

Supplementary materials

**Asymmetric conjugate addition of ketones to maleimides
organocatalyzed by a chiral primary amine-salicylamide**

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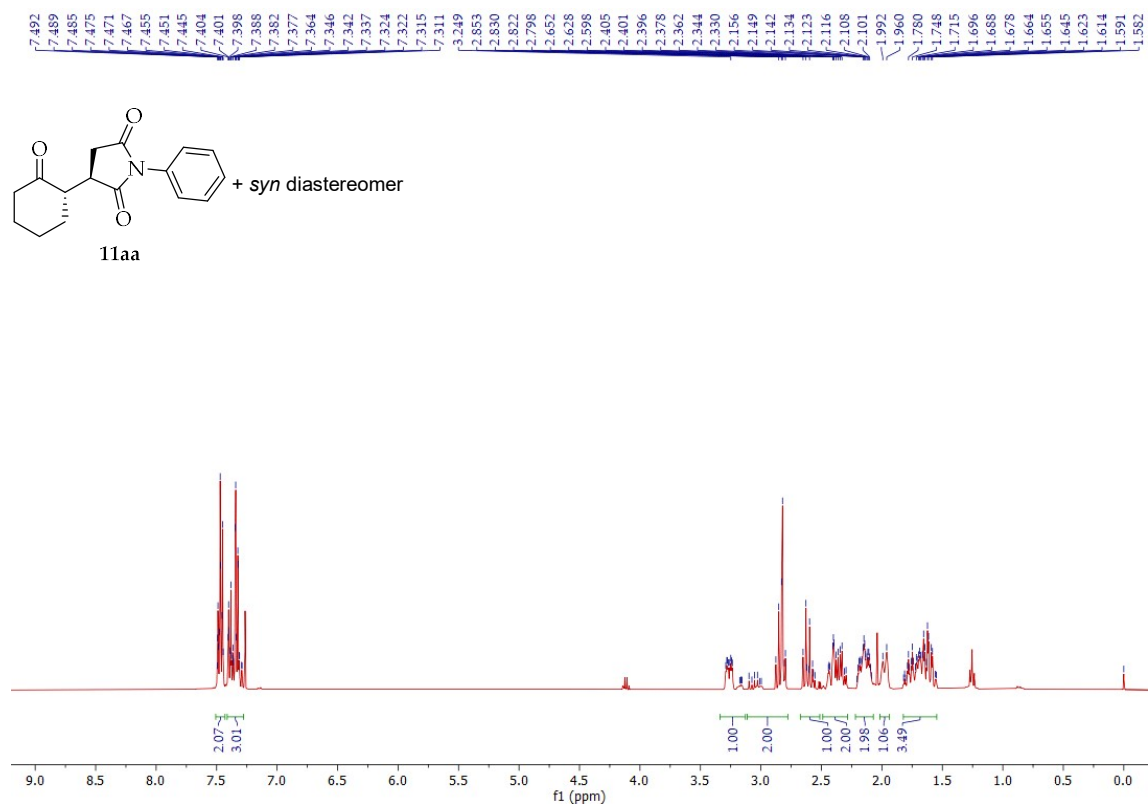


Figure S1. ¹H NMR spectrum (400 MHz) of compound 11aa.

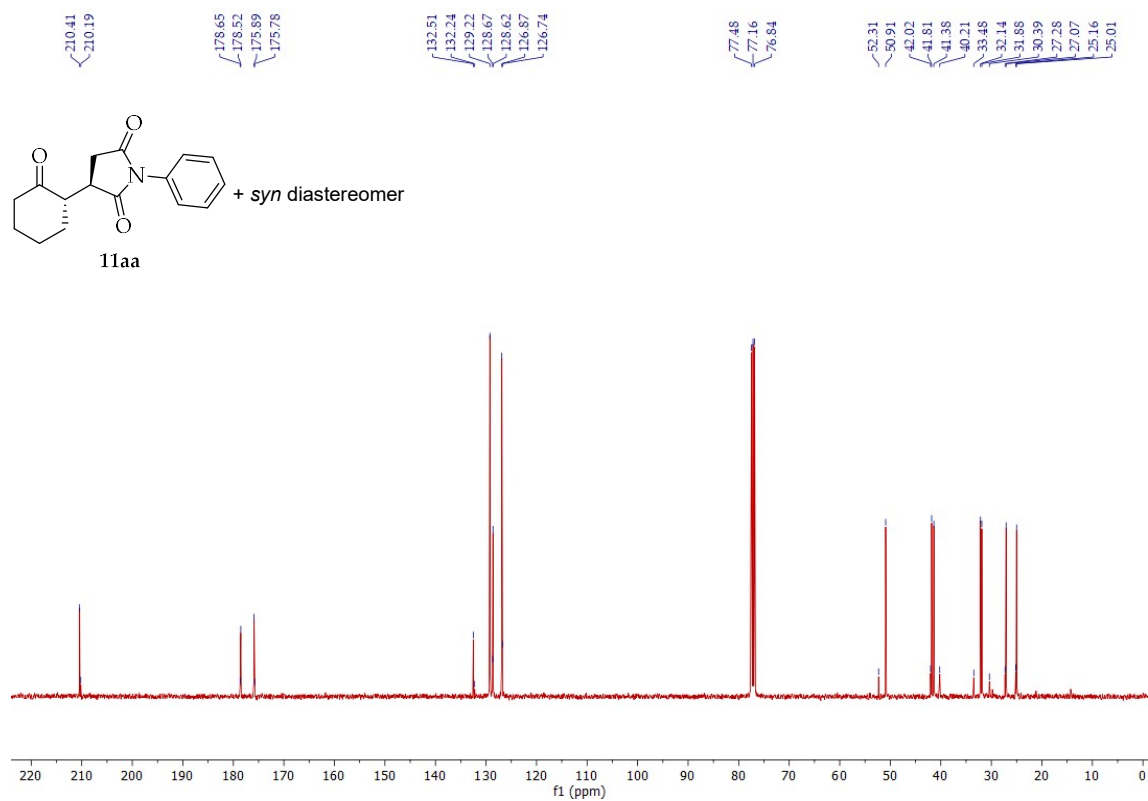


Figure S2. ¹³C NMR spectrum (101 MHz) of compound 11aa.

