

Supporting Information

Practical and Sustainable Synthesis of Optically Pure Levocabastine, an H₁ receptor antagonist

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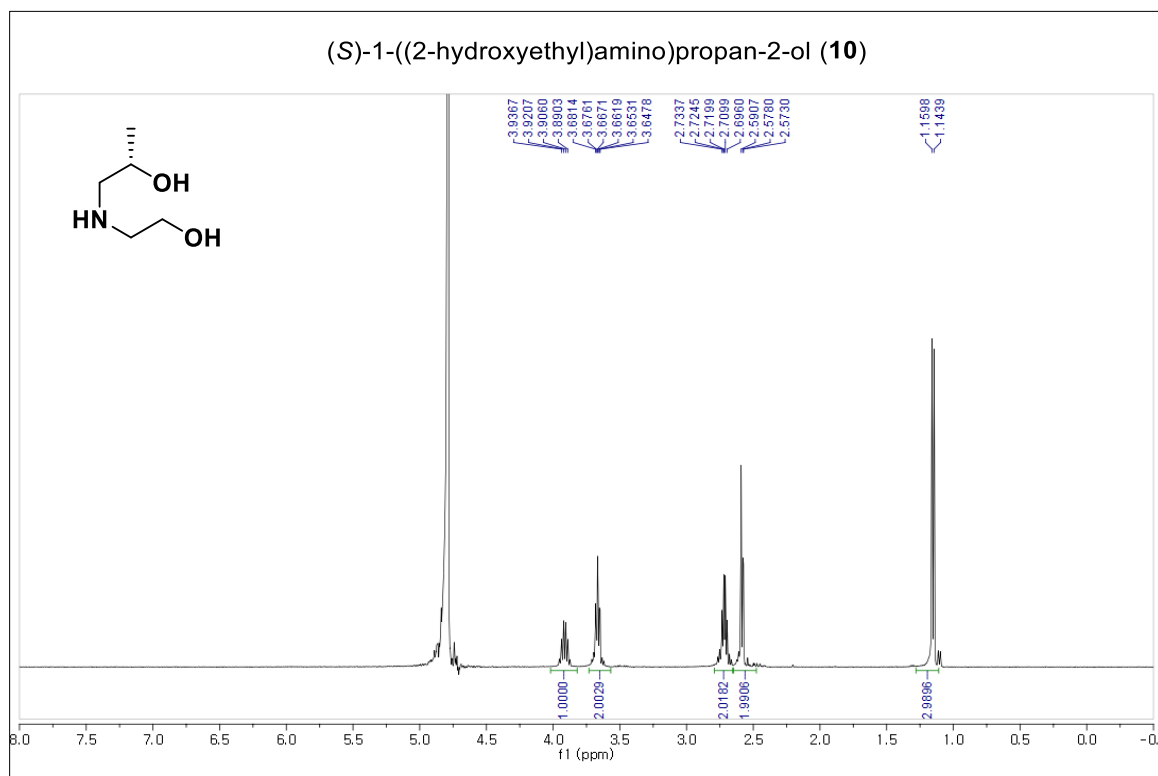
* Correspondence: ygsuh@snu.ac.kr; Tel.: +82-2-880-9174

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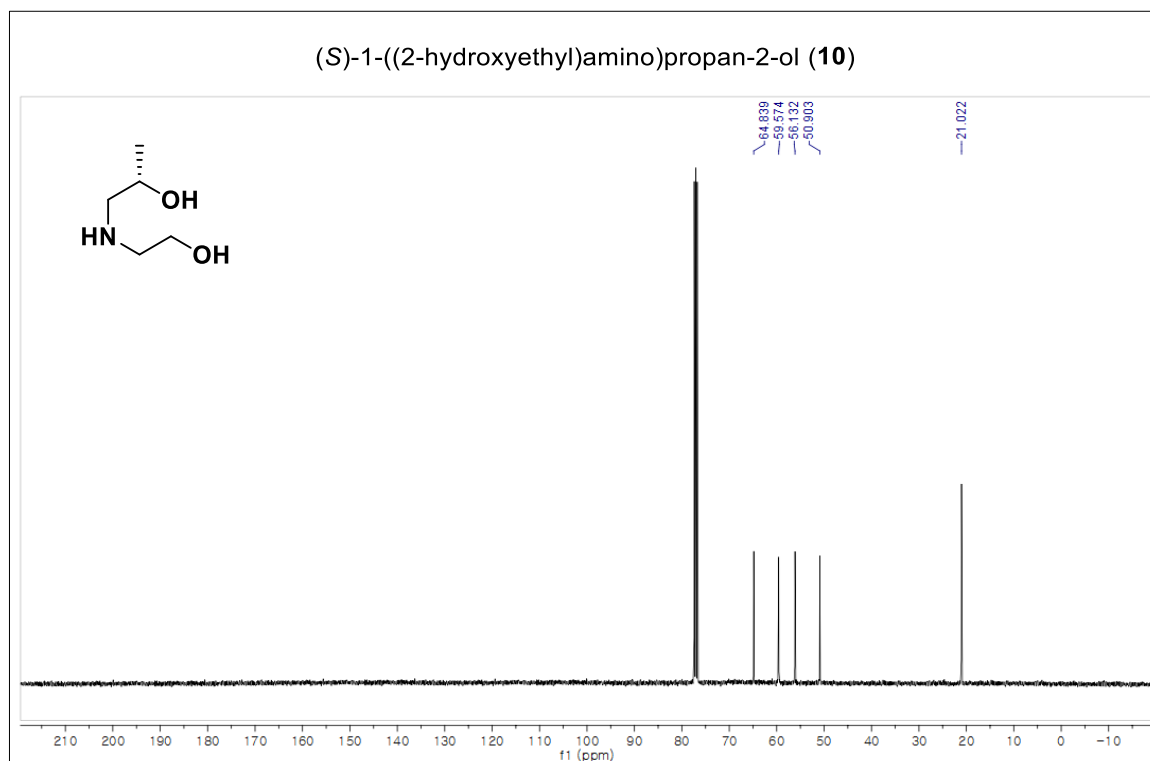
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(S)-1-((2-hydroxyethyl)amino)propan-2-ol (10)

