

Supporting Information

Benzimidazolones – A New Class of Selective Peroxisome Proliferator Activated Receptor Gamma (PPAR γ) Modulators

Weiguo Liu, Fiona Lau, Kun Liu, Harold B. Wood, Gaochao Zhou, Yuli Chen, Ying Li,
Taro E. Akiyama, Gino Castriota, Monica Einstein, Chualin Wang, Margaret E.
McCann, Thomas W. Doebber, Margaret Wu, Ching H. Chang, Lesley McNamara, Brian
McKeever, Ralph T. Mosley, Joel P. Berger and Peter T. Meinke*

Merck Research Laboratories, P. O. Box 2000, Rahway, New Jersey 07065

Table of Contents

1. Synthesis of intermediates
2. Results of elemental analysis of compounds **51** and **52**.
3. Chiral HPLC traces of selected compounds.

Synthesis of intermediates

2-Nitro-4-trifluoromethoxyacetylaniline (4a, R₁ = OCF₃). To a solution of 4-trifluoromethoxyaniline (**3a**, R₁ = OCF₃, 35 g, 200 mmol) in acetic acid (35 mL) at 0 to 10 °C, was added acetic anhydride (75 mL). The reaction mixture was stirred at 10 to 30 °C for 30 min. While cooling in an ice bath, H₂SO₄ (96%, 1.5 mL, 26 mmol) was added followed by HNO₃ (90%, 9.4 mL, 200 mmol). The mixture was stirred at room temperature for one hour and diluted with water (300 mL). The resulting slurry was stirred in ice bath for 30 minutes and filtered. The solid was washed with water and air dried to obtain 45 g (85% yield) of a yellow solid. ¹H NMR (CDCl₃, 500 MHz) δ 10.31 (s, 1H), 8.91 (d, 1H), 8.12 (s, 1H), 7.56 (d, 1H), 2.34 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 265.10 [M + H]⁺.

2-Amino-4-trifluoromethoxyacetylaniline (5a, R₁ = OCF₃). To a solution of 2-nitro-4-trifluoromethoxyacetylaniline (**4a**, 40 g, 180 mmol) in methanol (250 mL), was added 10% palladium on carbon (Pd/C, 10% wt/wt, 500 mg). The suspension was shaken in a Parr bottle under 45 psi of hydrogen for 4 hours, and then filtered through celite. The filtrate was concentrated to dryness to obtain 35 g (100% yield) of a light gray solid. ¹H NMR (CDCl₃, 500 MHz) δ 7.38 (brs, 1H), 7.13 (d, 1H), 6.64 (s, 1H), 6.63 (d, 1H), 4.02 (brs, 2H), 2.11 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 248.97 [M + H]⁺.

1,2-Diamino-4-trifluoromethoxybenzene (6a, R₁ = OCF₃). To a solution of 2-amino-4-trifluoromethoxyacetylaniline (**5a**, 30 g, 120 mmol) in methanol (250 mL), was added 5 N aqueous sodium hydroxide solution (30 mL, 150 mmol). The reaction mixture was refluxed at 70 °C overnight, then, concentrated to remove methanol. The aqueous residue was cooled to room temperature and extracted with ethyl acetate (3 x 25 mL). The organic extracts were combined, concentrated, and purified by silica gel chromatography with hexane/ethyl acetate (4:1) as solvent system to obtain 20 g (87% yield) of a yellow oil. ¹H NMR (CDCl₃, 500 MHz) δ 6.66 (d, 1H), 6.60 (s, 1H), 6.59 (d, 1H), 3.91 (brs, 4H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 192.99 [M + H]⁺.

1-Boc-5-Trifluoromethoxybenzimidazole-2-one and **1-Boc-6-Trifluoromethoxybenzimidazole-2-one (7c, R₁ = 5-OCF₃; 7d, R₁ = 6-OCF₃).** To a solution of 1, 2-diamino-4-trifluoromethoxybenzene (**6a**) (35 g, 180 mmol) in tetrahydrofuran (350 mL), was added urea (32 g, 180 mmol). The solution was refluxed at 70 °C overnight, concentrated under vacuum to a volume of about 100 mL and diluted with water (500 mL). The suspension was stirred at room temperature overnight and filtered. The solid was washed with water and dried under vacuum to obtain 35 g (88% yield) of a white crystalline solid of 5-trifluoromethoxybenzimidazole-2-one. ¹H NMR (DMSO-d₆, 500 MHz) δ 10.85 (d, 2H), 6.97 (d, 1H), 6.90 (d, 2H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 219.21 [M + H]⁺.