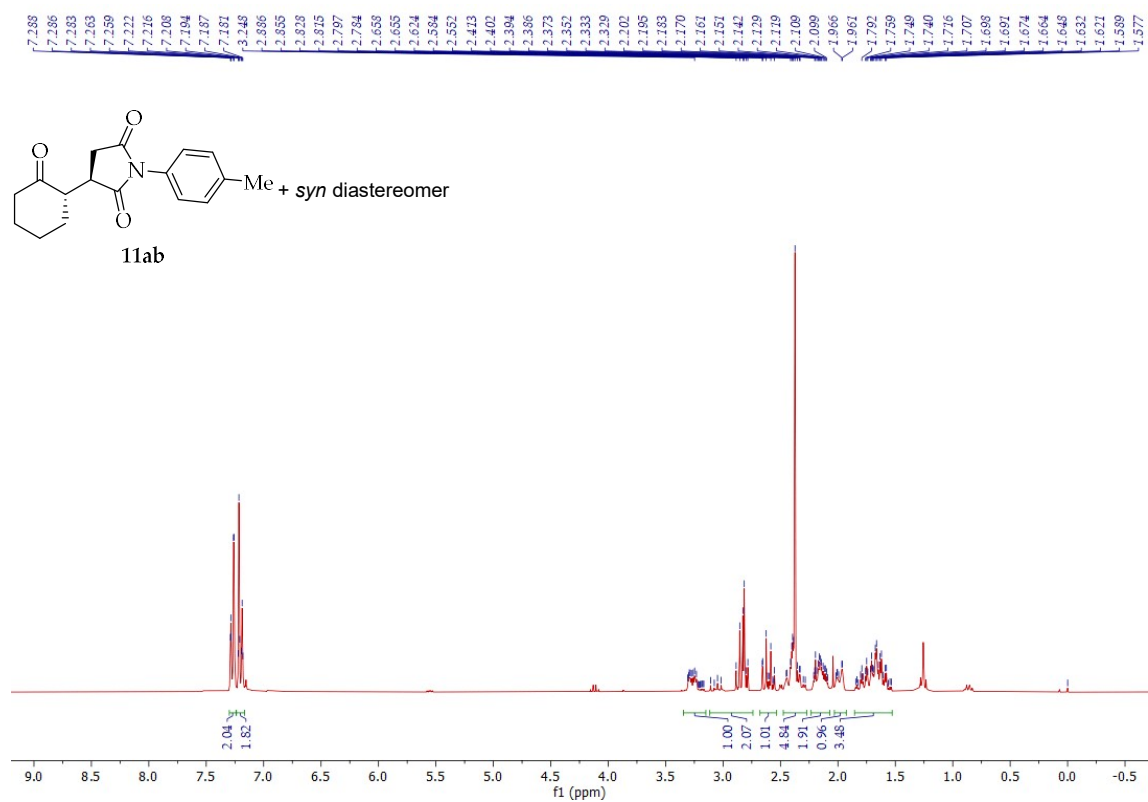


Figure S3. ¹H NMR spectrum (300 MHz) of compound **11ab**.

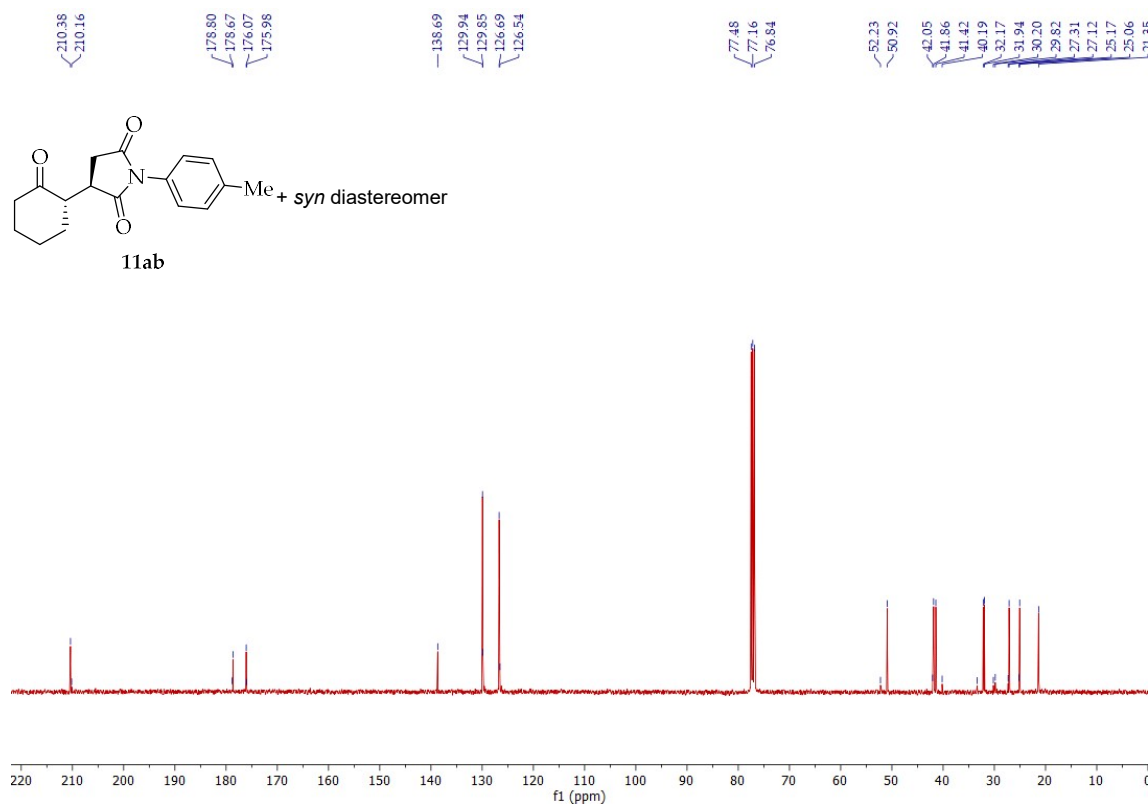


Figure S4. ¹³C NMR spectrum (75 MHz) of compound **11ab**.