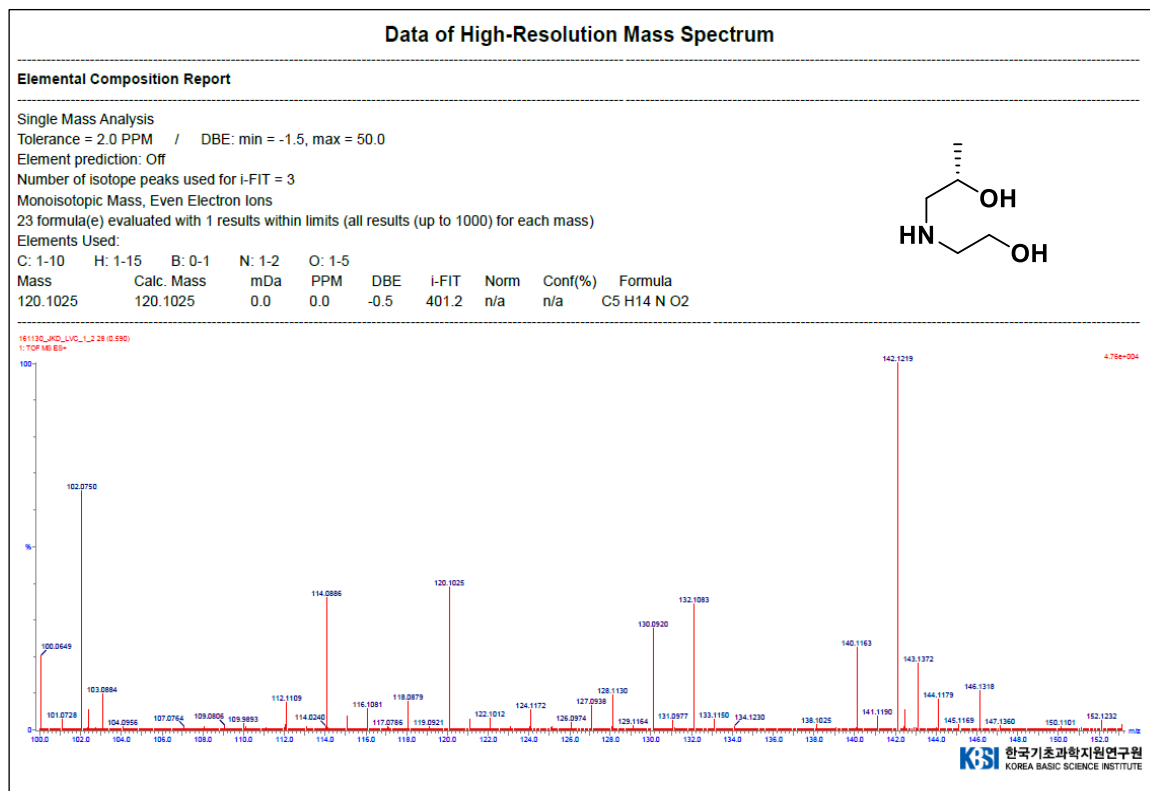
▼ ¹H-NMR (400MHz, D₂O) spectrum



▼ ¹³C-NMR (100MHz, CDCl₃) spectrum

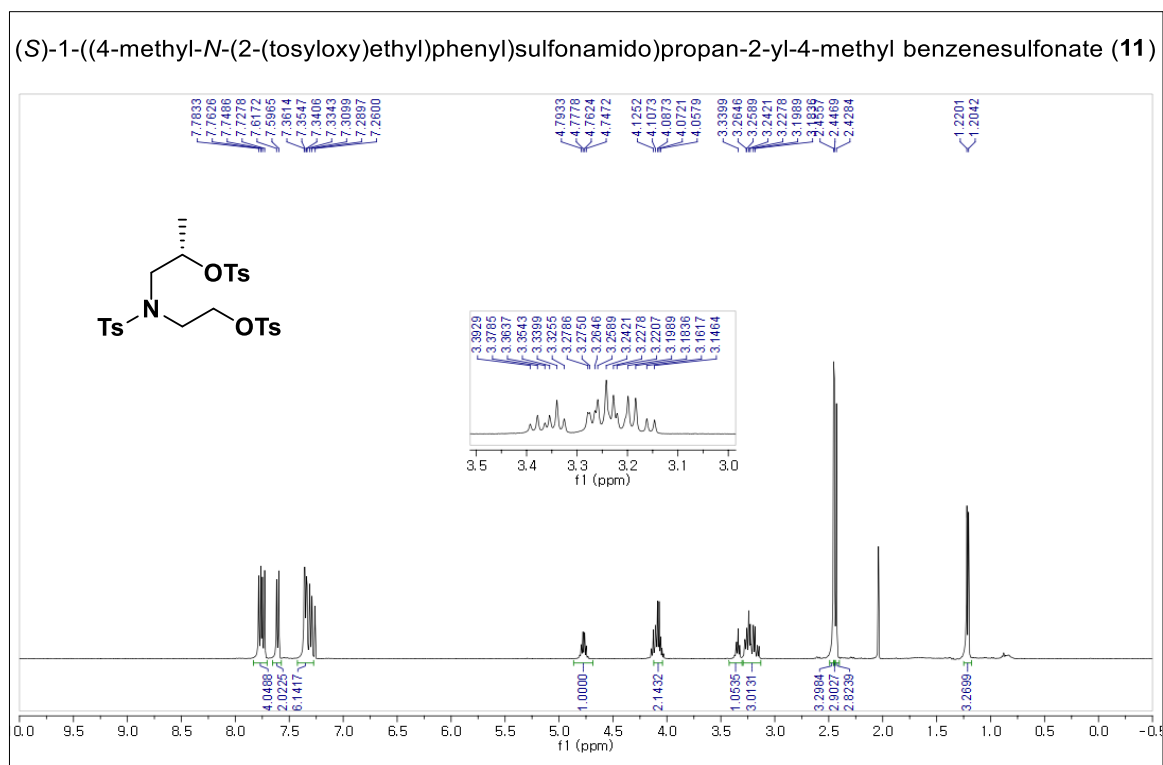


▼ High-Resolution Mass spectrum

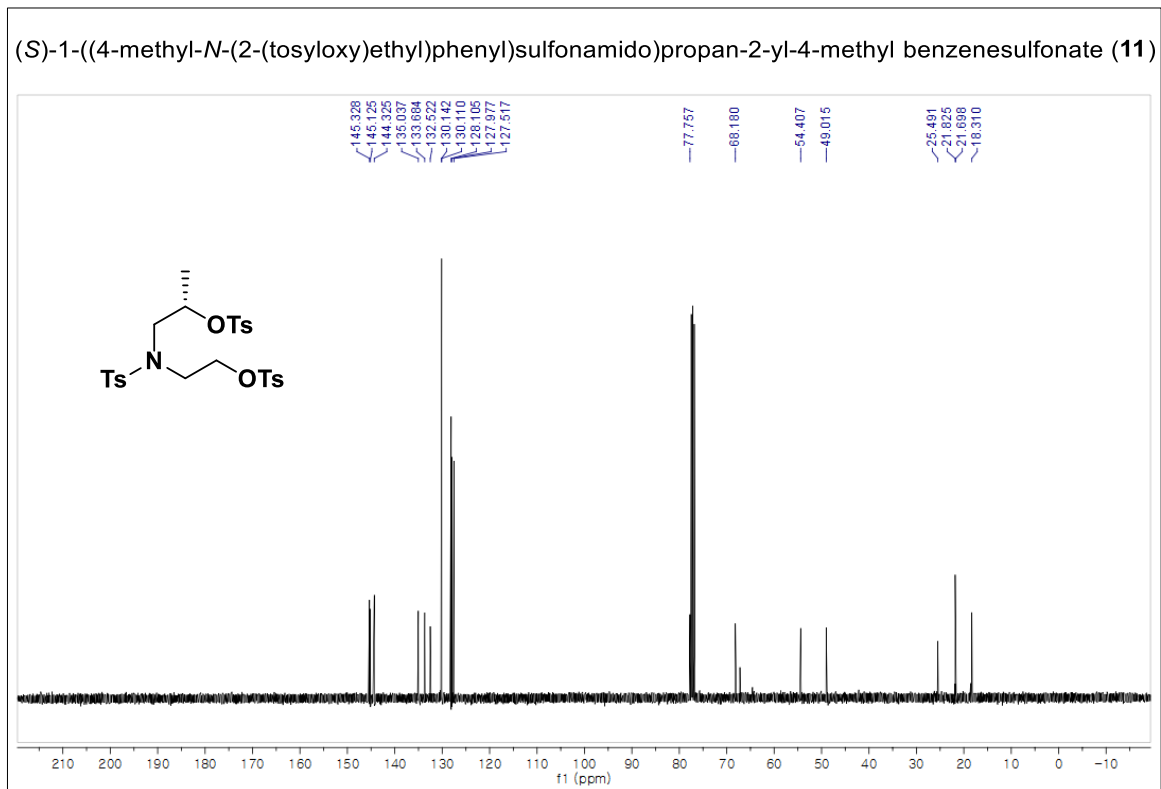


(S)-1-((4-methyl-N-(2-(tosyloxy)ethyl)phenyl)sulfonamido)propan-2-yl-4-methyl benzenesulfonate (11)

