An *N*-Aryl-Substituted Oxazolidinone-Containing Ketone-Catalyzed Asymmetric Epoxidation Using Hydrogen Peroxide as Primary Oxidant

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Table 2, Entry 1

Table 2, Entry 2

Table 2, Entry 3

HPLC Cond.: Column: Chiralcel OD (Column No. OD00CE-DL010), Chiral Technologies, Inc.
 Eluent: Hexanes/IPA (90/10); Flow Rate: 1.0mL/min; Detection: UV 220 nm

Peak No	Ret. Time (min)	Result ()	Area (counts)
1	4.604	49.5471	6552150
2	8.824	50.4529	6671940
		100.0000	13224090

Peak No	Ret. Time (min)	Result ()	Area (counts)
1	4.648	6.1437	276157
2	9.049	93.8563	4218784
		100.0000	4494941

Table 2, Entry 4

GC Cond.: Column: Chiraldex B-DM (Cat. No. 77023), Adv. Separation Technologies, Inc.
 Oven: 60 °C; Carrier: Helium, head pressure 25 psi; Detection: FID 250 °C

Peak No	Peak Name	Result ()	Ret. Time (min)	Area (counts)
1		49.9753	64.793	106964
2		50.0247	69.984	107069
Totals		100.0000		214033

Peak No	Peak Name	Result ()	Ret. Time (min)	Area (counts)
1		91.5201	63.609	355116
2		8.4799	70.793	32904
Totals		100.0000		388020

Table 2, Entry 5

HPLC Cond.: Column: Chiralcel OD (Column No. OD00CE-DL010), Chiral Technologies, Inc.

Eluent: Hexanes/IPA (95/5); **Flow Rate:** 1.0mL/min; **Detection:** UV 270 nm

Peak No	Ret. Time (min)	Result ()	Minutes Area (counts)
1	13.314	49.8727	1111818
2	15.894	50.1273	1117493
		100.0000	2229311

Peak No	Ret. Time (min)	Result ()	Minutes Area (counts)
1	13.009	89.8571	18704434
2	15.012	10.1429	2111319
		100.0000	20815752

Table 2, Entry 6

HPLC Cond.: Column: Chiralcel OD (Column No. OD00CE-DL010), Chiral Technologies, Inc.

Eluent: Hexanes/IPA (94/6); **Flow Rate:** 1.0mL/min; **Detection:** UV 270 nm

Peak No	Ret. Time (min)	Result ()	Minutes Area (counts)
1	7.786	50.0249	924890
2	8.719	49.9751	923971
		100.0000	1848861

Peak No	Ret. Time (min)	Result ()	Minutes Area (counts)
1	7.901	95.6605	1013522
2	8.901	4.3395	45977
		100.0000	1059499

Table 2, Entry 7

GC Cond.: Column: Chiraldex B-DM (Cat. No. 77023), Adv. Separation Technologies, Inc.
Oven: 110 °C; Carrier: Helium, head pressure 20 psi; Detection: FID 250 °C

Peak No	Peak Name	Result ()	Ret. Time (min)	Area (counts)
1		50.5482	58.069	319385
2		49.4518	65.256	312458
Totals		100.0000		631843

Peak No	Peak Name	Result ()	Ret. Time (min)	Area (counts)
1		1.9166	59.787	5181
2		98.0834	65.827	265155
Totals		100.0000		270336

Table 2, Entry 8

GC Cond.: Column: Chiraldex B-DM (Cat. No. 77023), Adv. Separation Technologies, Inc.
Oven: 100 °C; Carrier: Helium, head pressure 20 psi; Detection: FID 250 °C

Peak No	Peak Name	Result ()	Ret. Time (min)	Area (counts)
1		49.6437	49.916	73367
2		50.3563	54.688	74420
Totals		100.0000		147787

Peak No	Peak Name	Result ()	Ret. Time (min)	Area (counts)
1		4.9804	49.951	32480
2		95.0196	53.323	619691
Totals		100.0000		652171

Table 2, Entry 9

HPLC Cond.: Column: Chiralcel OD (Column No. OD00CE-DL010), Chiral Technologies, Inc.
Eluent: Hexanes/IPA (96/4); **Flow Rate:** 1.0mL/min; **Detection:** UV 254 nm

Peak No	Ret. Time (min)	Result ()	Minutes Area (counts)
1	10.399	49.3402	34150416
2	17.862	50.6598	35063752
		100.0000	69214168