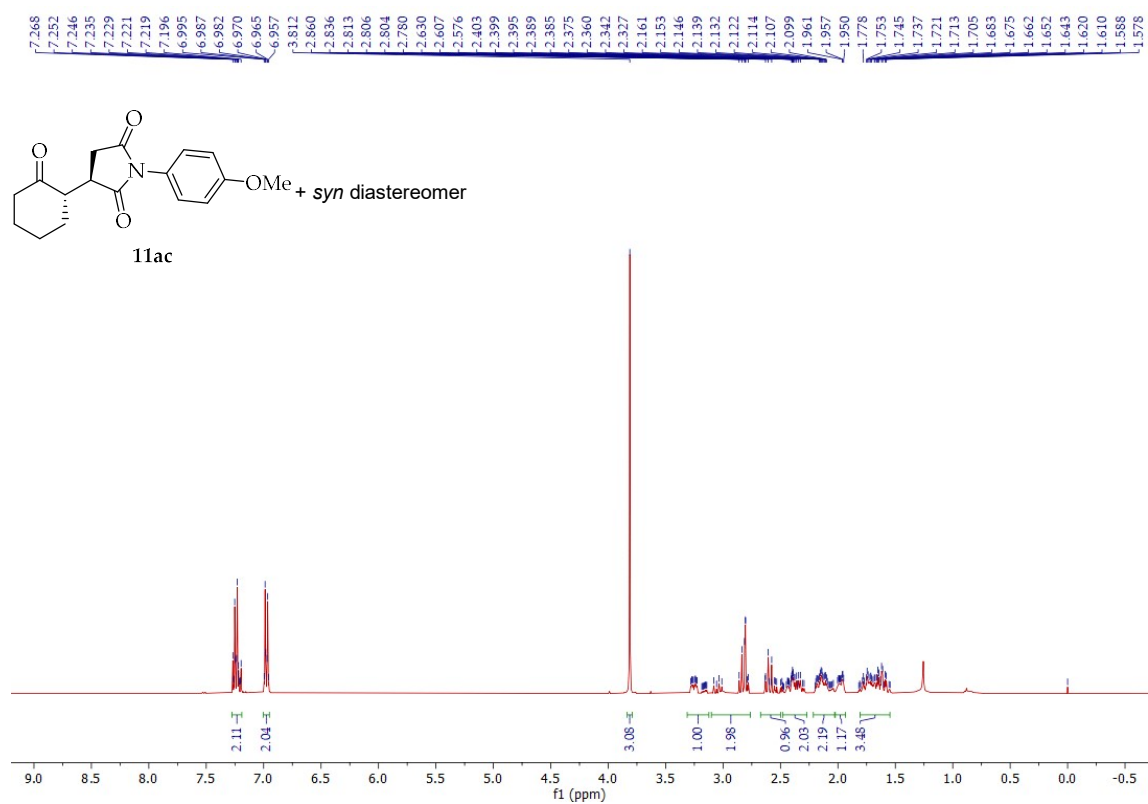


Figure S5. ^1H NMR spectrum (400 MHz) of compound **11ac**.

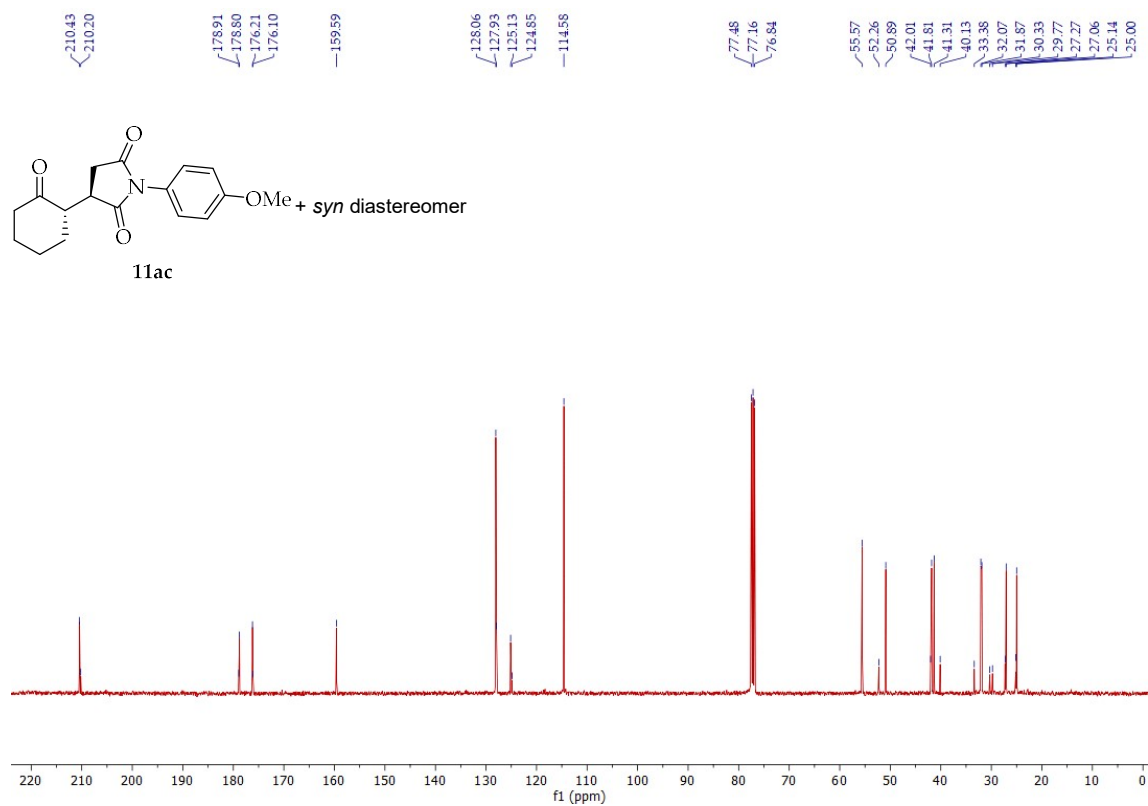


Figure S6. ^{13}C NMR spectrum (101 MHz) of compound **11ac**.

