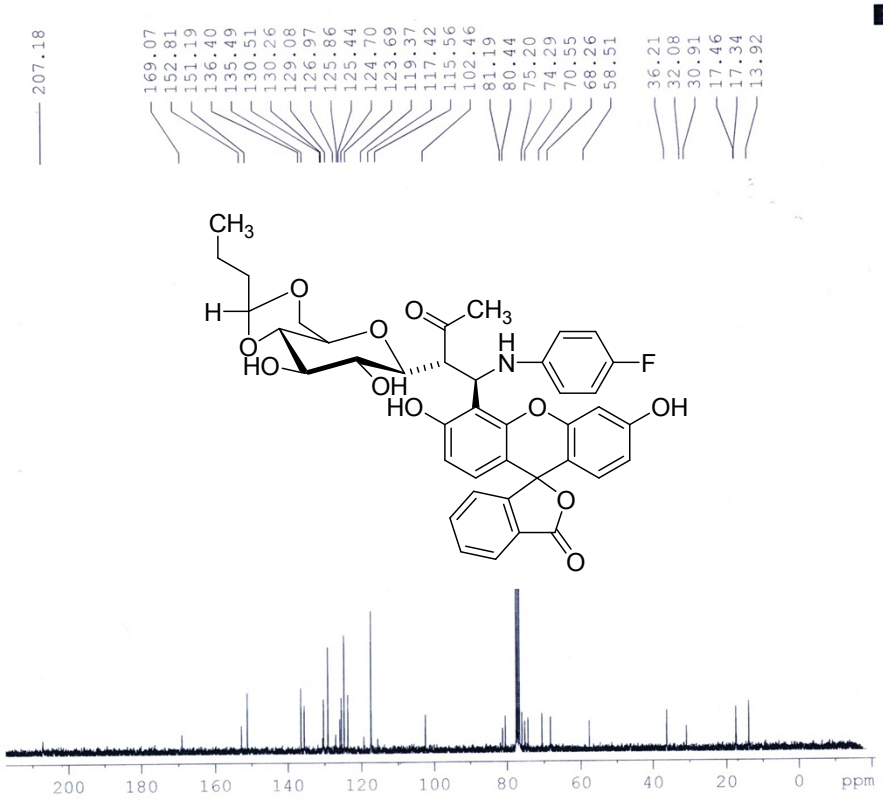
GB 0
PC 1.40

S9. ^{1}H NMR spectrum of compound **19**



S10. ^{13}C NMR spectrumof compound **19**



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TD0                            1

======== CHANNEL f1 ========
NUC1                         13C
P1                          9.30 usec
PL1                         0.00 dB
SFO1                 75.4752953 MHz

======== CHANNEL f2 ========
CPDPRG2                 waltz16
NUC2                         1H
PCPD2                      80.00 usec
PL2                         0.00 dB
PL12                       15.68 dB
PL13                       16.00 dB
SFO2                300.1312005 MHz