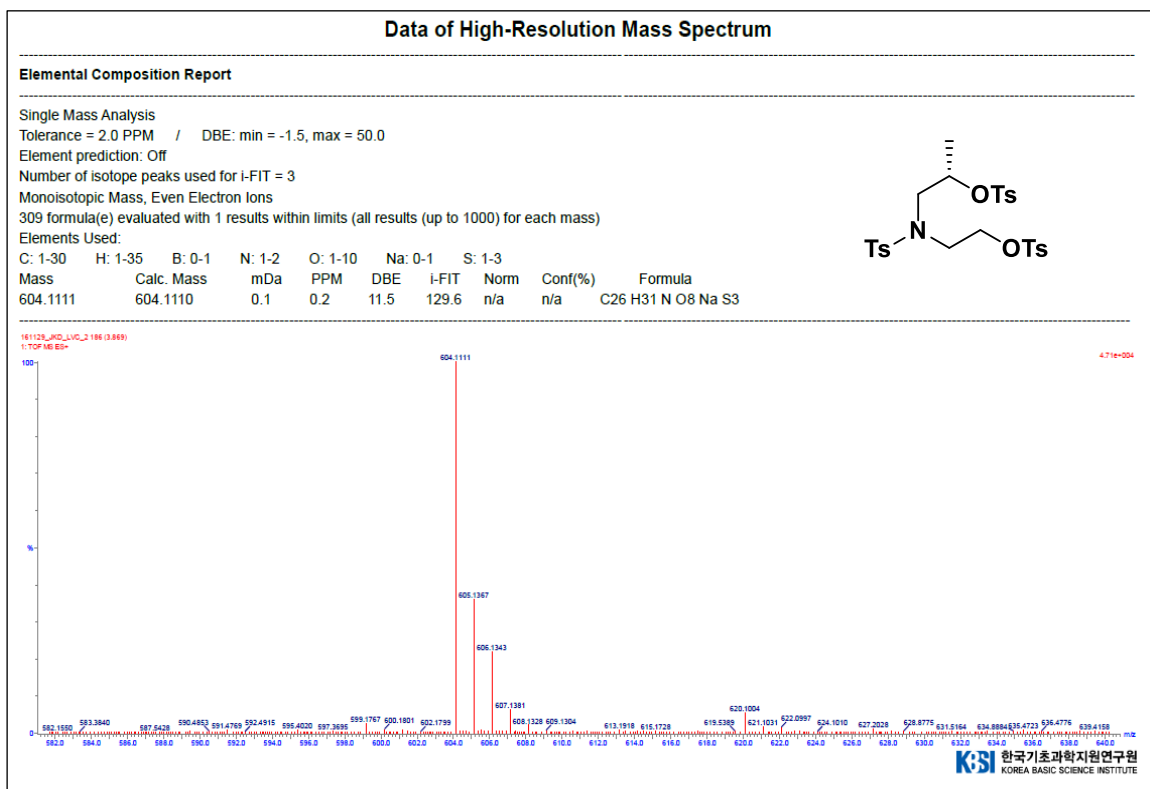
▼ ¹H-NMR (400MHz, CDCl₃) spectrum



▼ ¹³C-NMR (100MHz, CDCl₃) spectrum

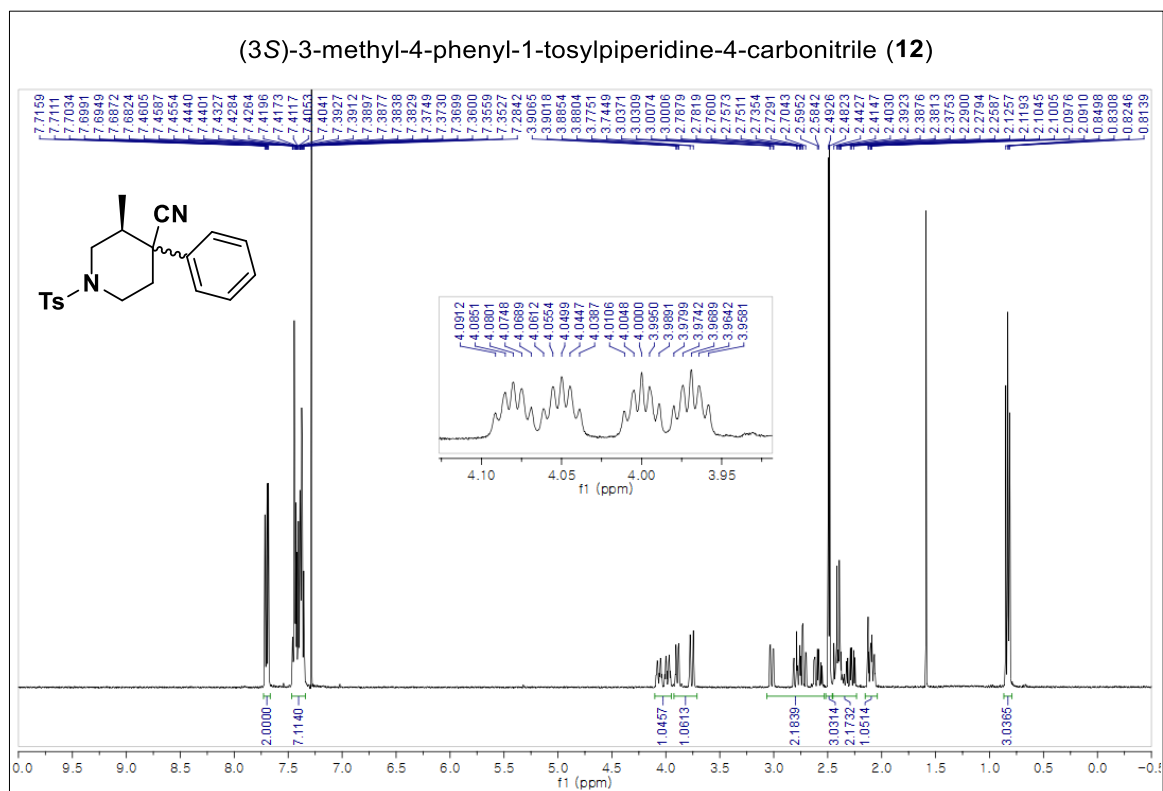


▼ High-Resolution Mass spectrum

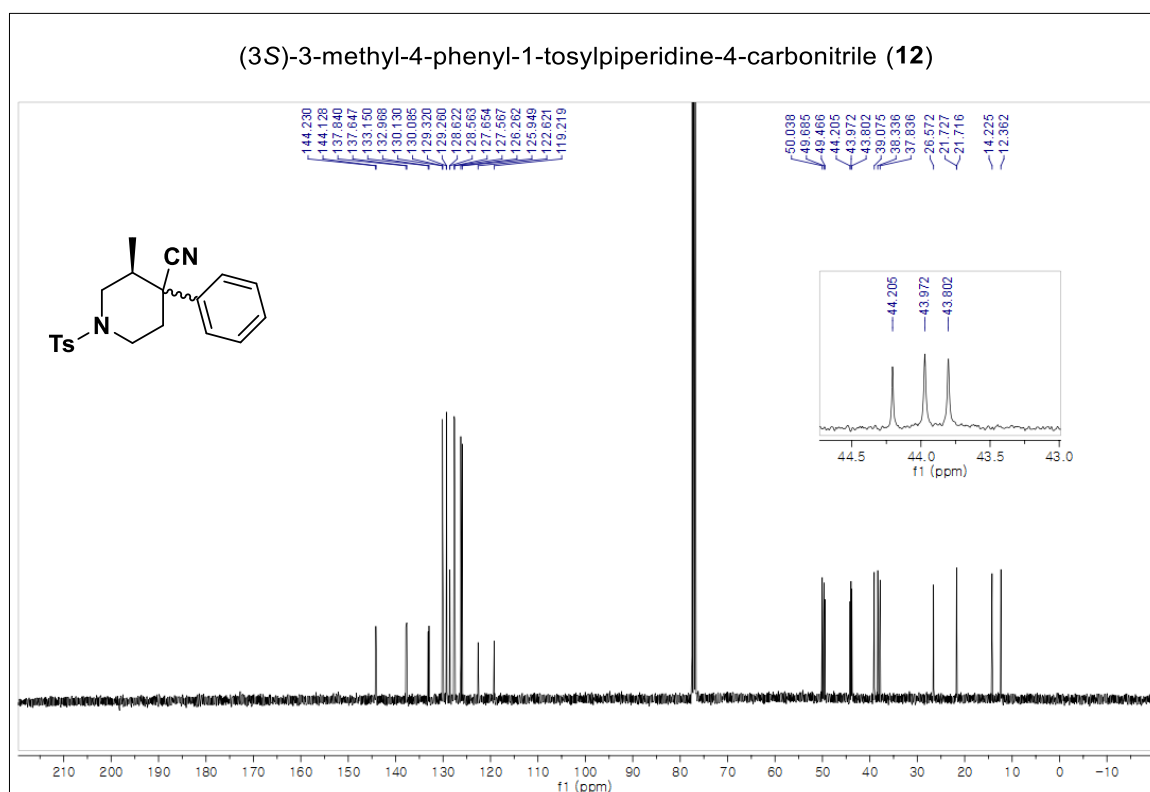


(3S)-3-methyl-4-phenyl-1-tosylpiperidine-4-carbonitrile (12)

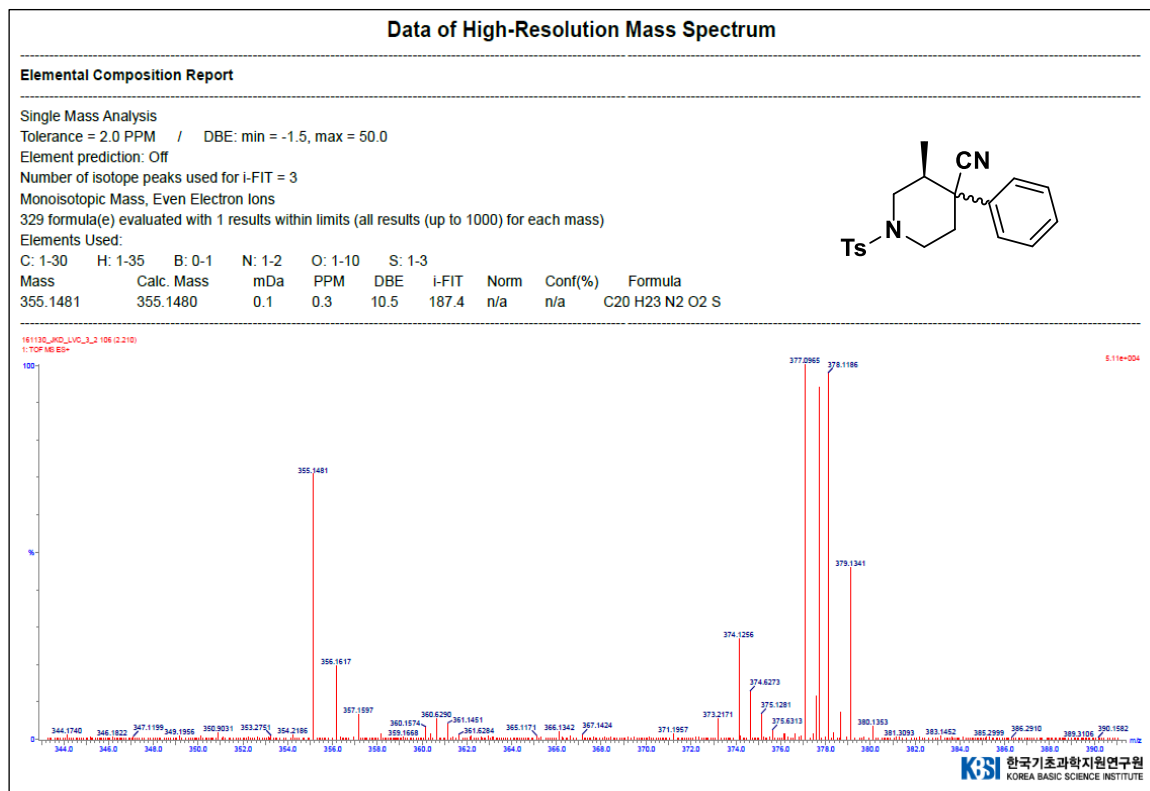
▼ ¹H-NMR (400MHz, CDCl₃) spectrum



▼ ¹³C-NMR (100MHz, CDCl₃) spectrum



▼ High-Resolution Mass spectrum



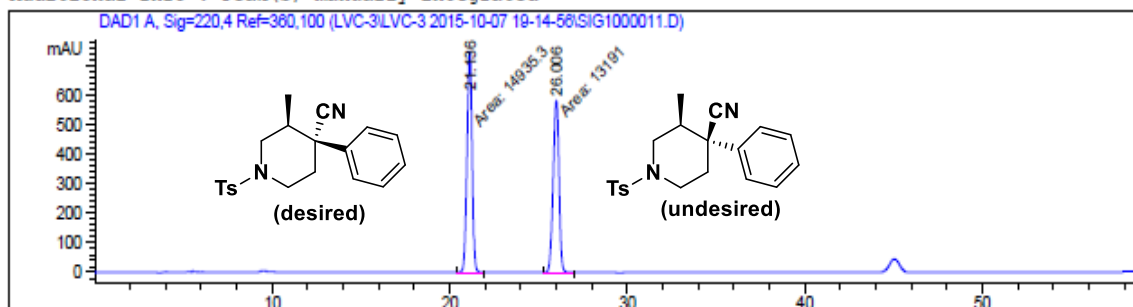
▼ HPLC (dr = 53.1 : 46.9)

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=====
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Acq. Instrument : HPLC1200                          Location  : Vial 70
Injection Date  : 10/7/2015 1:46:18 PM              Inj       : 1
                                                    Inj Volume: 10.000 µl

Acq. Method    : C:\CHEM32\1\DATA\LVC-3\LVC-3 2015-10-07 19-14-56\LVC-4.M
Last changed   : 10/7/2015 2:53:43 AM by KSJ
Analysis Method: C:\CHEM32\1\METHODS\DIQUAFOSOL_ASSAY.M
Last changed   : 12/1/2016 10:56:53 AM by cgh
                (modified after loading)
Sample Info    : 18.2 mg / 20 ml
    
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Additional Info : Peak(s) manually integrated



Area Percent Report

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Sorted By      :      Signal
Multiplier:    :      1.0000
Dilution:      :      1.0000
Use Multiplier & Dilution Factor with ISTDs
    
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Signal 1: DAD1 A, Sig=220,4 Ref=360,100