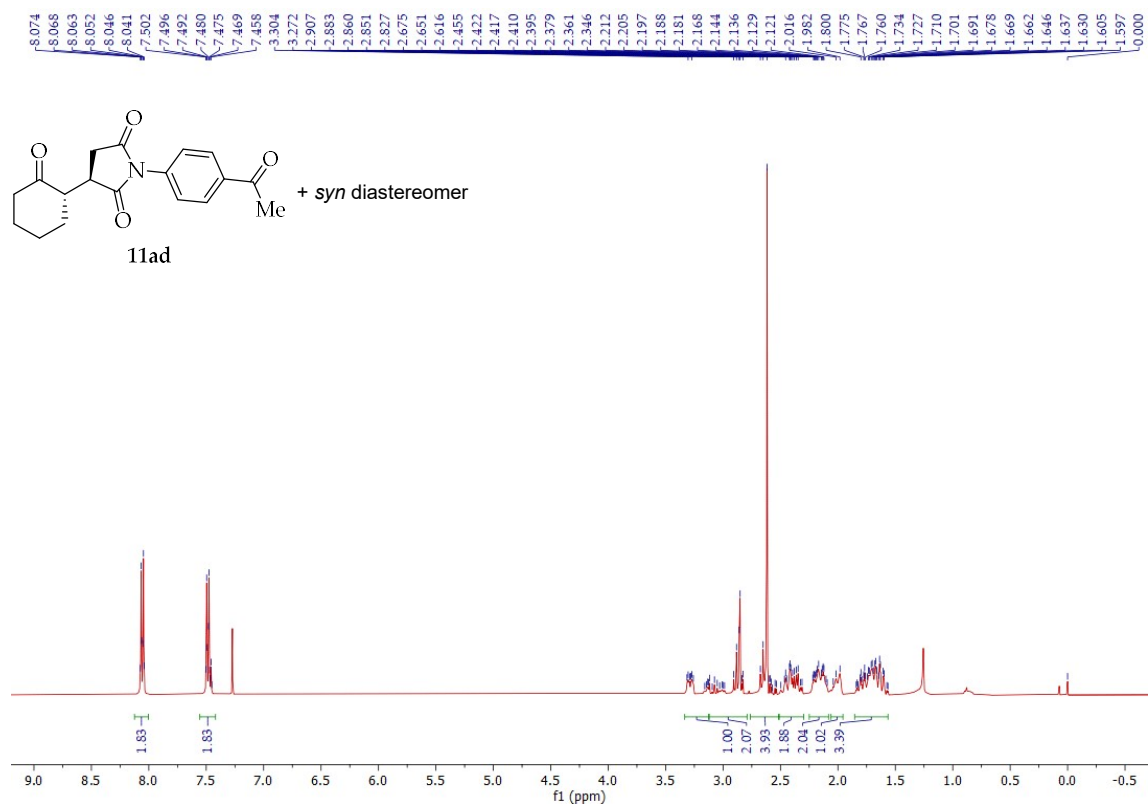


Figure S7. ¹H NMR spectrum (400 MHz) of compound 11ad.

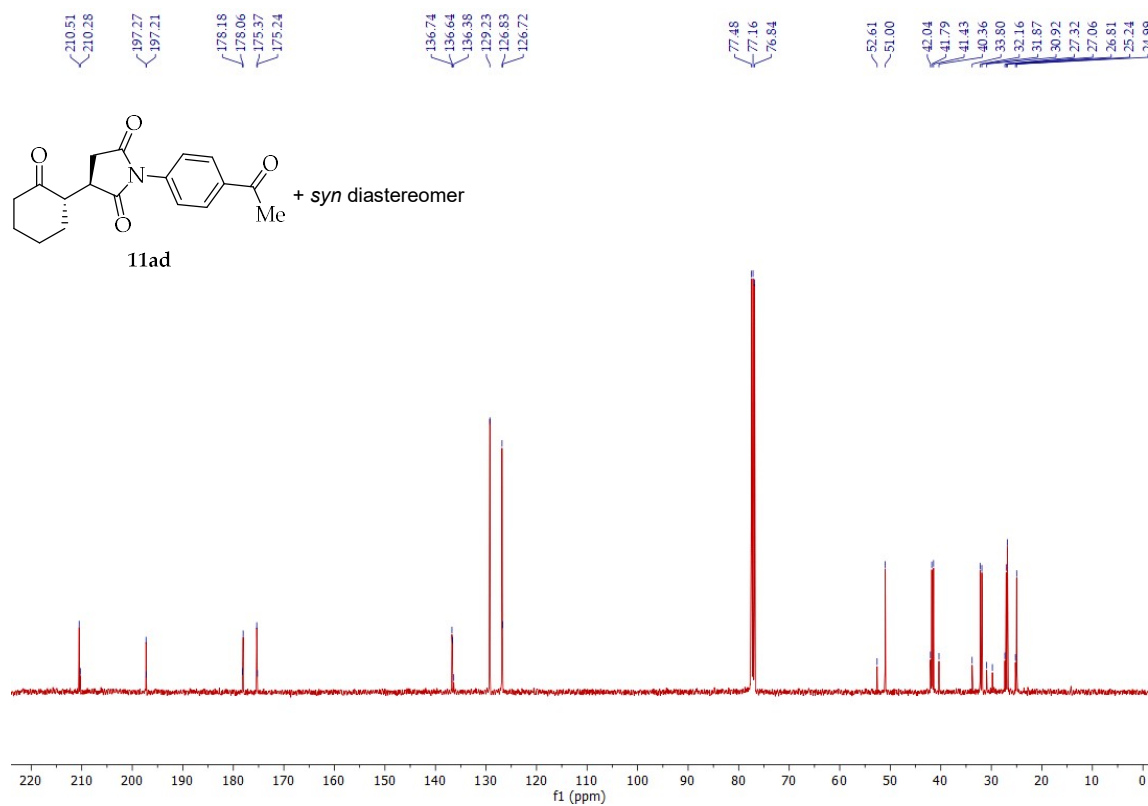


Figure S8. ¹³C NMR spectrum (101 MHz) of compound 11ad.