Peak No	Ret. Time (min)	Result ()	Minutes Area (counts)
1	9.649	5.8764	567739
2	16.698	94.1236	9093566
		100.0000	9661305

Table 2, Entry 10

GC Cond.: Column: Chiraldex B-DM (Cat. No. 77023), Adv. Separation Technologies, Inc.
Oven: 100 °C; **Carrier:** Helium, head pressure 20 psi; **Detection:** FID 250 °C

Peak No	Peak Name	Result ()	Ret. Time (min)	Minutes Area (counts)
1		50.1930	25.129	495145
2		49.8070	26.796	491338
Totals		100.0000		986483

Peak No	Peak Name	Result ()	Ret. Time (min)	Minutes Area (counts)
1		94.9904	25.139	596376
2		5.0096	27.409	31452
Totals		100.0000		627828

Table 2, Entry 11

GC Cond.: Column: Chiraldex B-DM (Cat. No. 77023), Adv. Separation Technologies, Inc.
Oven: 110 °C; Carrier: Helium, head pressure 20 psi; Detection: FID 250 °C

Peak No	Peak Name	Result ()	Ret. Time (min)	Area (counts)
1		49.8737	24.469	24316
2		50.1263	25.791	24439
Totals		100.0000		48755

Peak No	Peak Name	Result ()	Ret. Time (min)	Area (counts)
1		91.1583	24.099	623515
2		8.8417	25.726	60476
Totals		100.0000		683991

STANDARD 1H OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl3
Ambient temperature
INOVA-400 "naria"

Pulse 30.8 degrees
Acq. time 2.291 sec
Width 6982.6 Hz
8 repetitions

OBSERVE H1, 400.1063148 MHz
DATA PROCESSING
Gauss apodization 0.971 sec
FT size 65536
Total time 0 min, 23 sec

¹³C OBSERVE

Pulse Sequence: szpul
Solvent: CDCl₃
Ambient temperature
INOVA-400 "narnia"

Relax. delay 1.700 sec
Pulse 44.5 degrees
Acq. time 0.533 sec
Width 30018.8 Hz
90 repetitions
OBSERVE C13, 100.6067913 MHz
DECOUPLE H1, 400.1083268 MHz
Power 42 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
line broadening 2.0 Hz
FT size 32768
Total time 622730 hr, 10 min, 7. sec

STANDARD 1H OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl3

Ambient temperature

INOVA-400 "narnia"

Pulse 30.8 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063146 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

13C OBSERVE

Pulse Sequence: s2pu1

Solvent: CDCl3

Ambient temperature

INOVA-400 "naria"

Relax. delay 1.700 sec

Pulse 44.5 degrees

Acq. time 0.533 sec

Width 30018.8 Hz

249 repetitions

OBSERVE C13, 100.6067894 MHz

DECOUPLE H1, 400.1083268 MHz

Power 42 dB

continuously on

WALTZ-16 modulated

DATA PROCESSING

line broadening 2.0 Hz

FT size 32768

Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: s2pu1

Solvent: CDCl3

Ambient temperature

INOVA-400 "narnia"

Pulse 31.0 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063206 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

13C OBSERVE

Pulse Sequence: zgpg30
Solvent: CDCl3
Ambient temperature
INOVA-400 "narrila"

Relax. delay 1.700 sec
Pulse 46.5 degrees
Acq. time 0.533 sec
Width 30018.8 Hz
380 repetitions
OBSERVE C13, 100.607894 MHz
DECOUPLE H1, 400.108368 MHz
Power 42 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 2.0 Hz
F1 size 32768
Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: szpul

Solvent: CDCl3
Ambient temperature
INOVA-400 "narnia"

Pulse 30.8 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063148 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

13C OBSERVE

Pulse Sequence: zgpg1

Solvent: CDCl3

Ambient temperature

INOVA-400 "narnia"

Relax. delay 1.700 sec

Pulse 44.5 degrees

Acq. time 0.533 sec

Width 30018.8 Hz

1060 repetitions

OBSERVE C13, 100.6067894 MHz

DECOUPLE H1, 400.1083268 MHz

Power 42 dB

continuously on

WALTZ-16 modulated

DATA PROCESSING

Line broadening 2.0 Hz

FT size 32768

Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: szpul
Solvent: CDCl3
Ambient temperature
INOVA-400 "narnia"

Pulse 30.8 degrees
Acq. time 2.291 sec
Width 6982.6 Hz
8 repetitions
OBSERVE H1, 400.1063140 MHz
DATA PROCESSING
Gauss apodization 0.971 sec
FT size 65536
Total time 0 min, 23 sec