To a solution of 5-trifluoromethoxybenzimidazole-2-one (35 g, 160 mmol) in DMF (150 mL) was added NaH (95%, 4.9 g, 190 mmol). The reaction mixture was stirred at room temperature for 2 hours followed by addition of di-tert-butyl dicarbonate

(35 g, 160 mmol). The mixture was stirred at room temperature overnight, diluted with water (400 mL), and extracted with ethyl acetate (2 x 150 mL). The organic extract was washed with water (2 x 100 mL) and brine (100 mL), dried over anhydrous MgSO₄, and concentrated under vacuum. The residue was chromatographed on silica gel with hexane/ethyl acetate (3:1) as the solvent system to obtain 13 g (25% yield) of 1-Boc-5-trifluoromethoxybenzimidazole-2-one (**7c**) as an earlier eluted product. Fractions containing the later eluted product were combined and concentrated to dryness to obtain 24 g (47% yield) of 1-Boc-6-trifluoromethoxybenzimidazole-2-one (**7d**). ¹H NMR (DMSO-d₆, 500 MHz) δ 11.21 (brs, 1H), 7.56 (s, 1H), 7.12 (d, J=7Hz, 1H), 7.03 (d, J=7Hz, 1H), 1.57 (s, 9H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 319.09 [M + H]⁺.

N, 2-Dihydroxy-4-methylbenzamide (12a, X = 4-Me). To a solution of 2-hydroxy-4-methylbenzoic acid (**11a**, X = 4-Me, 10 g, 66 mmol) in a 4:1 mixture of benzene and methanol (200 mL) was added dropwise a 2.0 M solution of (trimethylsilyl)diazomethane in hexanes (35 mL) until the yellow color no longer dissipate. The mixture was concentrated to dryness, purified by SiO₂ flash column with hexane/ethyl acetate as solvent to obtain 10 g (98% yield) of a white solid as 2-hydroxy-4-methylbenzoic acid methyl ester. This ester was dissolved in 1,4-dioxane (50 mL) and added dropwise to an aqueous solution (100 mL) containing hydroxylamine (3.9 g, 120 mmol) and NaOH (7.2 g, 180 mmol) at RT. The mixture was stirred at RT for 12 hrs, and concentrated under vacuum to remove organic solvent. The aqueous solution was adjusted to pH = 1 with 1N HCl. The resulting precipitate was collected by filtration and dried to obtain 11 g (95% yield) of a solid. ¹H NMR (DMSO-d₆, 500 MHz) δ: 7.24 (s,

1H), 7.19 (d, 1H), 6.79 (d, 1H), 2.40 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: m/z 167.96 [M + H]⁺.

6-Methyl-1,2-benzisoxazole-3(2H)-one (13a, X = 4-Me). A solution of N, 2-dihydroxy-4-methylbenzamide (**12a**, 3 g, 18 mmol) in THF (50 mL) was heated to 70 °C. To this hot solution was added 1, 1'-carbonyldiimidazole (CDI, 4.4 g, 27 mmol). The mixture was then refluxed overnight, cooled to RT, and diluted with ethyl acetate (150 mL). The solution was washed with 1N HCl, water and brine, dried with anhydrous MgSO₄ and concentrated to dryness. The residue was purified by SiO₂ flash chromatography using hexane/ethyl acetate as solvent to obtain 1.2 g (45%) of a solid. ¹H NMR (CDCl₃, 500 MHz) δ : 7.03 (s, 1H), 6.98 (d, 1H), 6.95 (d, 1H), 2.39 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: m/z 150.01 [M + H]⁺.