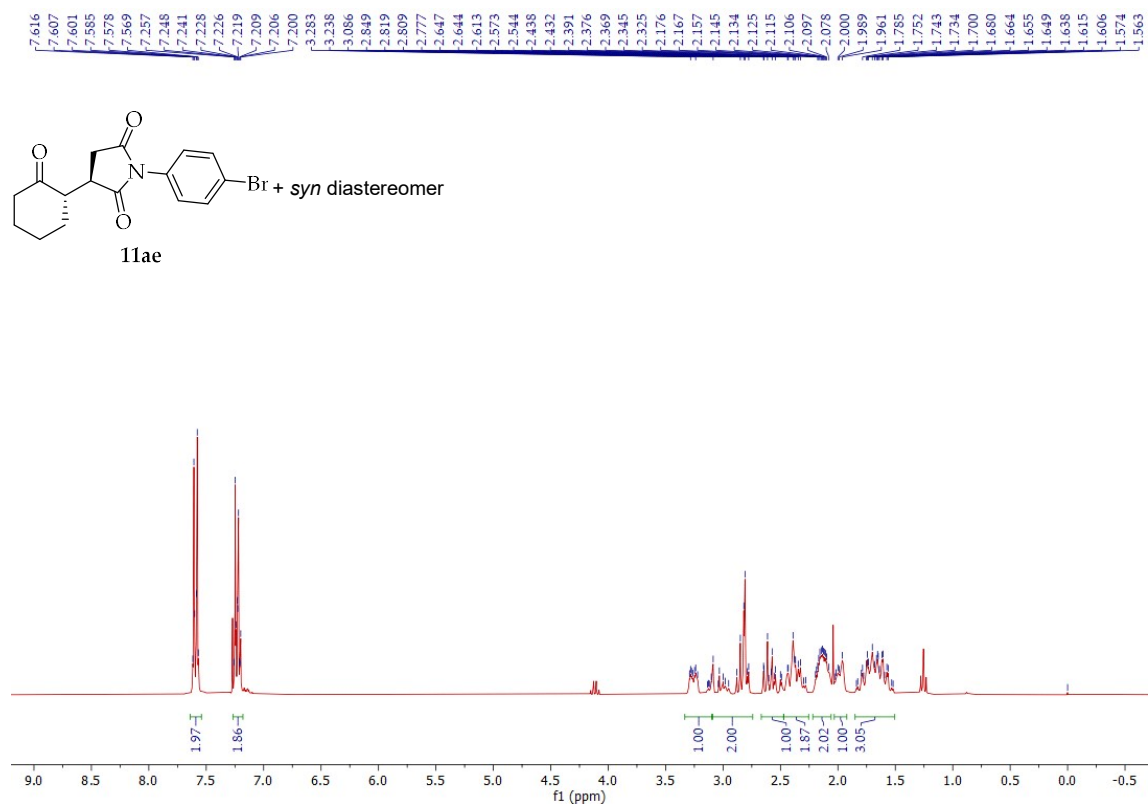


Figure S9. ^1H NMR spectrum (300 MHz) of compound **11ae**.

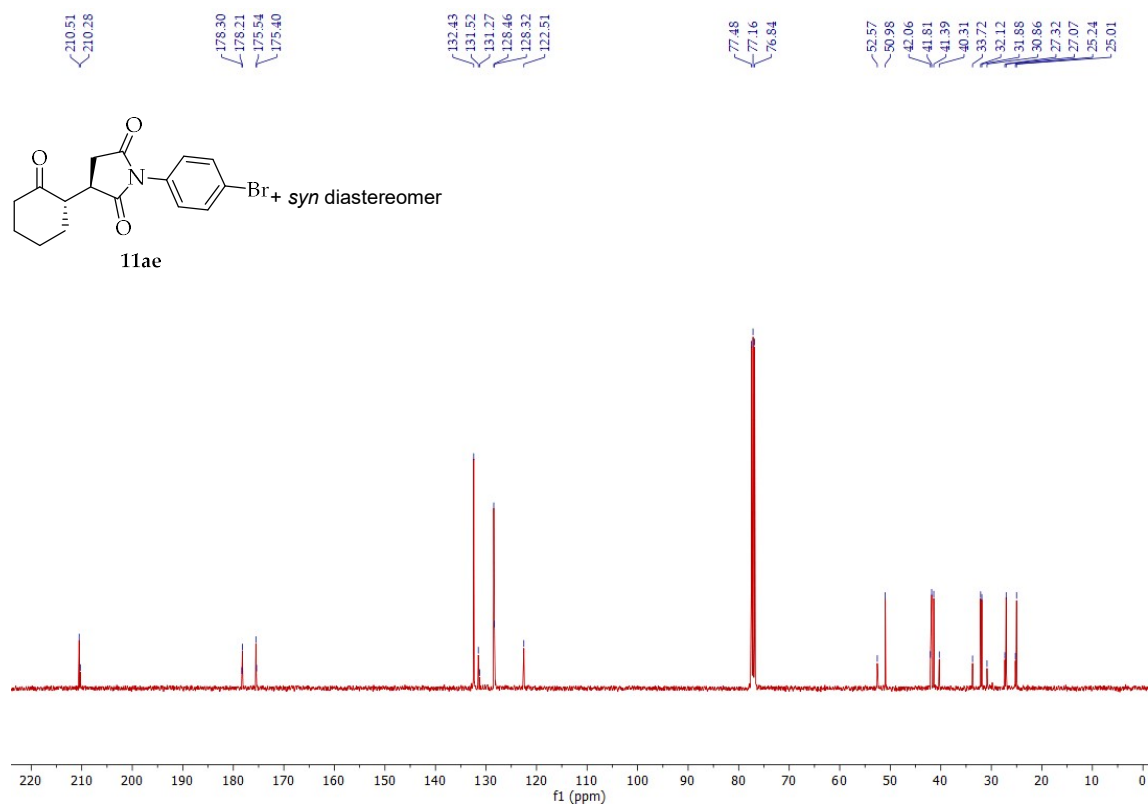


Figure S10. ^{13}C NMR spectrum (75 MHz) of compound **11ae**.