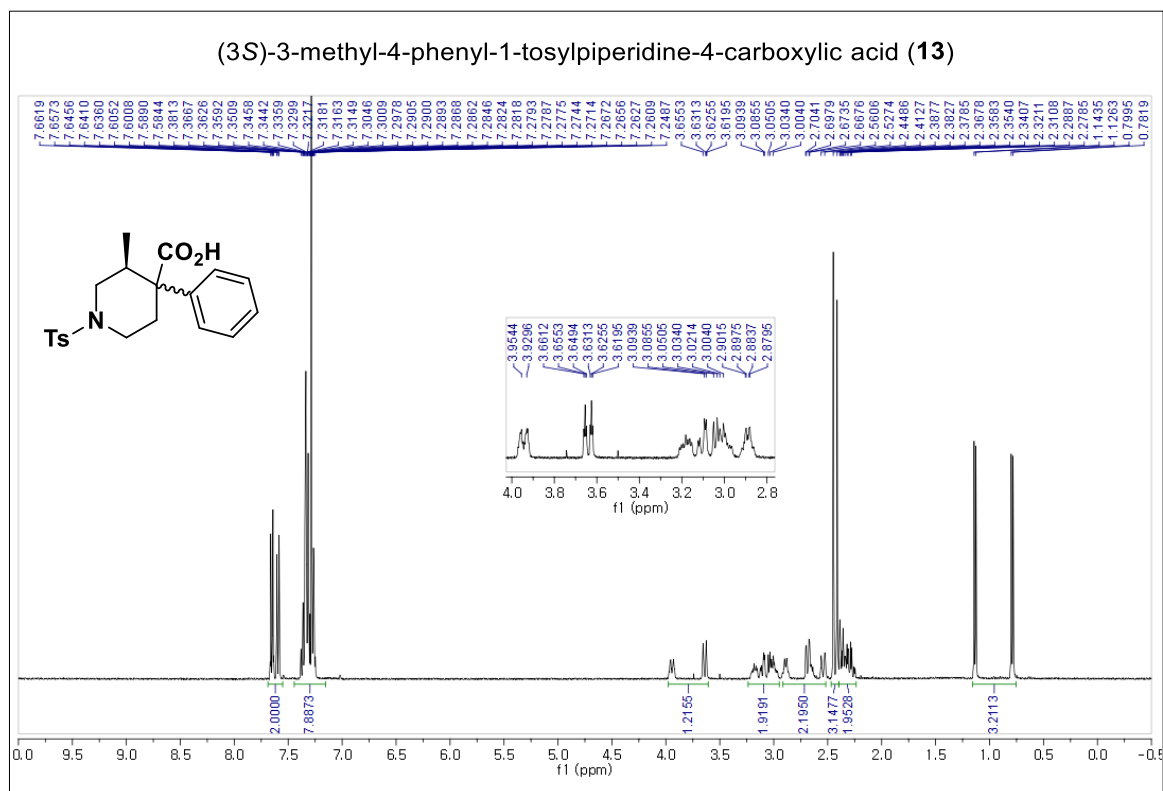
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2	26.006	MM	0.3781	1.31910e4	581.53333	46.8993

Totals : 2.81263e4 1332.40326

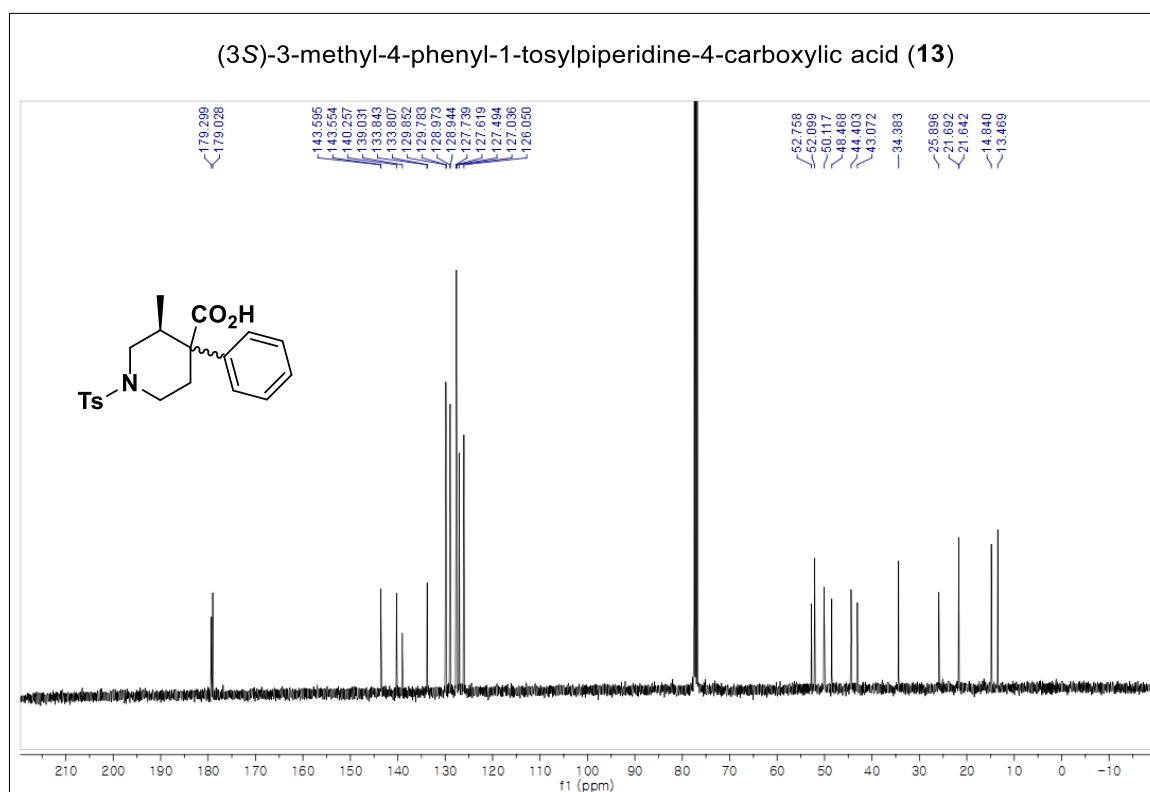
*** End of Report ***

(3S)-3-methyl-4-phenyl-1-tosylpiperidine-4-carboxylic acid (**13**)