13C OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl3
Ambient temperature
INOVA-400 "narnia"

Relax. delay 1.700 sec

Pulse 44.5 degrees

Acq. time 0.533 sec

Width 30018.8 Hz

450 repetitions

OBSERVE C13, 100.6067894 MHz

DECOUPLE H1, 400.1083268 MHz

Power 42 dB

continuously on

WALTZ-16 modulated

DATA PROCESSING

Line broadening 2.0 Hz

FT size 32768

Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl3

Ambient temperature

INOVA-400 "narda"

Pulse 30.8 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063146 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

13C OBSERVE

Pulse Sequence: zgpg30
Solvent: CDCl3
Ambient temperature
INOVA-400 "marrina"

Relax. delay 1.700 sec
Pulse 44.5 degrees
Acq. time 0.533 sec
Width 30018.8 Hz
640 repetitions
OBSERVE C13, 100.6067894 MHz
DECOUPLE H1, 400.1083268 MHz
Power 42 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
line broadening 2.0 Hz
FT size 32768
Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl3

Ambient temperature

INOVA-400 "narnia"

Pulse 30.8 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063140 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

¹³C OBSERVE

Pulse Sequence: szpul

Solvent: CDCl₃

Ambient temperature

INOVA-400 "narnia"

Relax. delay 1.700 sec

Pulse 44.5 degrees

Acq. time 0.513 sec

Width 30018.8 Hz

550 repetitions

OBSERVE C13, 100.6067894 MHz

DECOUPLE H1, 400.1083268 MHz

Power 42 dB

continuously on

WALTZ-16 modulated

DATA PROCESSING

Line broadening 2.0 Hz

FT size 32768

Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: zgpg30

Solvent: CDCl3

Ambient temperature

INOVA-400 "naria"

Pulse 30.8 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063140 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

13C OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl3

Ambient temperature

INOVA-400 "narnia"

Relax. delay 1.700 sec

Pulse 44.5 degrees

Acq. time 0.533 sec

Width 30018.8 Hz

450 repetitions

OBSERVE C13, 100.6067894 MHz

DECOUPLE H1, 400.1083268 MHz

Power 42 dB

continuously on

WALTZ-16 modulated

DATA PROCESSING

Line broadening 2.0 Hz

FT size 32768

Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: szpul

Solvent: CDCl3

Ambient temperature

INOVA-400 "nmr1a"

Pulse 30.8 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063148 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

¹³C OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl₃

Ambient temperature
INOVA-400 "narnia"

Relax. delay 1.700 sec

Pulse 44.5 degrees

Acq. time 0.533 sec

Width 30018.8 Hz

220 repetitions

OBSERVE C13, 100.6067894 MHz

DECOUPLE H1, 400.1083268 MHz

Power 42 dB

continuously on

WALTZ-16 modulated

DATA PROCESSING

Line broadening 2.0 Hz

FT size 32768

Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl3

Ambient temperature

INOVA-400 "narrla"

Pulse 30.8 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063148 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

13C OBSERVE

Pulse Sequence: zgpg30
Solvent: CDCl₃
Ambient temperature
INOVA-400 "naria"

Relax. delay 1.700 sec
Pulse 44.5 degrees
Acq. time 0.53 sec
Width 30018.8 Hz
500 repetitions
OBSERVE C13, 100.6067894 MHz
DECOUPLE H1, 400.1083268 MHz
Power 42 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 2.0 Hz
FT size 32768
Total time 622730 hr, 10 min, 7 sec

STANDARD 1H OBSERVE

Pulse Sequence: s2pul

Solvent: CDCl3

Ambient temperature

INOVA-400 "narnia"

Pulse 30.8 degrees

Acq. time 2.291 sec

Width 6982.6 Hz

8 repetitions

OBSERVE H1, 400.1063123 MHz

DATA PROCESSING

Gauss apodization 0.971 sec

FT size 65536

Total time 0 min, 23 sec

¹³C OBSERVE

Pulse Sequence: s2pul
Solvent: CDCl₃
Ambient temperature
INOVA-400 "marnia"

Relax. delay 1.700 sec
Pulse 44.5 degrees
Acq. time 0.533 sec
Width 30018.8 Hz
207 repetitions
OBSERVE C13, 100.6067894 MHz
DECOUPLE H1, 400.1083268 MHz
Power 42 dB
continuously on
WALTZ-16 modulated
DATA PROCESSING
Line broadening 2.0 Hz
FT size 32768
Total time 622730 hr, 10 min, 7 sec