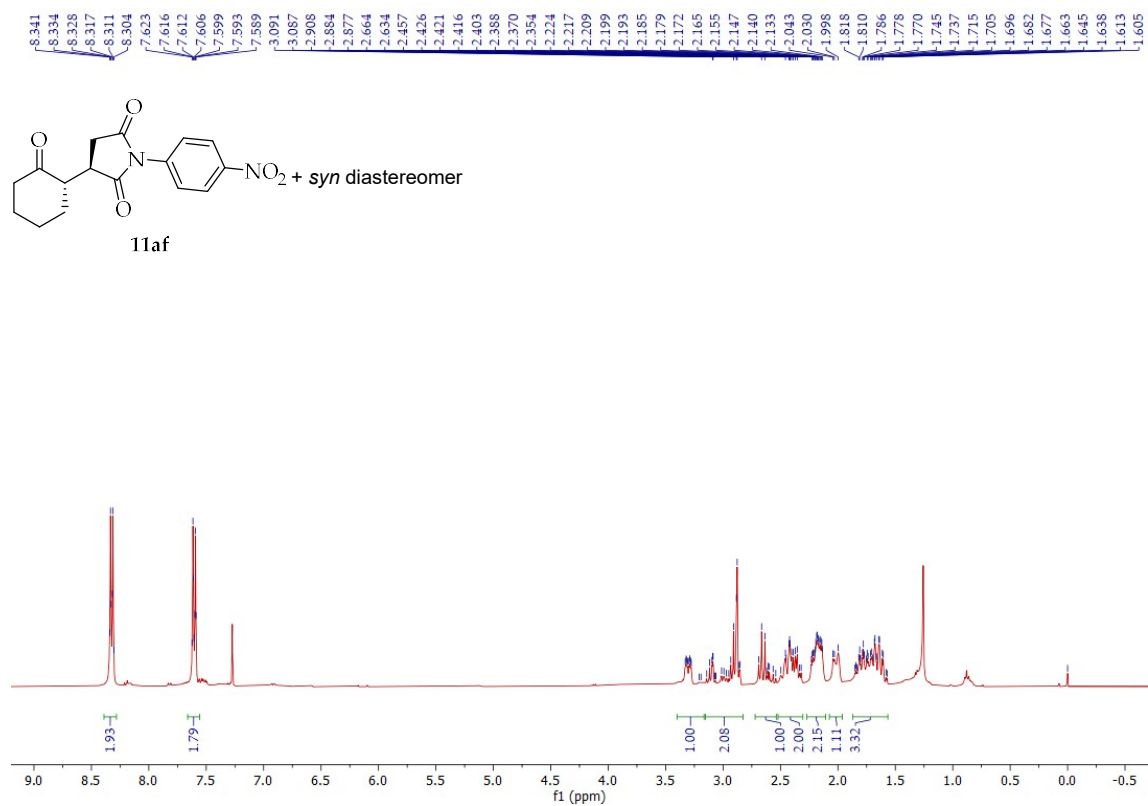


Figure S11. ^1H NMR spectrum (400 MHz) of compound **11af**.

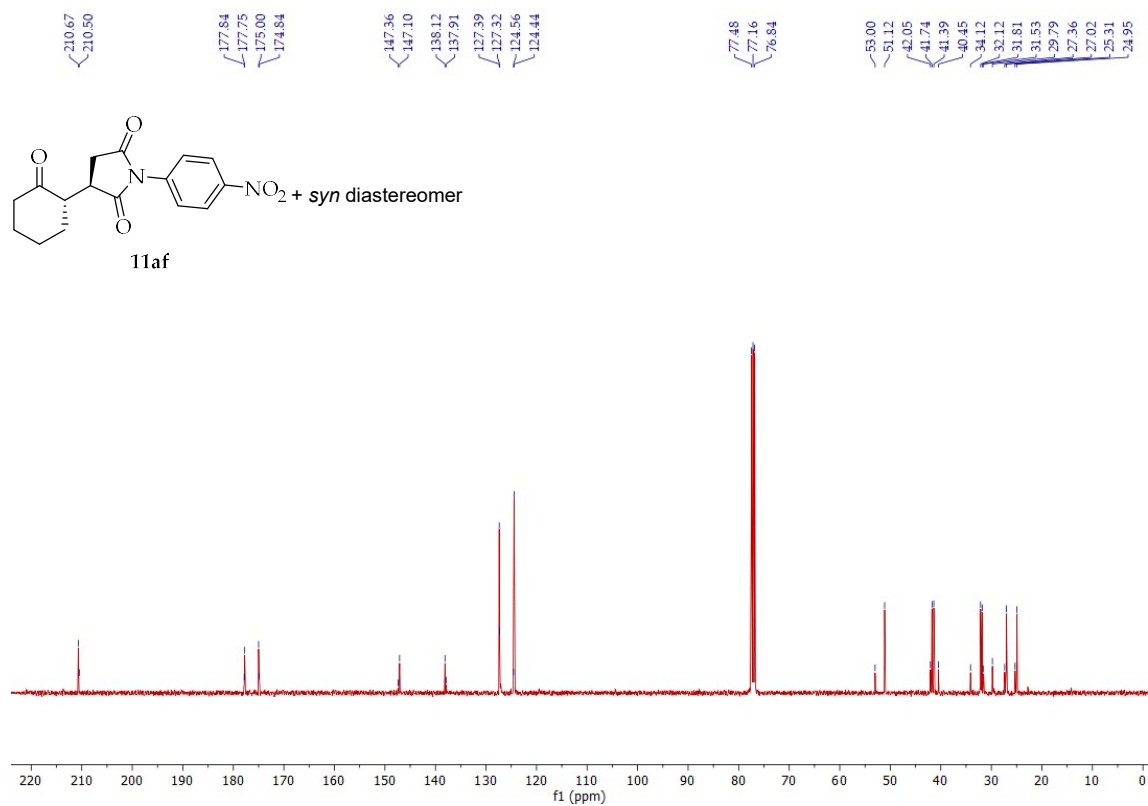


Figure S12. ^{13}C NMR spectrum (101 MHz) of compound **11af**.