F2 - Processing parameters
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SF                   75.4677490 MHz
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GB                             0
PC                          1.40
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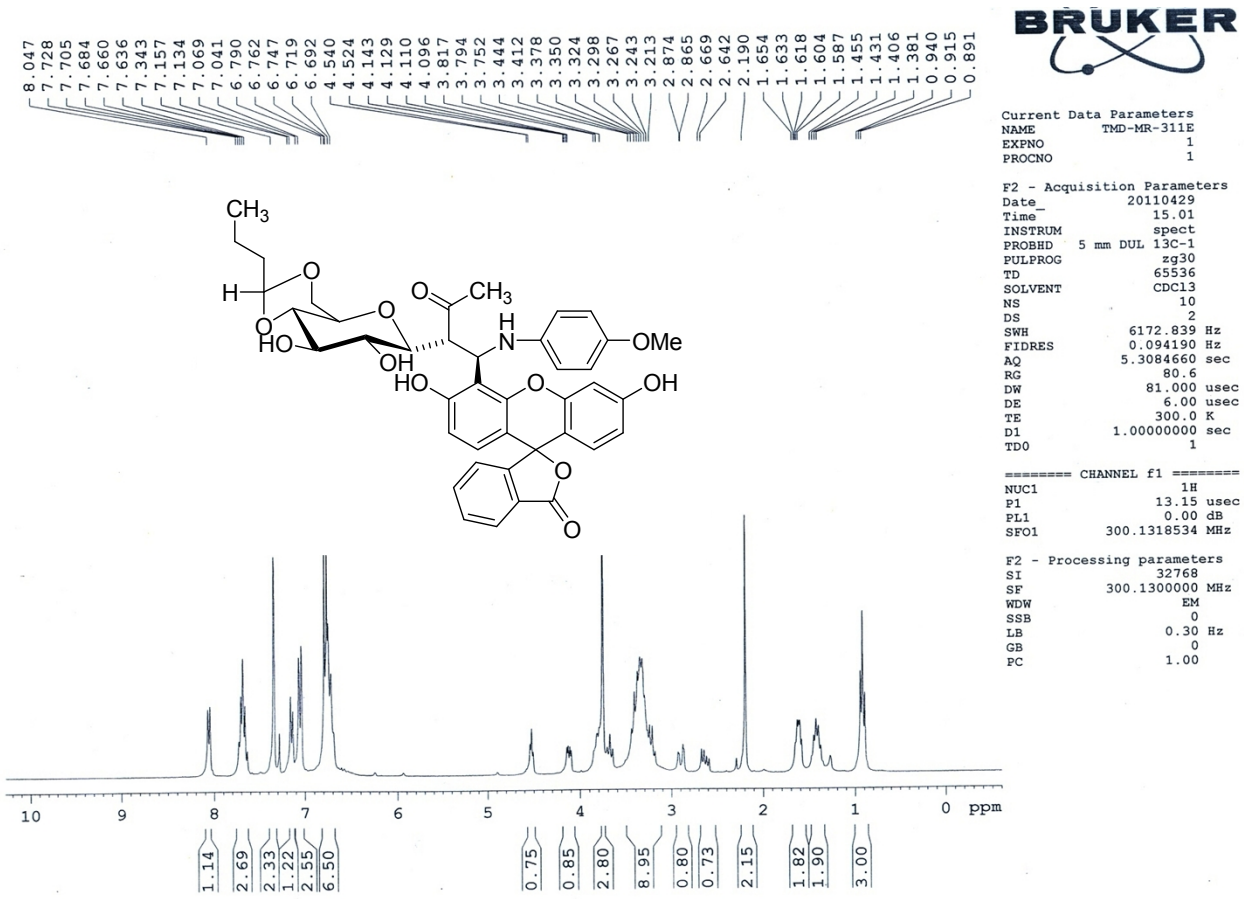
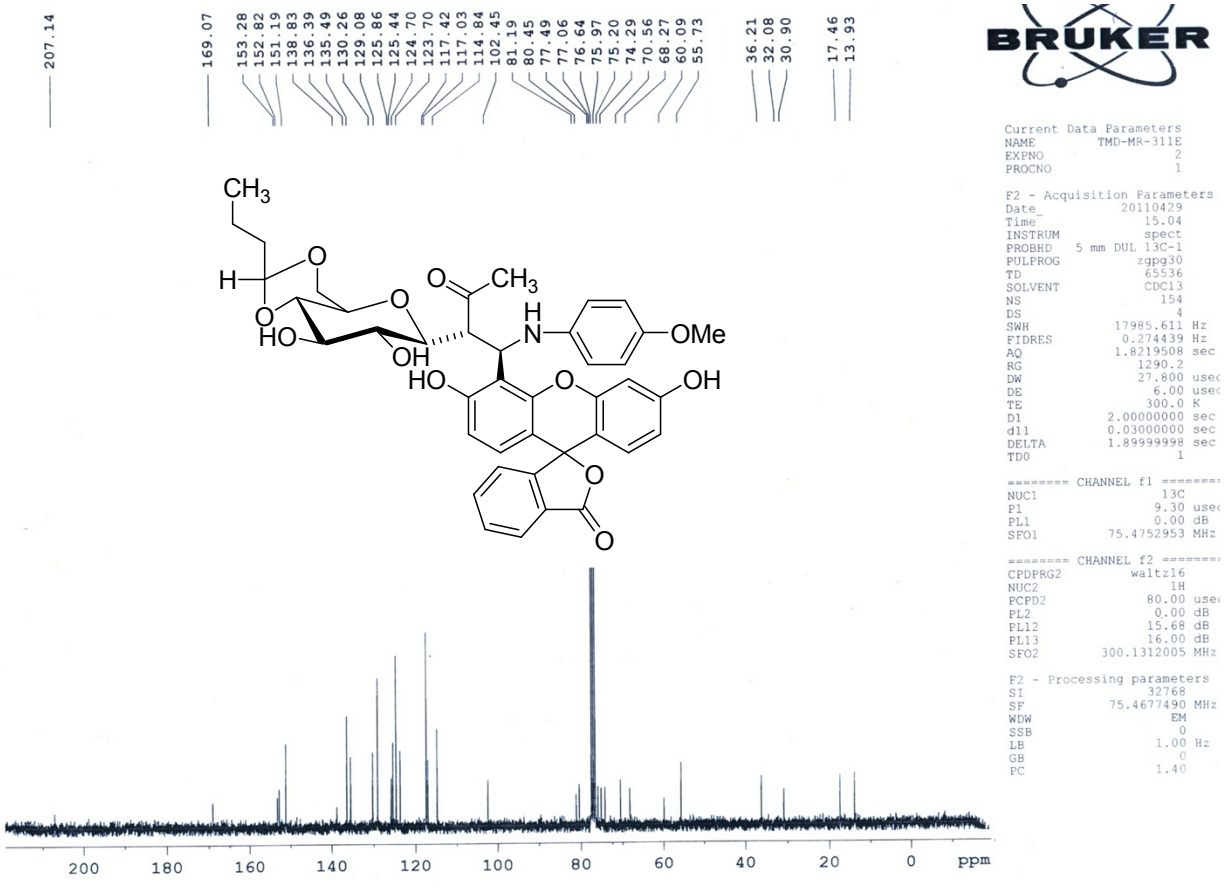
S11. ^{1}H NMR spectrum of compound **20**