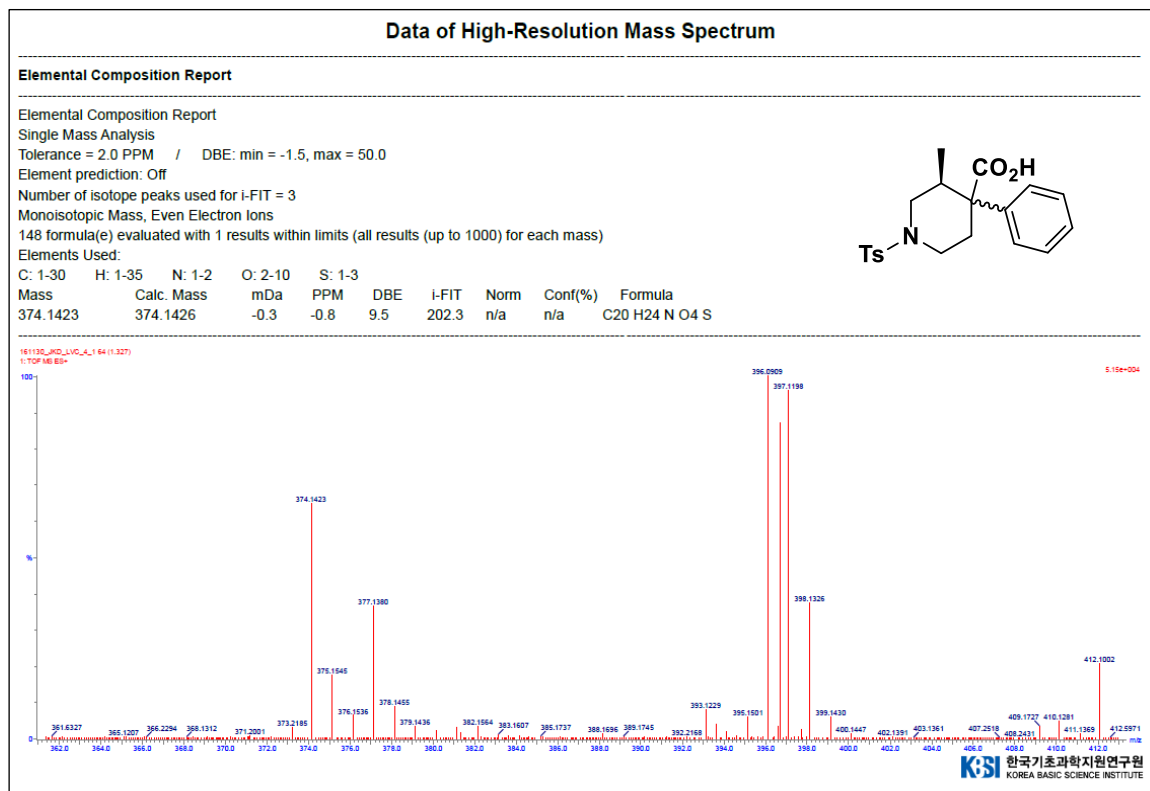
▼ ¹H-NMR (400MHz, CDCl₃) spectrum



▼ ¹³C-NMR (100MHz, CDCl₃) spectrum

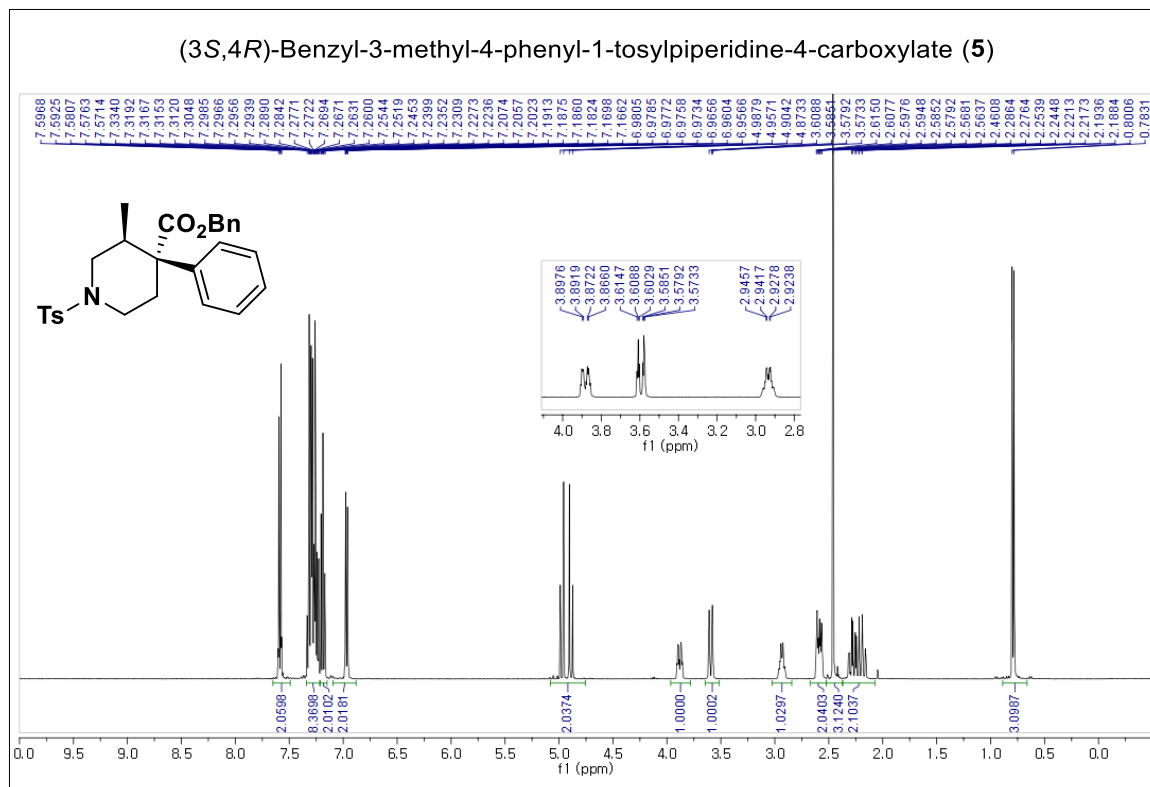


▼ High-Resolution Mass spectrum

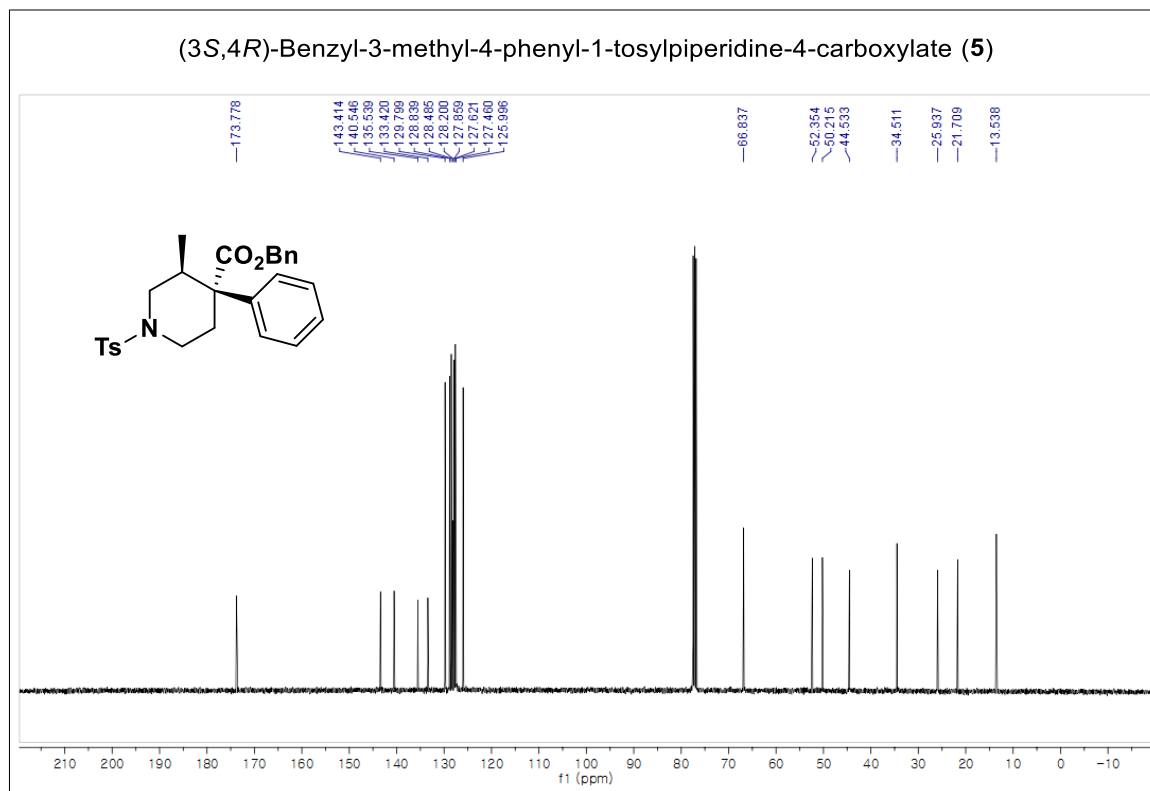


(3S,4R)-Benzyl-3-methyl-4-phenyl-1-tosylpiperidine-4-carboxylate (5)