3-Chloro-6-methyl-1,2-benzisoxazole-3(2H)-one (14a, X = 6-Me). A mixture of 6-methyl-1,2-benzisoxazole-3(2H)-one (**13a**, X = 4-Me, 130 mg, 0.87 mmol), triethylamine (88 mg, 0.87 mmol) and phosphorus oxychloride (POCl₃, 440 mg, 4.35 mmol) was heated in a sealed pressure tube at 90 °C for 5 hrs. The mixture was cooled to RT, poured on to ice/water (10 mL) and extracted with diethyl ether (3 x 10 mL) the ether extracts were combined, concentrated to dryness and purified by SiO₂ flash chromatography using hexane/ethyl acetate as solvent to obtain 95 mg (78% yield) of a solid. ¹H NMR (CDCl₃, 500 MHz) δ : 7.09 (s, 1H), 6.98 (m, 2H), 2.41 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: m/z 168.01 [M + H]⁺.

(2R)-(2-Chloro-5-methylphenoxy)-propanoic acid methyl ester (17a, Y = 2-Cl). To a solution of 2-chloro-5-methyl-phenol (**15a**, Y = 2-Cl, 8 g, 56 mmol), methyl (S)-lactate (**16**, 7.78 g, 62 mmol), and triphenylphosphine (19 g, 73 mmol) in THF (60

mL) cooled to 0 °C, was added slowly diisopropyl azodicarboxylate (DIAD, 14.7 g, 73 mmol). The mixture was allowed to warm to RT, stirred overnight, and concentrated to dryness. The residue was purified by SiO₂ flash chromatography using hexane/ethyl acetate to obtain 5.6 g (44% yield) of a solid. ¹H NMR (CDCl₃, 500 MHz) δ: 7.24 (d, 1H), 6.79 (d, 1H), 6.68 (s, 1H), 4.80 (q, 1H), 3.80 (s, 3H), 2.36 (s, 3H), 1.72 (d, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 228.98 [M + H]⁺.

(2R)- [5-(Bromomethyl)-2-chlorophenoxy]-propanoic acid methyl ester (18a, Y = 2-Cl). To the solution of (2R)-(2-chloro-5-methylphenoxy)-propanoic acid methyl ester (**17a**, Y = 2-Cl, 2.4 g, 10.5 mmol) in carbon tetrachloride (CCl₄, 20 mL) was added N-bromosuccinimide (NBS, 1.87 g, 10.8 mmol) and 2,2-azobis(2-methylpropionitrile) (AIBN, catalytic). The mixture was heated under nitrogen for 16 hrs, cooled to RT, diluted with dichloromethane, washed with saturated NaHCO₃ solution, and concentrated to dryness. The residue was purified by SiO₂ flash chromatography using hexane/ethyl acetate as solvent to obtain 1.8 g (60% yield) of a solid. ¹H NMR (CDCl₃, 500 MHz) δ: 7.36 (d, 1H), 6.98 (d, 1H), 6.86 (s, 1H), 4.80 (q, 1H), 3.80 (s, 3H), 4.41 (dd, dH), 1.71 (d, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 306.98 [M + H]⁺.

2-Chloro-5-methylphenoxytrifluoromethanysulfonate. To a solution of 2-chloroanisole (20 g, 141 mmol) in pyridine (75 mL) cooled to 0 °C in an ice bath, was added trifluoromethanesulfonic anhydride (Tf₂O, 43.7 g, 142 mmol). The mixture was stirred at 0 °C for 30 min. then at room temperature overnight. It was poured into ice/water (400 mL) and extracted with diethylether (2 x 200 mL). The ether extract was washed with 10% HCl, water, and brine, dried over MgSO₄ and concentrated to dryness. The residual yellow oil was purified by flash SiO₂ column washing with hexane to obtain

35 g (91% yield) of an oil. $^1\text{H NMR}$ (CDCl_3 , 500 MHz) δ : 7.42 (d, 1H), 7.20 (s, 1H), 7.18 (d, 1H), 2.41 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: m/z 275.0 $[\text{M} + \text{H}]^+$.