S12. ^{13}C NMR spectrum of compound **20**

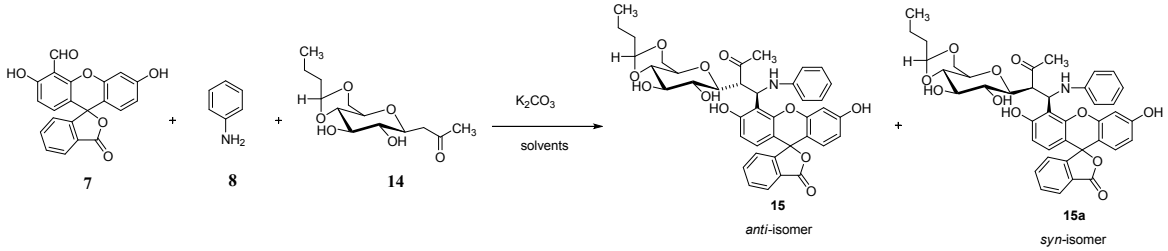


Optimization of experimental conditions:

The several solvents employed in this optimization are playing key role in the formation of fluorescein based β-aminoglycosyl ketones (**15**). Initially, the three-component Mannich reaction of fluorescein-monoaldehyde (**7**) with aniline (**8**) and 1-(4,6-*O*-butylidene-β-D-glucopyranosyl)propan-2-one (**14**) in the presence of potassium carbonate (K_2CO_3) were conducted and optimization are shown in Table 1. Potassium carbonate (K_2CO_3) catalyzed Mannich reactions in organic solvents such as acetonitrile, THF, 1,2-dichloroethane, methanol, and ethanol gave the desired products **15** as a single

isomer without **15a** in low yield with the formation of by-products. We found that a remarkable solvent effect existed in 10 mol% potassium carbonate-catalyzed reaction at reflux temperature. These results showed that methanol was the most suitable solvent for this transformation among others, such as acetonitrile, THF, 1,2-dichloromethane, and ethanol (Table 1, entries 1-5).