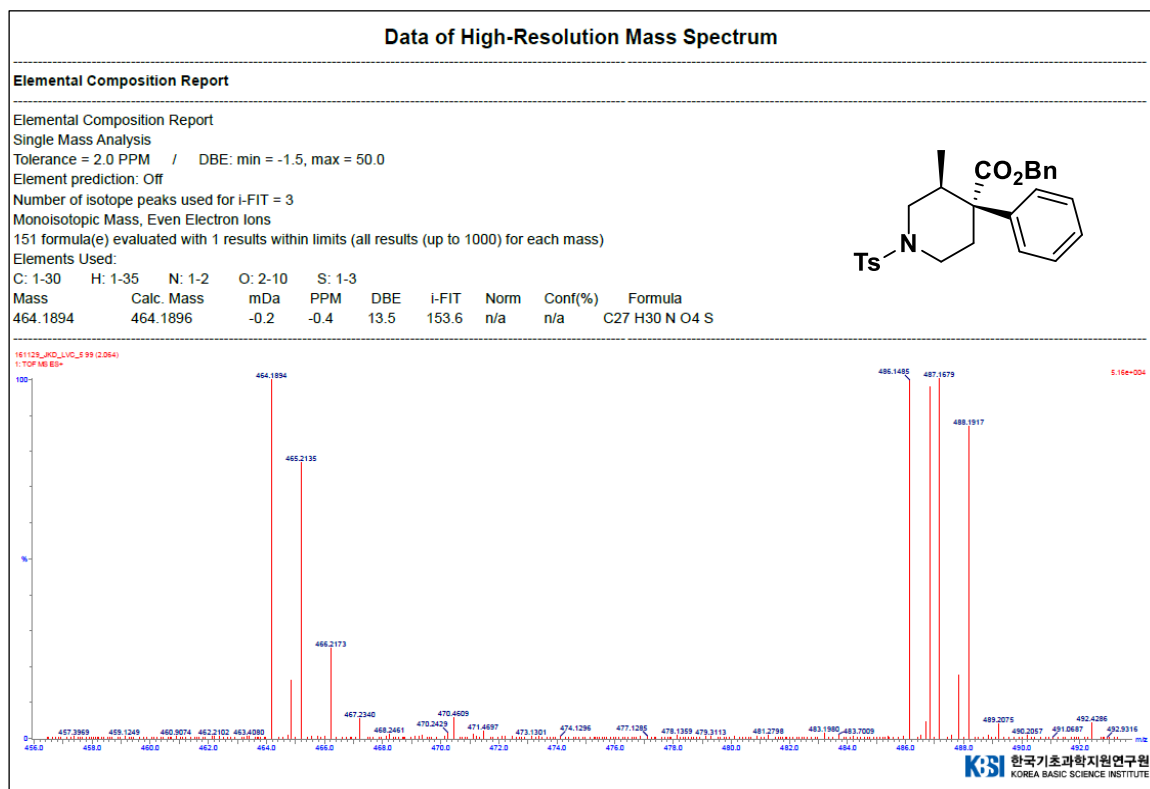
▼ ¹H-NMR (400MHz, CDCl₃) spectrum



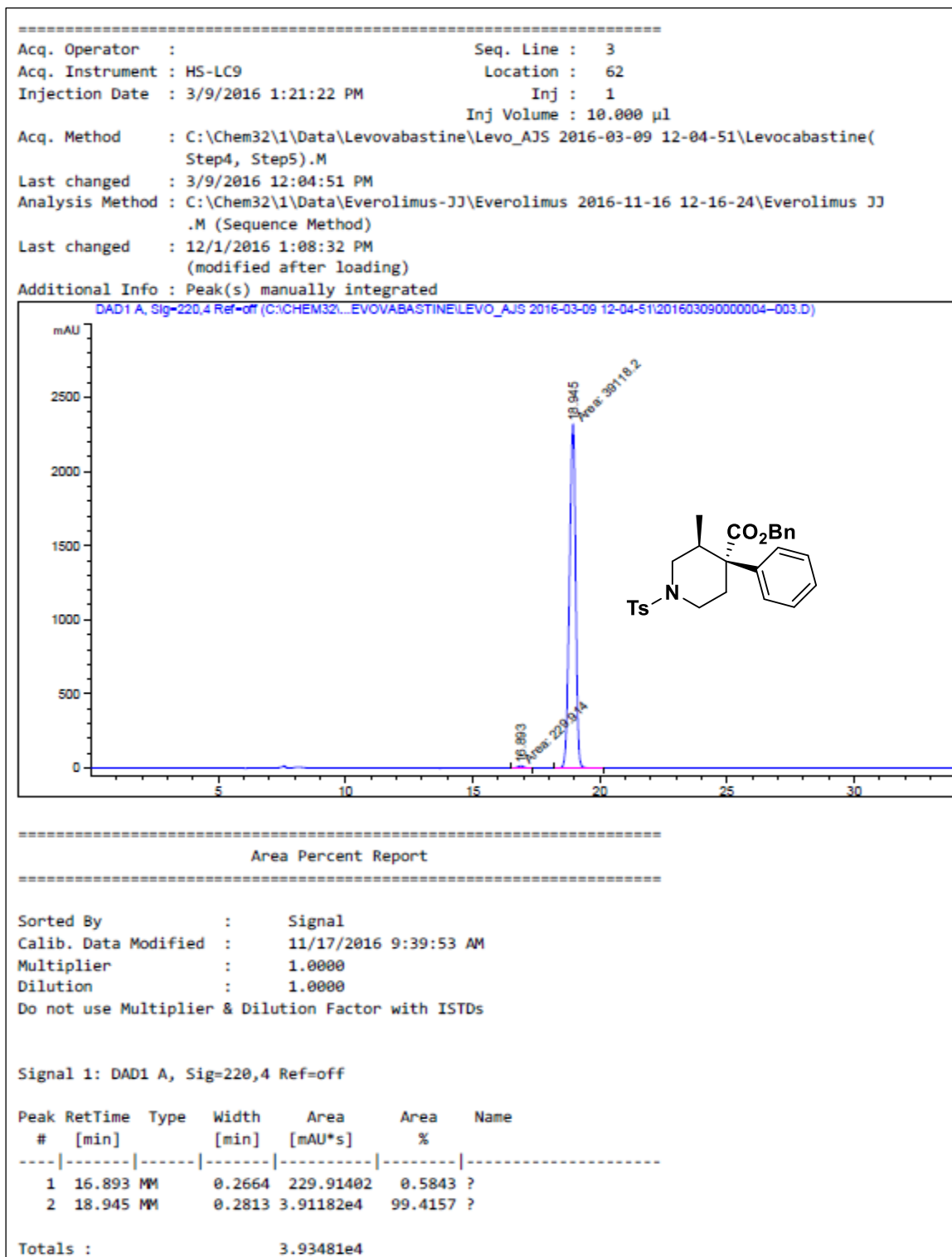
▼ ¹³C-NMR (100MHz, CDCl₃) spectrum



▼ High-Resolution Mass spectrum

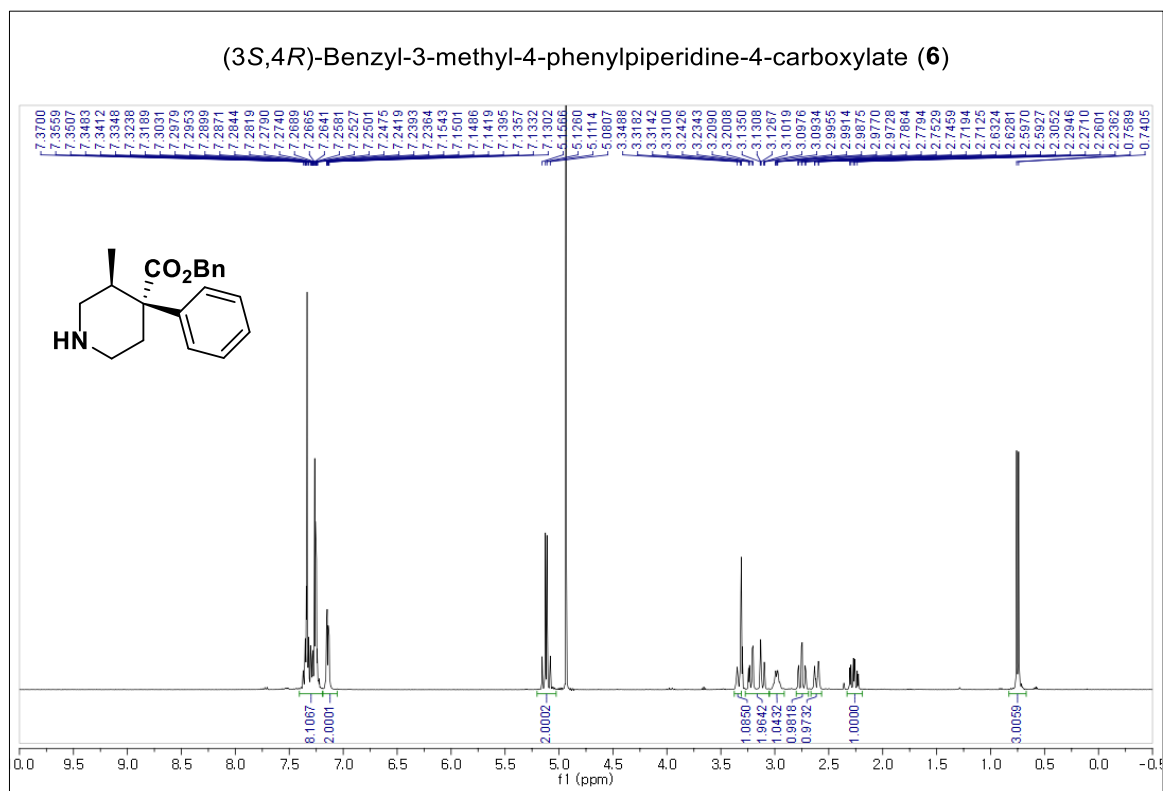


▼ HPLC (dr = 99.4 : 0.6)

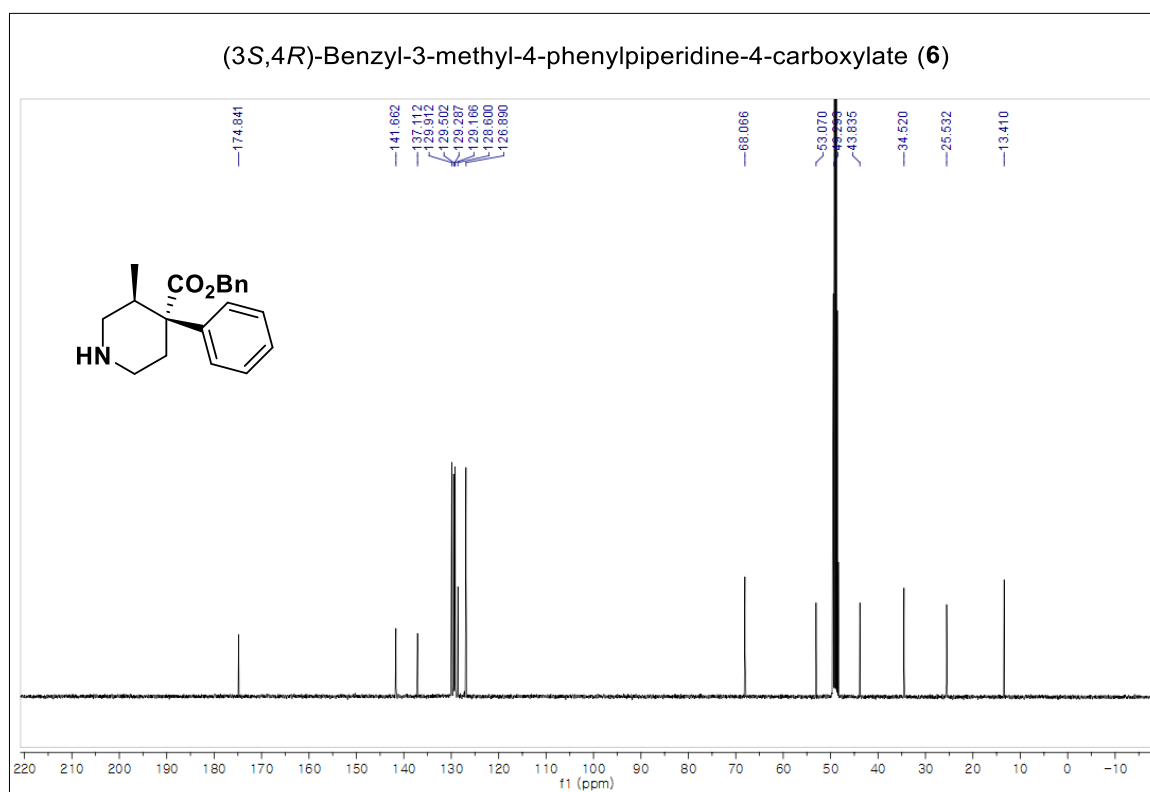


(3*S*,4*R*)-Benzyl-3-methyl-4-phenylpiperidine-4-carboxylate (**6**)