2-Chloro-5-methylacetophenone (20b, Y = 2-Cl). Argon was bubbled into a solution of the above triflate (15 g, 54.7 mmol) in dry DMF (100 mL). To this solution under argon was added sequentially triethylamine (6 g, 60 mmol), vinyl butylether (27.4 g, 274 mmol), 1,2-bis(diphenylphosphino)propane (dppp, 664 mg, 1.5 mmol) and $\text{Pd}(\text{OAc})_2$ (307 mg, 1.4 mmol). The mixture was then heated under argon to 80 °C for 3 hrs, cooled to room temperature, quenched with 10% HCl (100 mL), and stirred at room temperature overnight. The mixture was then, diluted with water (200 mL), and extracted with ethyl acetate. The organic extracts were combined, and concentrated to dryness. The residue was purified by flash SiO_2 column chromatograph with hexane/acetate as solvent to obtain 5.1 g (55% yield) of a colorless oil. $^1\text{H NMR}$ (CDCl_3 , 500 MHz) δ : 7.38 (s, 1H), 7.30 (d, 1H), 7.19 (d, 1H), 2.67 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: m/z 169.0 $[\text{M} + \text{H}]^+$.

2-(2-Chloro-3-methylphenyl)-1,2-propene (21b, Y = 2-Cl). To a solution of methyltriphenylphosphonium bromide (5.0g, 14 mmol) diethyl ether (40 mL) was added slowly n-butyllithium (1.6 M in heptane, 9.0 mL, 14 mmol) at room temperature. The resulting yellow solution was stirred for 30 min at room temperature, and 4-chloro-3-methylacetophenone (**20b**, 2.4 g, 14 mmol) was added by syringe. The reaction mixture was stirred at room temperature overnight, and filtered to remove the solid. The filtrate was concentrated to small volume and the residue purified by flash SiO_2 column chromatography with pure hexane as eluent to give 1.5 g (64% yield) of a colorless oil.

2-(4-Chloro-3-methylphenyl)-1,2-propene (21c, Y = 4-Cl). To a solution of methyltriphenylphosphonium bromide (55 g, 154 mmol) diethyl ether (400 mL) was added slowly n-butyllithium (1.6 M in heptane, 96 mL, 154 mmol) at room temperature. The resulting yellow solution was stirred for 30 min at room temperature, and 4-chloro-3-methylacetophenone (Aldrich, 26 g, 154 mmol) was added by syringe. The reaction mixture was stirred at room temperature overnight, and filtered to remove the solid. The filtrate was concentrated to small volume and the residue purified by flash SiO₂ column chromatography with pure hexane as eluent to give 20 g (81% yield) of a colorless oil. ¹H NMR (CDCl₃, 500 MHz) δ: 7.37 (d, 1H), 7.32 (s, 1H), 7.28 (d, 1H), 5.39 (s, 1H), 5.13 (s, 1H), 2.43 (s, 3H), 2.17 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 167.1 [M + H]⁺

2(R)-2-(4-Chloro-3-methylphenyl)-1,2-propane-diol (22c, Y = 4-Cl). To a suspension of AD-mix-β (150 g) in H₂O/tBuOH (250 mL/250 mL) at 0 °C was added 2-(4-chloro-3-methylphenyl)propene (20 g, 121 mmol). The reaction mixture was stirred at 0 °C overnight. Na₂SO₃ (70 g) was added. After stirring for 1 hr at room temperature, the mixture was extracted with EtOAc (3X). The combined organic layers were washed with brine, dried over MgSO₄, filtered, and concentrated in vacuum. Purification by flash chromatography gave 20 g (84% yield) of 2(R)-(4-chloro-3-methylphenyl)-1,2-propane-diol as an oil. ¹H NMR (CDCl₃, 500 MHz) δ: 7.37 (s, 1H), 7.32 (d, 1H), 7.24 (d, 1H), 3.82 (m, 1H), 3.66 (m, 1H), 2.42 (s, 3H), 1.88 (s, 3H).