Table 1. Optimization of reaction condition[a]



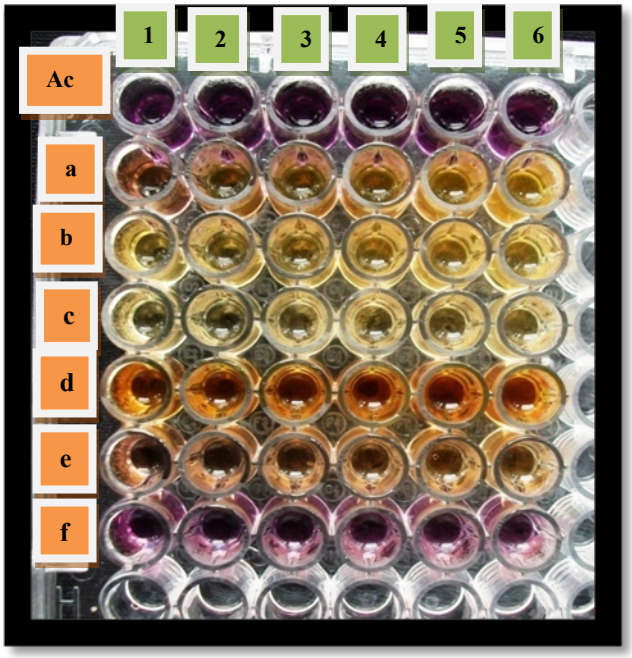
Entry	solvents	Potassium carbonate (mol%)	T (°C)	Time (hrs)	Yield (%)[b]
1	CH_3CN	10	reflux	8	44
2	EtOH	10	reflux	8	66
3	CH_2Cl_2	10	reflux	8	54
4	THF	10	reflux	8	61
5	**MeOH**	**10**	**reflux**	**8**	**71**
6	MeOH	10	rt	8	58
7	MeOH	5	reflux	8	45
8	MeOH	-	reflux	8	-

[a]All the reactions were carried out using **7** (1.0 mmol), **8** (1.0 mmol), and **14** (1.0 mmol) in 10 mL solvent.
[b]Isolated yields.

When the model reaction was carried out under room temperature, reduced yield was observed (Table 1, entry 6). When the reaction was catalyzed by 5 mol%, the reaction time was prolonged to 8 h and the desired product **15** was obtained with only 45% (Table 1, Entry 7). While no conversion of fluorescein based β-aminoglycosyl ketone **15** was

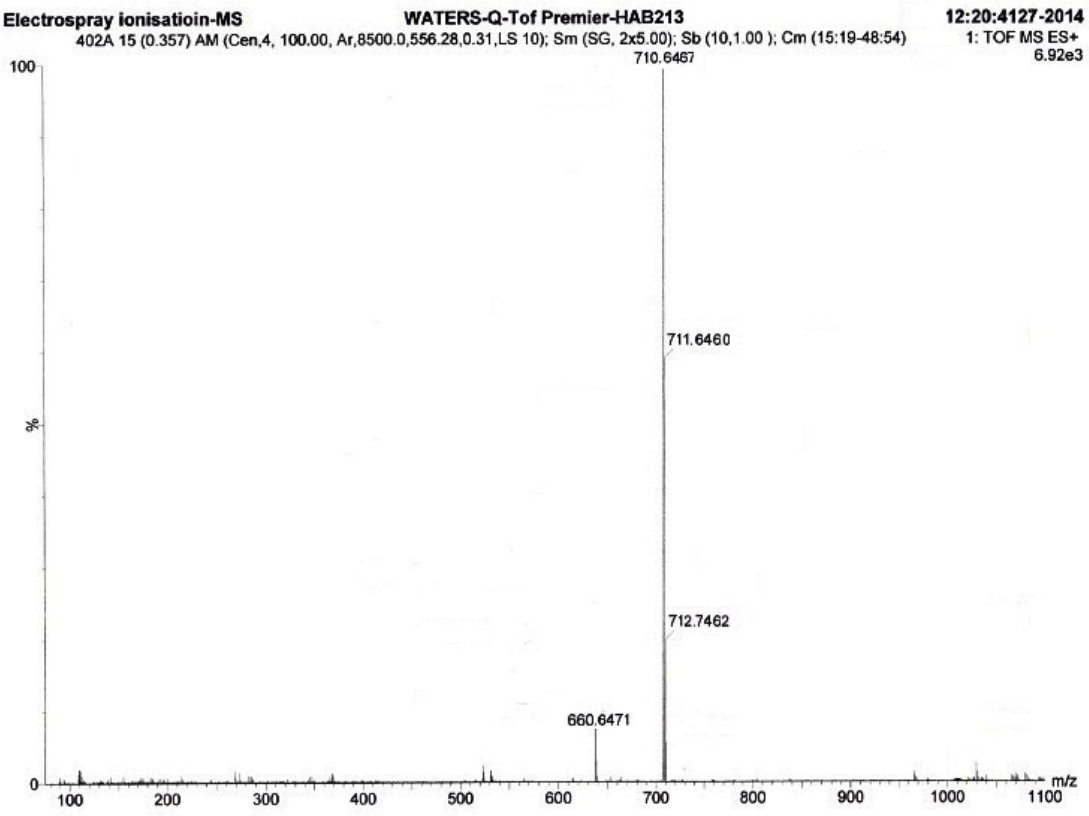
obtained in the absence of potassium carbonate (Table 1, Entry 8). Thus, the most suitable reaction conditions for the formation of **15** were stablished (Table 1, entry 5) as high yield and good *anti* selectivity.