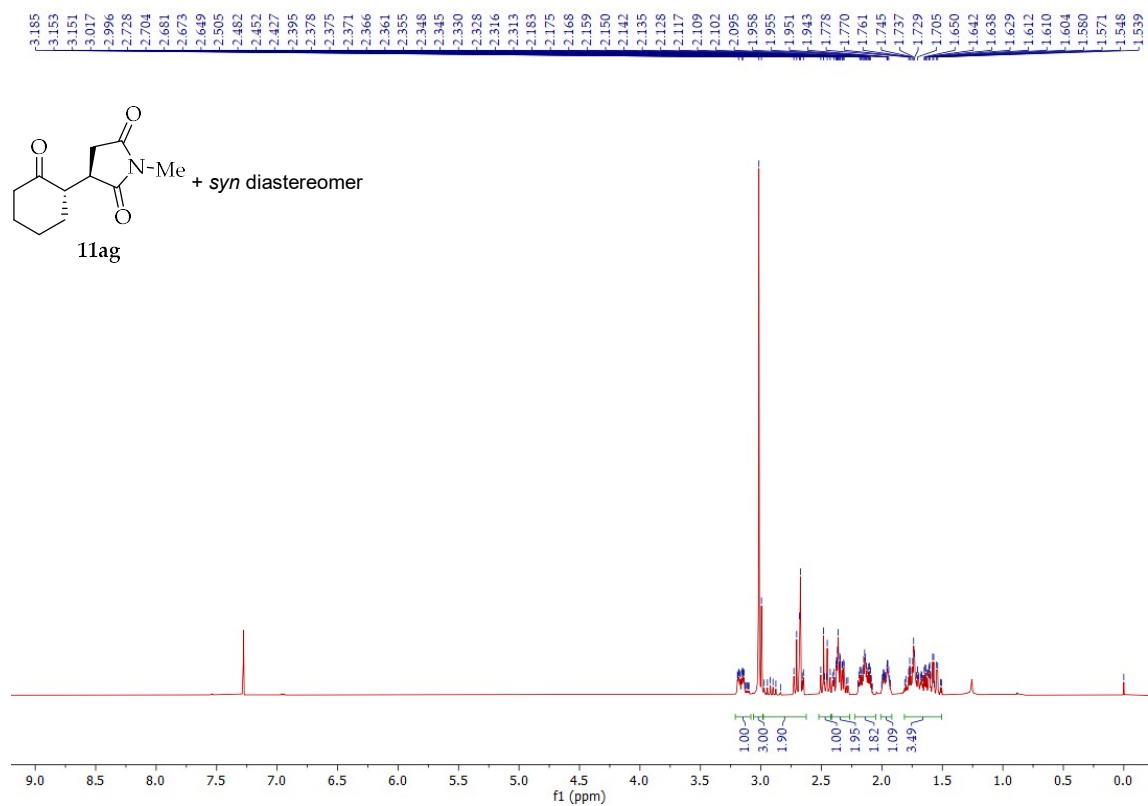


Figure S13. ¹H NMR spectrum (400 MHz) of compound **11ag**.

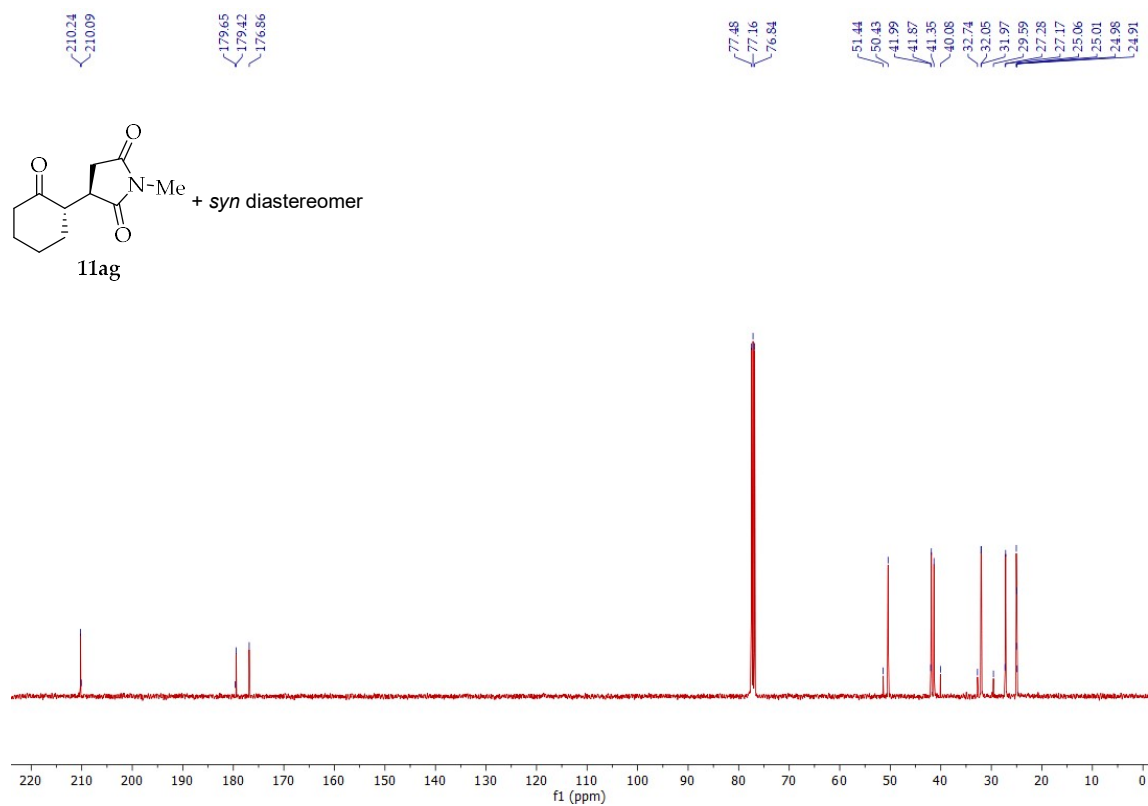


Figure S14. ¹³C NMR spectrum (101 MHz) of compound **11ag**.