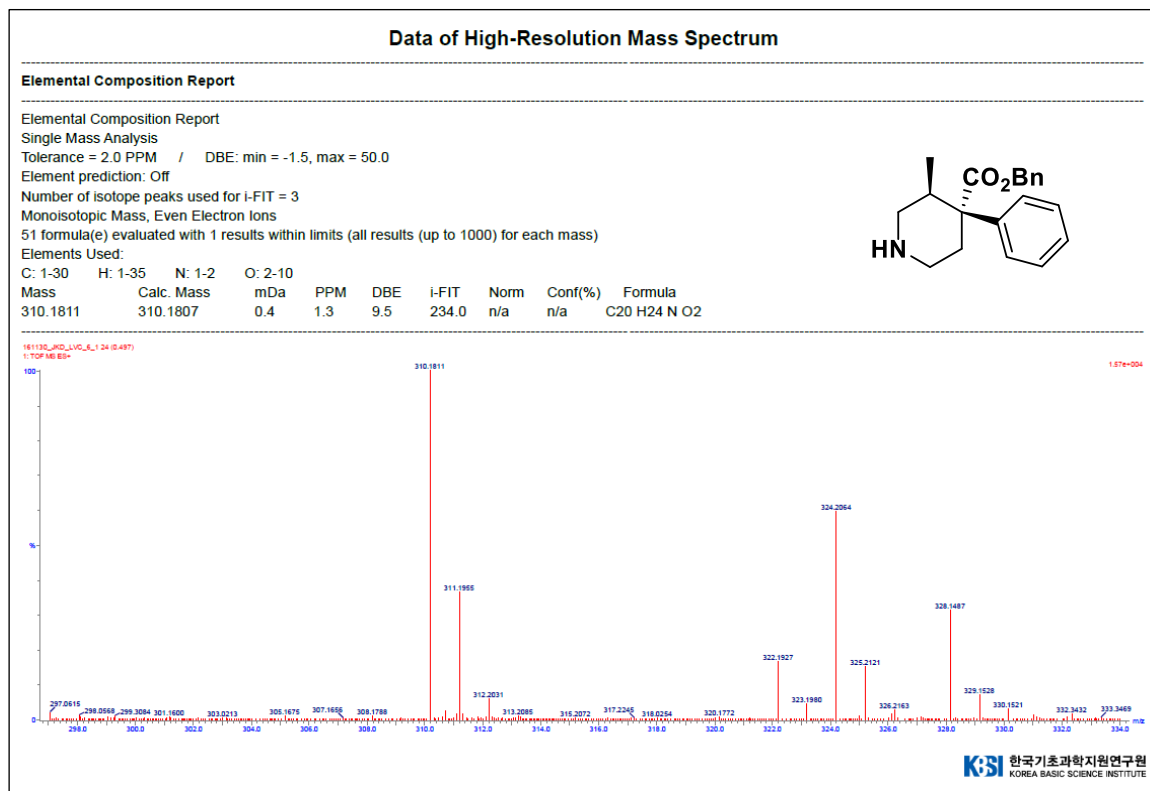
▼ ¹H-NMR (400MHz, CD₃OD) spectrum



▼ ¹³C-NMR (100MHz, CD₃OD) spectrum

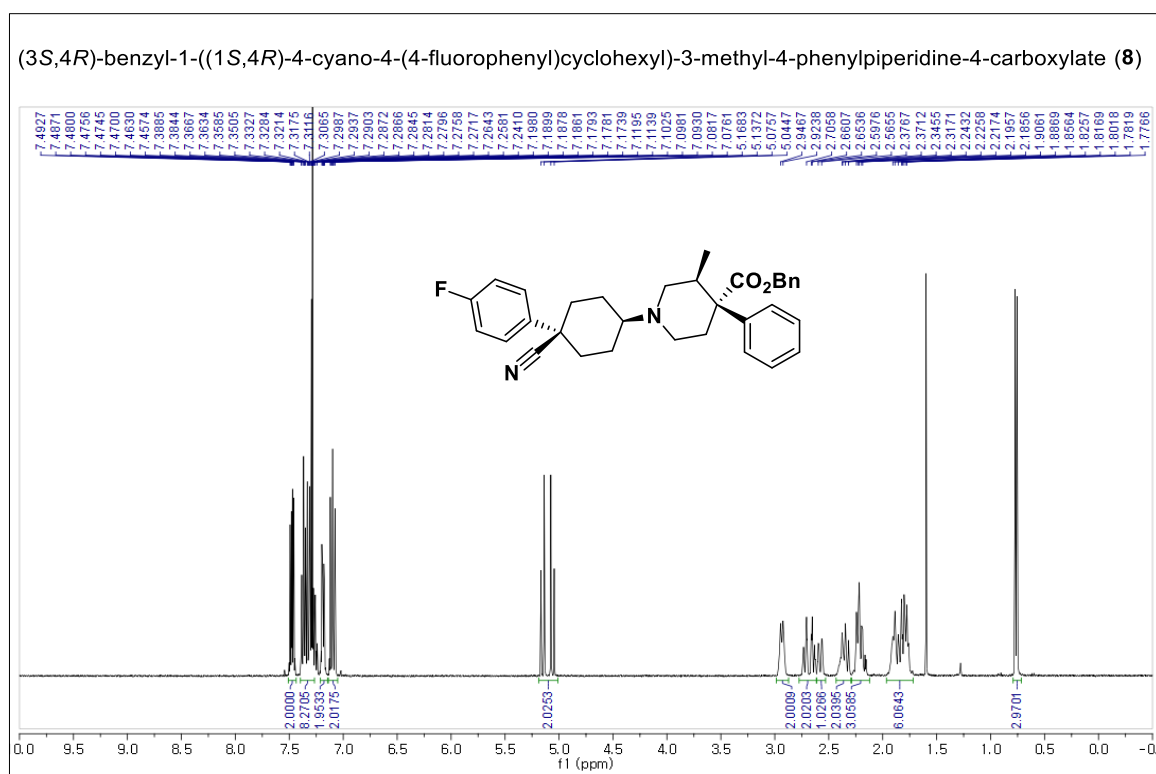


▼ High-Resolution Mass spectrum

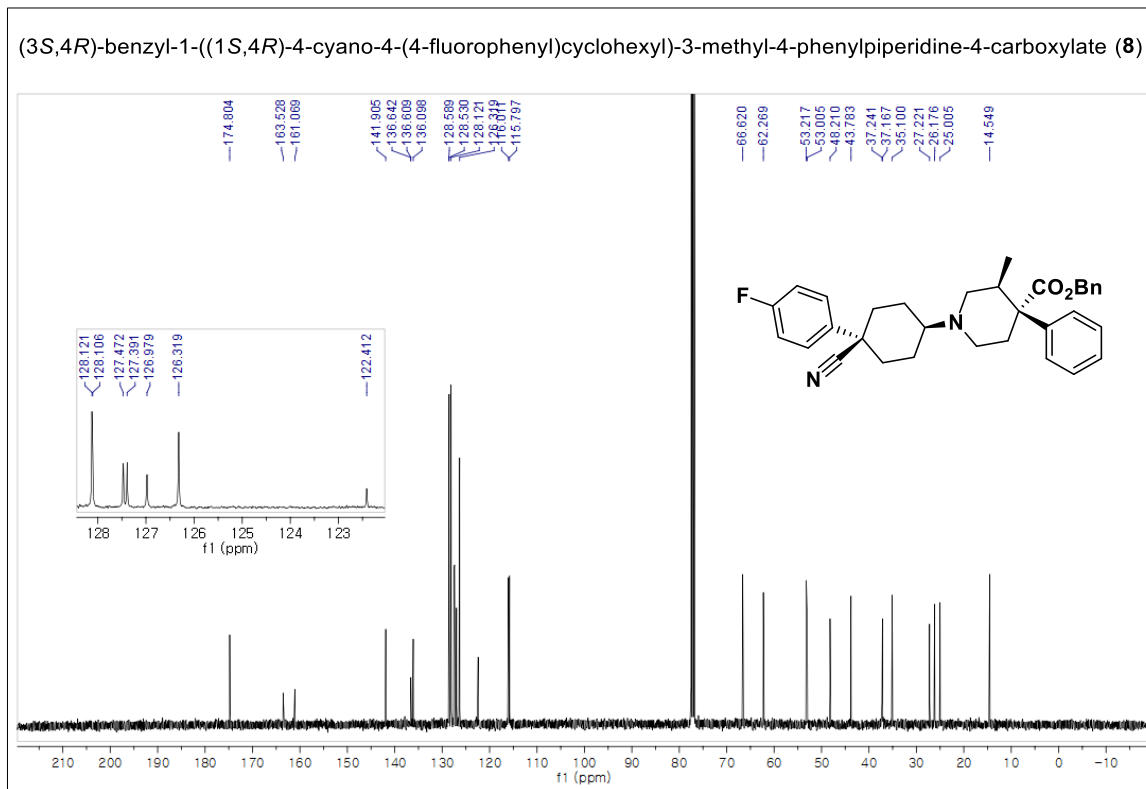


(3*S*,4*R*)-benzyl-1-((1*S*,4*R*)-4-cyano-4-(4-fluorophenyl)cyclohexyl)-3-methyl-4-phenylpiperidine-4-carboxylate (**8**)