Fig 1. Antioxidant activities of fluorescein based β-aminoglycosylketones

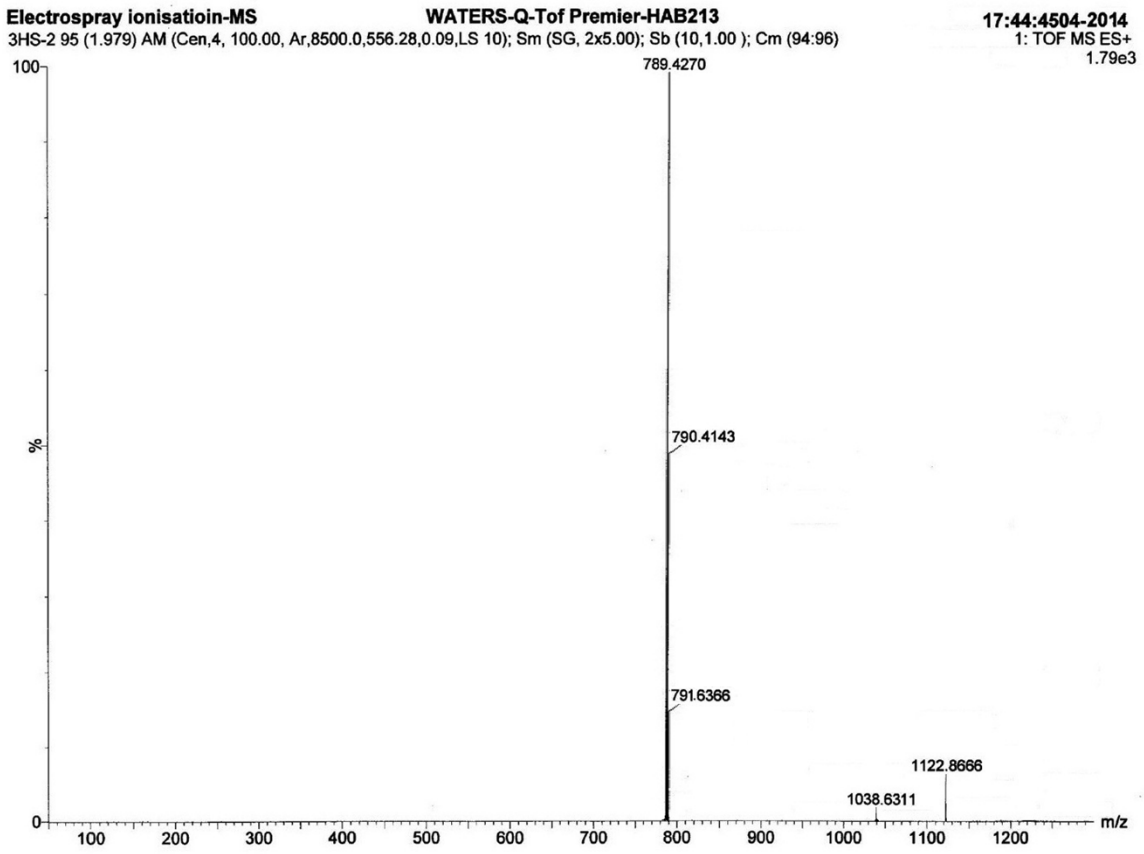


Antioxidant activities of fluorescein based β-aminoglycosylketones (**15-20**) in 96-well microplates: (Ac) control; (1) 10 µg; (2) 20 µg; (3) 30 µg; (4) 40 µg; (5) 50 µg; and (6) 60 µg. (a) **15**, (b) **17**, (c) **19**, (d) **18**, (e) **20**, and (f) **16**.

