Fluorination of naturally occurring N^6-benzyladenosine remarkably increased its antiviral activity and selectivity

(Supplementary material)

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¹H and ¹³C (with complete proton decoupling) NMR spectra were recorded on Bruker AMX 400 NMR instrument at 303 K relative to the residual solvent signals as internal standards (CDCl₃, 1H: δ = 7.26, 13C: δ = 77.16; DMSO-d₆, 1H: δ = 2.50, 13C: δ = 39.52; CD₃OD, 1H: δ = 3.31, 13C: δ = 49.00). ¹H-NMR-spectra were recorded at 400 MHz and ¹³C-NMR-spectra at 100 MHz.

High-resolution mass spectra (HRMS) were registered on a Bruker Daltonics microTOF-Q II instrument using electrospray ionization (ESI). The measurements were done in a positive ion mode. Interface capillary voltage: 4500 V; mass range from m/z 50 to 3000; external calibration (Electrospray Calibrant Solution, Fluka); nebulizer pressure: 0.4 Bar; flow rate: 3 µL/min; dry gas: nitrogen (4L/min); interface temperature: 200°C.

Samples were injected to the mass spectrometer chamber from the Agilent 1260 HPLC system equipped with Agilent Poroshell 120 EC-C18 (3.0 × 50 mm; 2.7 µm) column; flow rate 200 µL/min; samples were injected from the acetonitrile-water (1:1) solution and were eluted in a linear gradient of acetonitrile concentrations (50 → 100%).
Alteration of selectivity index of \(N^6\)-benzyladenosine derivatives according to the modification on the phenyl ring
$^1$H-NMR-spectrum (400 MHz) of 2',3',5'-tri-O-isobutyrylinosine in CDCl$_3$ at 303 K
$^1$H-NMR-spectrum (400 MHz) of 6-chloro-2',3',5'-tri-O-isobutyroyladenosine (4) in CDCl$_3$ at 303 K
$^{13}$C-NMR-spectrum (100 MHz) of 6-chloro-2',3',5'-tri-O-isobutyroyladenosine (4) in CDCl$_3$ at 303 K
High-resolution mass spectrum (HRMS) of 6-chloro-2',3',5'-tri-O-isobutyroyladenosine (4)
$^1$H-NMR-spectrum (400 MHz) of $N^6$-(2-fluorobenzyl)-2',3',5'-tri-O-isobutyryladenosine in DMSO-$d_6$ at 303 K
$^1$H-NMR-spectrum (400 MHz) of N$^\alpha$-(2-fluorobenzyl)-adenosine (5) in DMSO-$d_6$ at 303 K
$^{13}$C-NMR-spectrum (100 MHz) of $N^6$-(2-fluorobenzyl)-adenosine (5) in DMSO-$d_6$ at 303 K
High-resolution mass spectrum (HRMS) of $N^6$-(2-fluorobenzyl)-adenosine (5)
$^1$H-NMR-spectrum (400 MHz) of N$_6$-(3-fluorobenzyl)-2',3',5'-tri-O-isobutyroyladenosine in DMSO-$d_6$ at 303 K
$^1$H-NMR-spectrum (400 MHz) of $N^6$-(3-fluorobenzyl)-adenosine (6) in DMSO-$d_6$ at 303 K
$^{13}$C-NMR-spectrum (100 MHz) of $N^\beta$-(3-fluorobenzyl)-adenosine (6) in DMSO-$d_6$ at 303 K
High-resolution mass spectrum (HRMS) of $N^\beta$-(3-fluorobenzyl)-adenosine (6)
$^1$H-NMR-spectrum (400 MHz) of $N^\delta$-(4-fluorobenzyl)-2',3',5'-tri-O-isobutyroyl adenosine in CDCl$_3$ at 303 K
$^1$H-NMR-spectrum (400 MHz) of $N^\alpha$-(4-fluorobenzyl)-adenosine (7) in DMSO-$d_6$ at 303 K
$^{13}$C-NMR-spectrum (100 MHz) of $N^6$-(4-fluorobenzyl)-adenosine (7) in DMSO-$d_6$ at 303 K
High-resolution mass spectrum (HRMS) of $N^6$-(4-fluorobenzyl)-adenosine (7)
$^1$H-NMR-spectrum (400 MHz) of \( N^6-(2,6\text{-difluorobenzyl})-2',3',5'-\text{tri-O-isobutyroyladenosine} \) in CDCl\(_3\) at 303 K
$^1$H-NMR-spectrum (400 MHz) of N$^6$-(2,6-difluorobenzyl)-adenosine (8) in DMSO-$d_6$ at 303 K
$^{13}$C-NMR-spectrum (100 MHz) of $N^6$-(2,6-difluorobenzyl)-adenosine (8) in DMSO-$d_6$ at 303 K
High-resolution mass spectrum (HRMS) of $N^6$-(2,6-difluorobenzyl)-adenosine (8)
$^1$H-NMR-spectrum (400 MHz) of $N^\theta$-(2-trifluoromethylbenzyl)-2',3',5'-tri-O-isobutyroyladenosine in CDCl$_3$ at 303 K
$^1$H-NMR-spectrum (400 MHz) of $N^\alpha$-(2-trifluoromethylbenzyl)-adenosine (9) in DMSO-$d_6$ at 303 K
$^{13}$C-NMR-spectrum (100 MHz) of $N^6$-(2-trifluoromethylbenzyl)-adenosine (9) in DMSO-$d_6$ at 303 K
High-resolution mass spectrum (HRMS) of $N^6$-(2-trifluoromethylbenzyl)-adenosine (9)
$^1$H-NMR-spectrum (400 MHz) of $N^6$-(3-trifluoromethylbenzyl)-2',3',5'-tri-O-isobutyroyladenosine in CDCl$_3$ at 303 K
$^1$H-NMR-spectrum (400 MHz) of $N^\delta$-(3-trifluoromethylbenzyl)-adenosine (10) in DMSO-$d_6$ at 303 K
$^{13}$C-NMR-spectrum (100 MHz) of $N^6$-(3-trifluoromethylbenzyl)-adenosine (10) in DMSO-$d_6$ at 303 K
High-resolution mass spectrum (HRMS) of N⁶-(3-trifluoromethylbenzyl)-adenosine (10)
$^1$H-NMR-spectrum (400 MHz) of $N^6$-(4-trifluoromethylbenzyl)-2',3',5'-tri-O-isobutyroyl-adenosine in CDCl$_3$ at 303 K
$^{1}$H-NMR-spectrum (400 MHz) of $N^6$-(4-trifluoromethylbenzyl)-adenosine (11) in DMSO-$d_6$ at 303 K
$^{13}$C-NMR-spectrum (100 MHz) of $N^6$-(4-trifluoromethylbenzyl)-adenosine (11) in DMSO-$d_6$ at 303 K
High-resolution mass spectrum (HRMS) of $^6$-(4-trifluoromethylbenzyl)-adenosine (11)