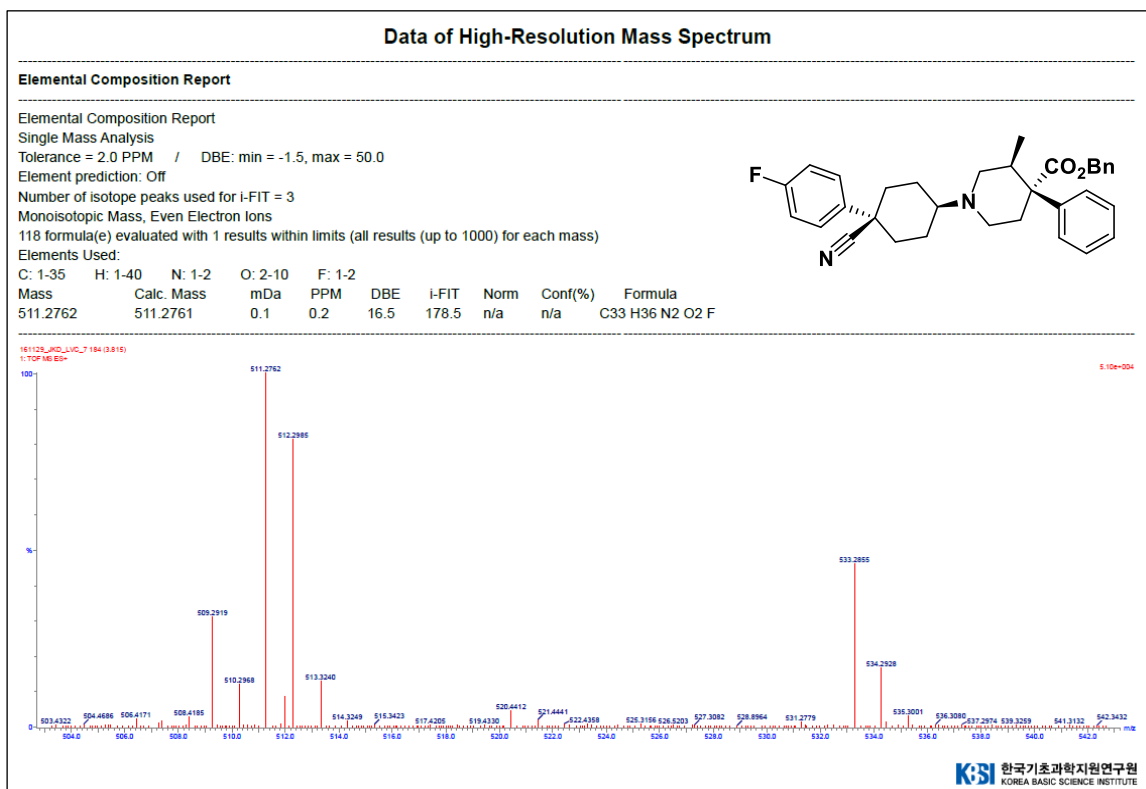
▼ ¹H-NMR (400MHz, CDCl₃) spectrum



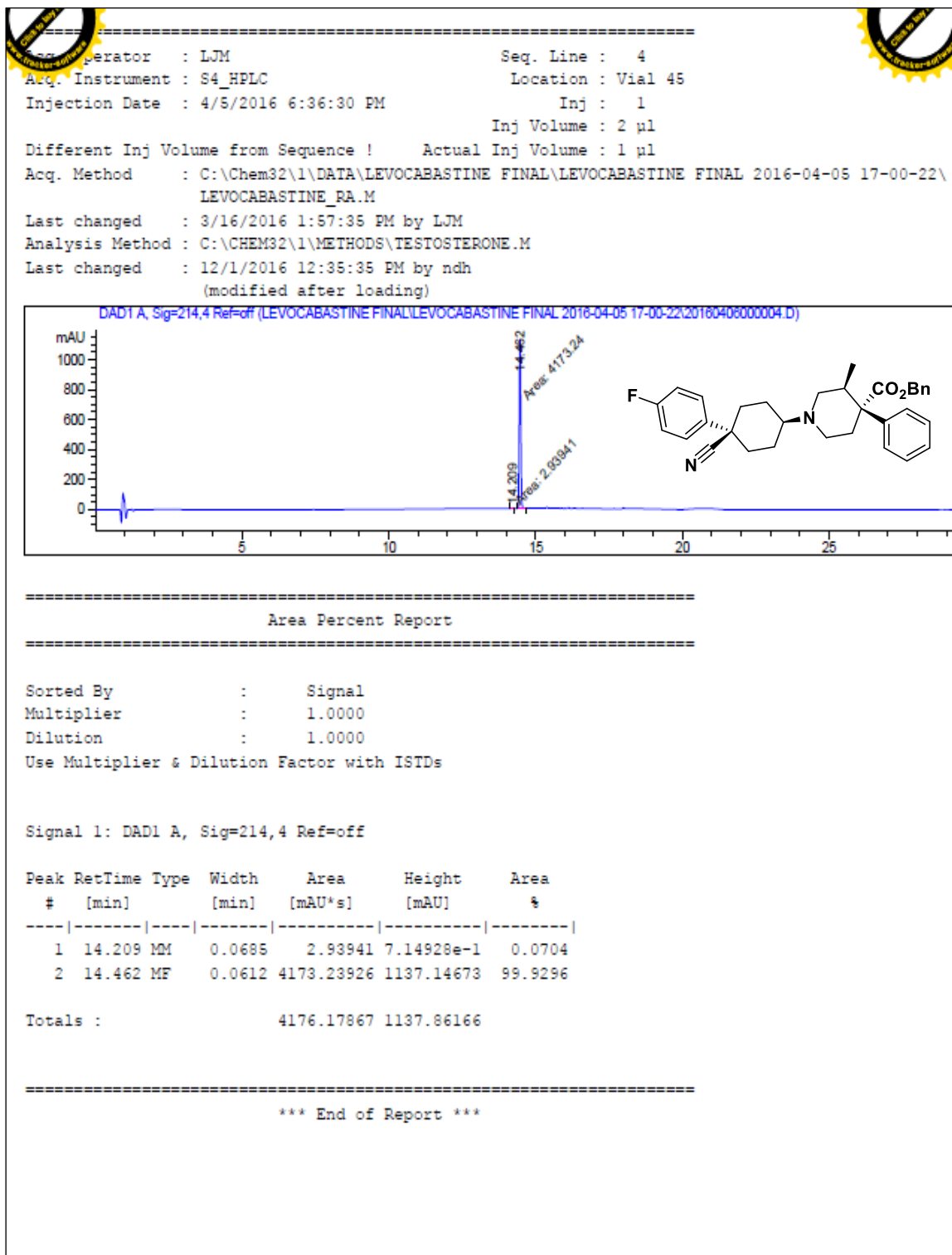
▼ ¹³C-NMR (100MHz, CDCl₃) spectrum



▼ High-Resolution Mass spectrum

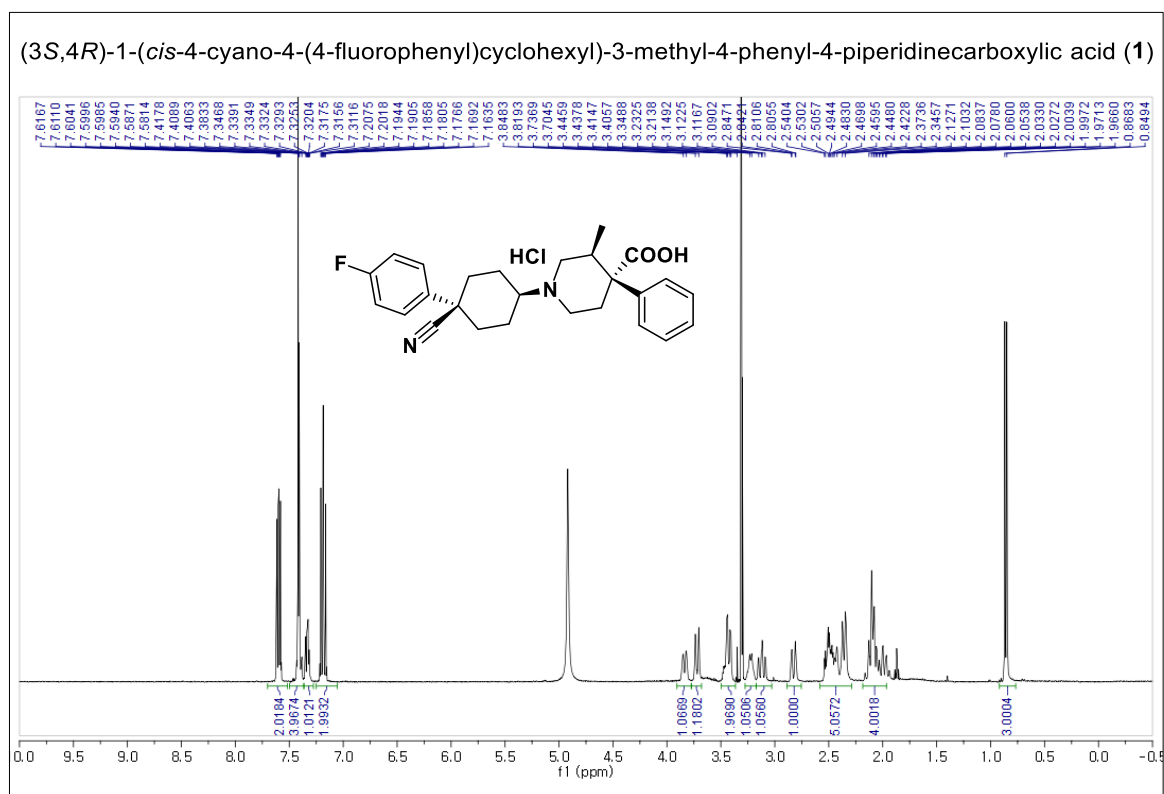


▼ HPLC (Geometric isomer < 0.1%)

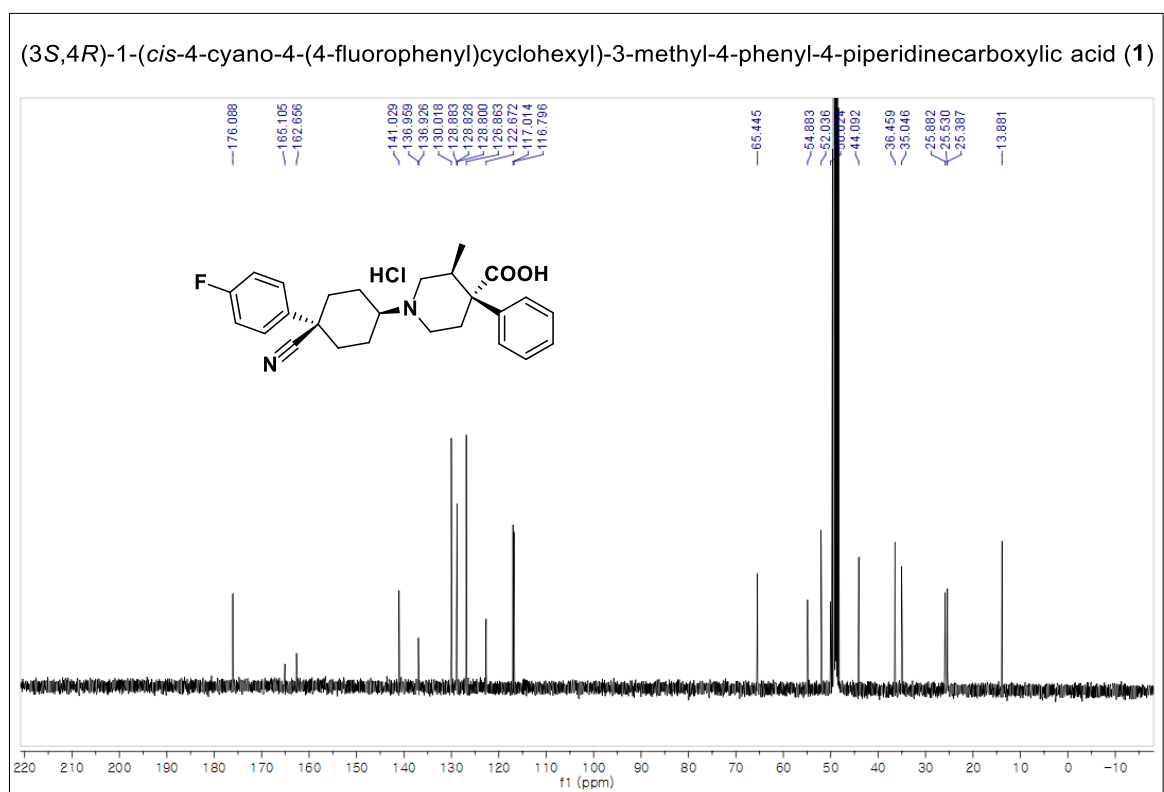


(3S,4R)-1-(*cis*-4-cyano-4-(4-fluorophenyl)cyclohexyl)-3-methyl-4-phenyl-4-piperidinecarboxylic acid (1, levocabastine hydrochloride)

▼ ¹H-NMR (400MHz, CD₃OD) spectrum



▼ ¹³C-NMR (100MHz, CD₃OD) spectrum



▼ High-Resolution Mass spectrum