2(R)-4-Chloro-2-hydroxy-2,3-dimethylphenylbenzeneacetic acid (23c, Y = 4-Cl). To a solution of 2(R)-2-(4-chloro-3-methylphenyl)-1,2-propane-diol (22c, Y = 4-Cl,

5.8 g, 29 mmol) in water (100 mL), was added NaHCO₃ (3.3 g, 38 mmol), and Pt/C (10%, 5.8 g). Air was bubbled through a gas dispenser into the solution at 70 °C for 18 hrs. The mixture was then cooled to RT, and filtered through celite. The filtrate was adjusted to pH = 2 with 1N H₂SO₄, and extracted with ethyl acetate. The organic extracts were combined, washed with brine, dried over MgSO₄, and concentrated to obtain 4.1 g (72% yield) of a solid. ¹H NMR (CDCl₃, 500 MHz) δ: 7.52 (s, 1H), 7.39 (m, 2H), 2.42 (s, 3H), 1.85 (s, 3H).

2(R)-4-Chloro-2-hydroxy-2,3-dimethylphenylbenzeneacetic acid methyl ester (24c, Y = 4-Cl). To a solution of 2(R)-4-chloro-2-hydroxy-2,3-dimethylphenylbenzeneacetic acid (**23c**, Y = 4-Cl). (1.1 g, 4.7 mmol) in anhydrous diethyl ether (10 mL) was added diazomethane ether solution (freshly produced following procedures in Aldrich Technical Bulletin AL-180) until a bright yellow color is produced or no more bubbles evolved. The solution was then concentrated to dryness to obtain 1.1 g (99% yield) of a white solid. ¹H NMR (CDCl₃, 500 MHz) δ: 7.41 (s, 1H), 7.38 (m, 2H), 3.79 (s, 3H), 2.39 (s, 3H), 1.79 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 229.1 [M + H]⁺.

(5R)-5-(4-Chloro-3-methylphenyl)-5-methyl-2,4-oxazolidinedione (25c, Y = 4-Cl). To a solution of 2(R)-4-chloro-2-hydroxy-2,3-dimethylphenylbenzeneacetic acid methyl ester (**24c**) (3.41 g, 15 mmol) in anhydrous ethanol (50 mL), was added NaOEt in ethanol (21% wt/wt, 8.5 mL, 22.4 mmol), and urea (1.1 g, 18 mmol). The mixture was heated to 95 °C and refluxed overnight. The solution was then cooled to room temperature, acidified with 1N HCl, concentrated to small volume, and diluted with water (100 mL). The aqueous mixture was extracted with ethyl acetate (3 x 50 mL). The

organic extracts were combined, washed with brine, dried over anhydrous MgSO₄, and concentrated to dryness to obtain 3.7 g (100% yield) of an oil that was used in the next step without further purification. ¹H NMR (CDCl₃, 500 MHz) δ: 7.41 (s, 1H), 7.39 (d, 1H), 7.35 (d, 1H), 4H), 2.40 (s, 3H), 1.91 (s, 3H). LC-Mass (ESI): >95% purity at λ 220 and 254 nm; MS: *m/z* 240.1 [M + H]⁺.

(5R)-5-(4-Chloro-3-methylphenyl)-5-methyl-N-trityl-2,4-oxazolidinedione (26c, Y = 4-Cl). To a solution of (5R)-5-(4-chloro-3-methylphenyl)-5-methyl-2,4-oxazolidinedione (**25c**, Y = 4-Cl) (2.1 g, 10 mmol) in anhydrous methylene chloride (50 mL) was added triethyl amine (1.0 g, 11 mmol) and trityl chloride (3.2 g, 11 mmol). The mixture was stirred under nitrogen at room temperature for 1 hour, washed with water (10 mL), brine (10 mL), dried over anhydrous MgSO₄, and concentrated to dryness to obtain 4.5 g (98% yield) of a solid. ¹H NMR (CDCl₃, 500 MHz) δ: 7.40-7.20 (multiple overlapping peaks, 18H), 2.42 (s, 3H), 1.89 (s, 3H).

(5R)-5-(3-Bromomethyl-4-chlorophenyl)-5-methyl-N-trityl-2,4-oxazolidinedione (27c, Y = H). To a solution of (5R)-5-(4-chloro-3-methylphenyl)-5-methyl-N-trityl-2,4-oxazolidinedione (**26c**, Y = 4-Cl). (3.0 g, 6.5 mmol) in carbon tetrachloride (100 mL) was added N-bromosuccinimide (1.0 g, 6.5 mmol), and AIBN (catalytic). The mixture was heated to 80 °C and refluxed overnight. The solution was then cooled to room temperature, washed with saturated NaHCO₃ solution (20 mL) water (20 mL), and brine (20 mL), and concentrated to dryness. The residue was purified by silica gel column chromatography with hexane/ethyl acetate (9:1) as a solvent to obtain 1.3 g (34% yield) of a white solid. ¹H NMR (CDCl₃, 500 MHz) δ: 7.5-7.2 (multiple overlapping peaks, 18H), 4.75 (dd, 2H), 1.79 (s, 3H).