Mass spectrum of compound 15



Mass spectrum of compound 16



Mass spectrum of compound 18

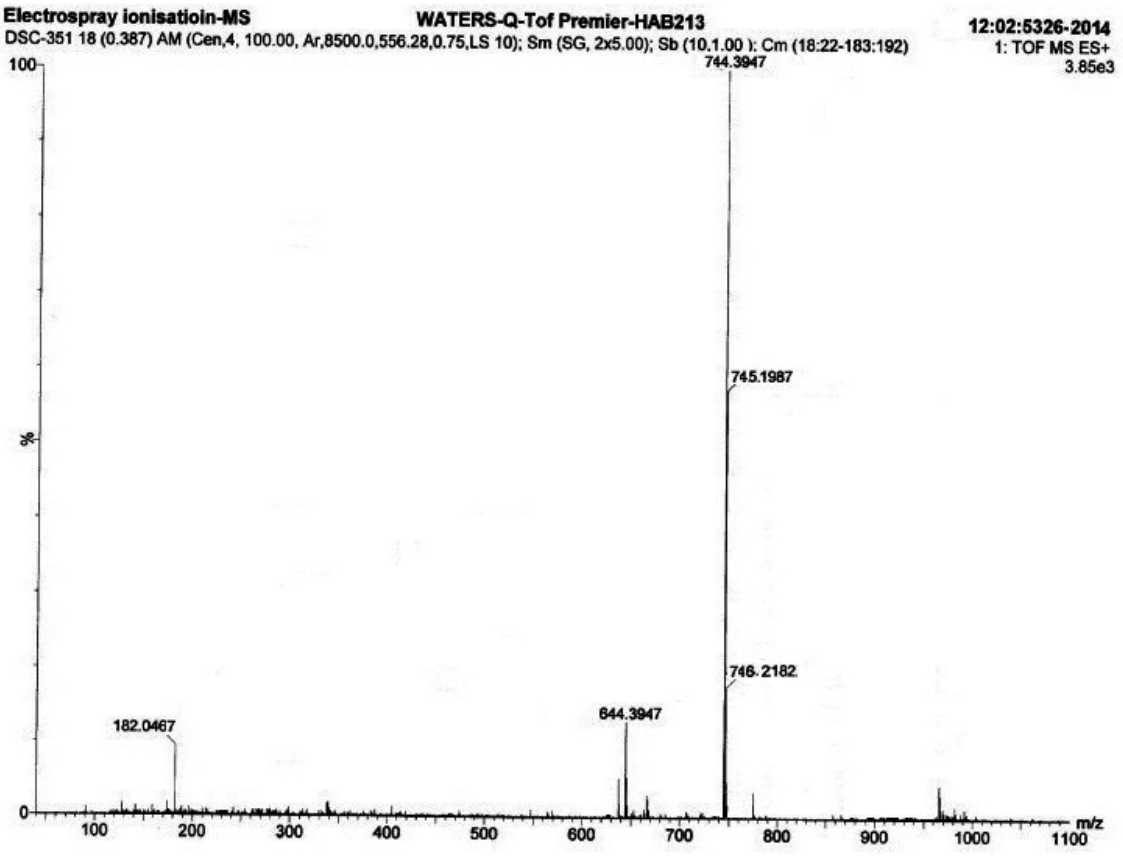


Table 4. DPPH radical scavenging activity of fluorescein based β-aminoglycosylketones 15-20

S.No	Concentration µg/mL	Inhibition of DPPH radical (%)					
		15	**16**	**17**	**18**	**19**	**20**
1.	20	11.60	12.58	11.92	13.07	11.42	12.25
2.	40	28.80	31.12	29.13	31.29	31.95	33.6
3.	60	32.25	49.00	46.19	46.68	48.34	45.19
4.	80	44.00	53.97	51.49	52.81	53.31	58.27
5.	100	60.93	66.55	66.55	64.90	61.68	65.56
6.	120	64.90	69.37	68.21	69.70	70.69	71.35