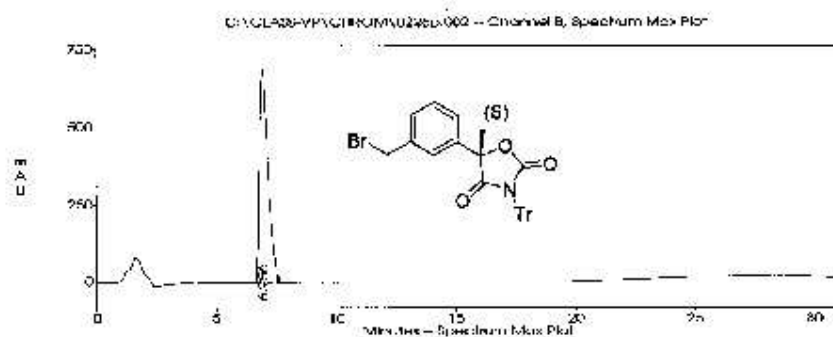
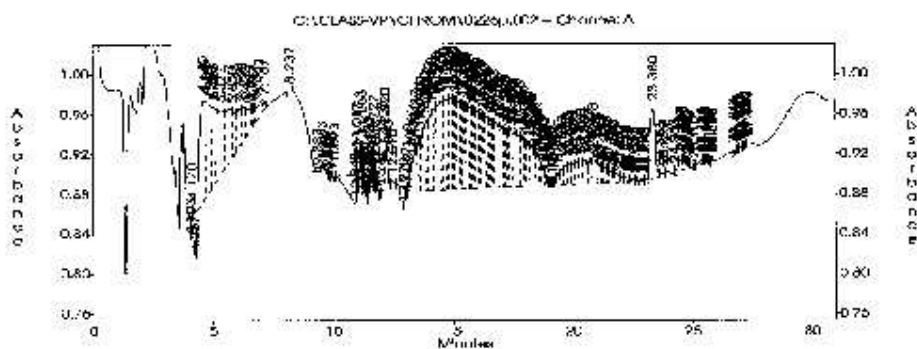
Elemental analysis results for compound 51, and 52.

compound	formula	calculated		found	
		C%	H%	C%	H%
51	C ₂₆ H ₂₀ N ₄ O ₆	64.46	4.16	64.38	4.21
52	C ₂₅ H ₁₇ ClN ₄ O ₅	61.42	3.50	61.47	3.43

Chiral HPLC traces of selected compounds:

EtOH/Heptane Chiral HPLC: 800-C330 (Rotation + PDA)

File : CHCLAS8-VPYCI#RUMU022qu.002
 Sample ID : 8
 Acquired : Feb 26, 2004 17:00:06
 File Desc. : User = ficou100@warr.com
 Instrument = EtOH/Heptane Chiral HPLC: RY800-C330
 Vial = 61 Inj. Vol. = 10 uL
 Start % B = 2
 Final % B = 70
 Gravel Time = 25 min
 Flow Rate = 0.75 ml/min
 Wavelength = 220
 Signal A = -MgF 400
 Solvent B = 200-proof EtOH
 Column 3 : Chiralcel OD 4.6 x 250 mm 10 micron



Channel A Results -- EDR Spectrum Max Plot

RT	Area	Area%	Width
4.10	92186	3.2	0.133
7.17	4662	1.0	0.337
4.29	172700	3.9	0.183
4.34	510072	1.7	0.347
4.75	842680	4.5	0.141
4.86	146772	0.8	0.061
5.03	239323	1.3	0.122
5.11	258371	1.4	0.173
5.38	529720	2.7	0.267
5.71	535628	2.9	0.223
5.85	203053	1.1	0.167
5.12	244751	1.3	0.220
5.28	143763	0.6	0.156
5.41	47943	0.2	0.060
5.57	147059	0.7	0.300
5.64	22752	0.2	0.057

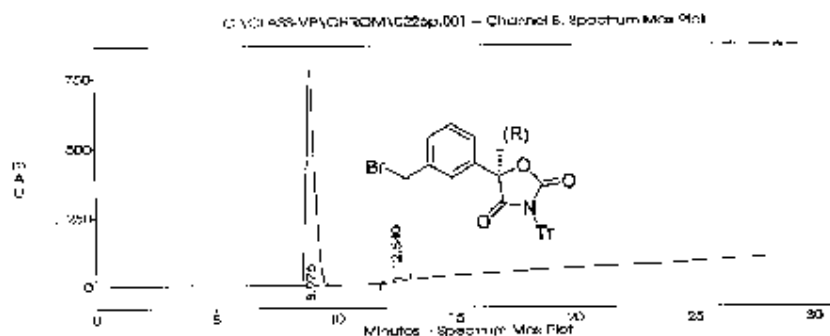
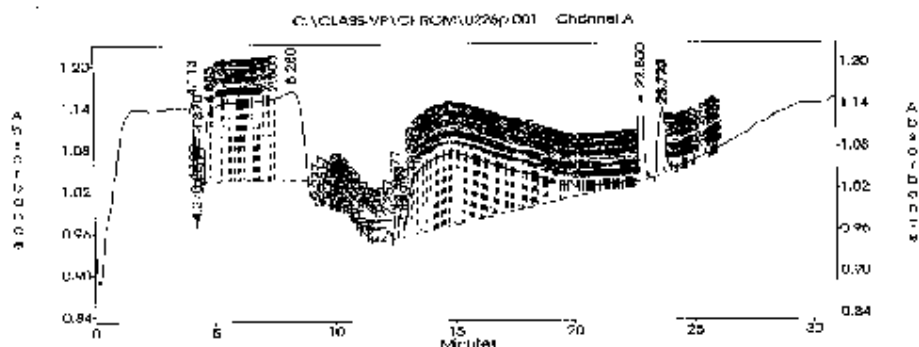
Channel B Results -- EDR Spectrum Max Plot

RT	Area%	Peak Purity	Length	Max	Width
8.26	100.0	0.9975	207	0.900	

Shimadzu Open-Access EtOH/Heptane Chiral HPLC: ESSER RY800-C330

EtOH/Heptane Chiral HPLC: 800-C330 (Rotation + PDA)

File Name : C:\CLASS-VP\CHROM\0226p.001
 Sample ID : 44488 14
 Acquired : Feb 26, 2004 16:23:16
 File Desc : User = fiona @andromeda.com
 Instructions : EtOH/Heptane Chiral HPLC 8000-C330
 Vial : 66 Inj. Vol. : 10 µL
 Split % B : 3
 Final % B : 13.0
 Gradient Time : 25 min
 Flow Rate : 1.75 µL/min
 Wavelength : 220
 Solvent A : n-HEPTANE
 Solvent B : 200-proof EtOH
 Column 1 : CHIRALCEL OD 1.6 µ 250 µm LE micron



Channel A Results

RT	Area	Area %	Width
4.11	4297	0.5	0.082
4.13	131839	0.1	0.077
4.27	252870	0.9	0.127
4.37	135558	0.7	0.150
4.56	27341	0.1	0.132
4.92	634694	2.1	0.335
5.13	251707	0.8	0.223
5.27	1054206	3.2	0.336
5.34	232377	0.7	0.070
5.43	266533	0.9	0.086
5.59	214875	0.7	0.202
5.67	227220	0.8	0.077
5.64	372162	1.3	0.173
5.92	317207	1.0	0.103
5.67	371028	0.6	0.083
5.09	332720	0.9	0.079

Channel B Results -- PDA DwellTime Max Plot

RT	Area%	Peak Purity	Length Hex	Width
4.11	37.3	0.9766	207	0.032
23.54	7.0	0.9391	238	1.204

Shimadzu Open-Access EtOH/Heptane Chiral HPLC: ESSER RY800-C330