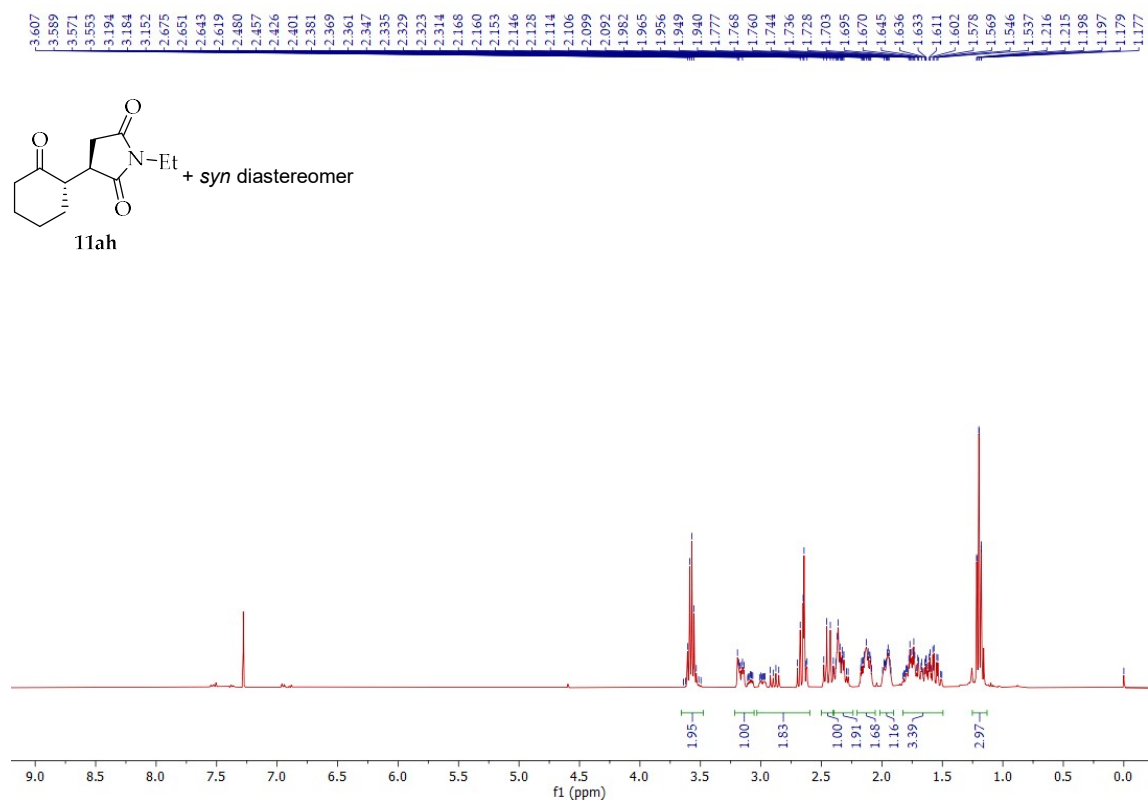


Figure S15. ¹H NMR spectrum (400 MHz) of compound **11ah**.

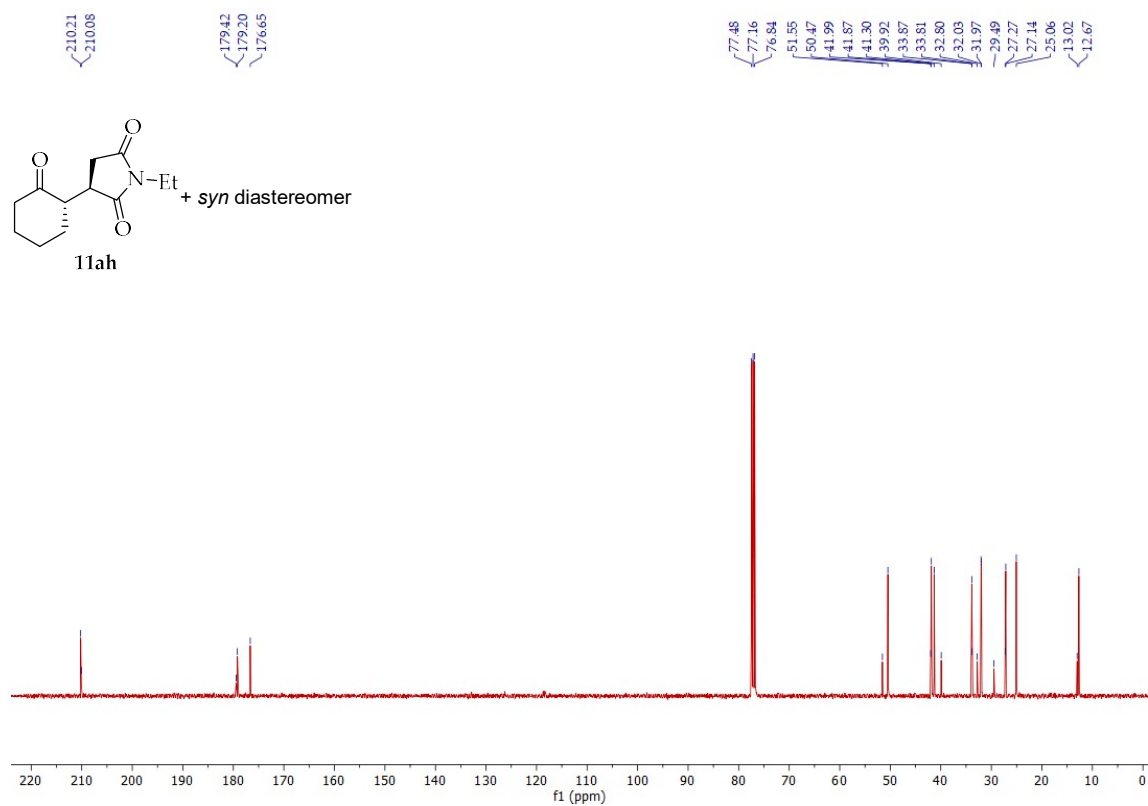


Figure S16. ¹³C NMR spectrum (101 MHz) of compound **11ah**.

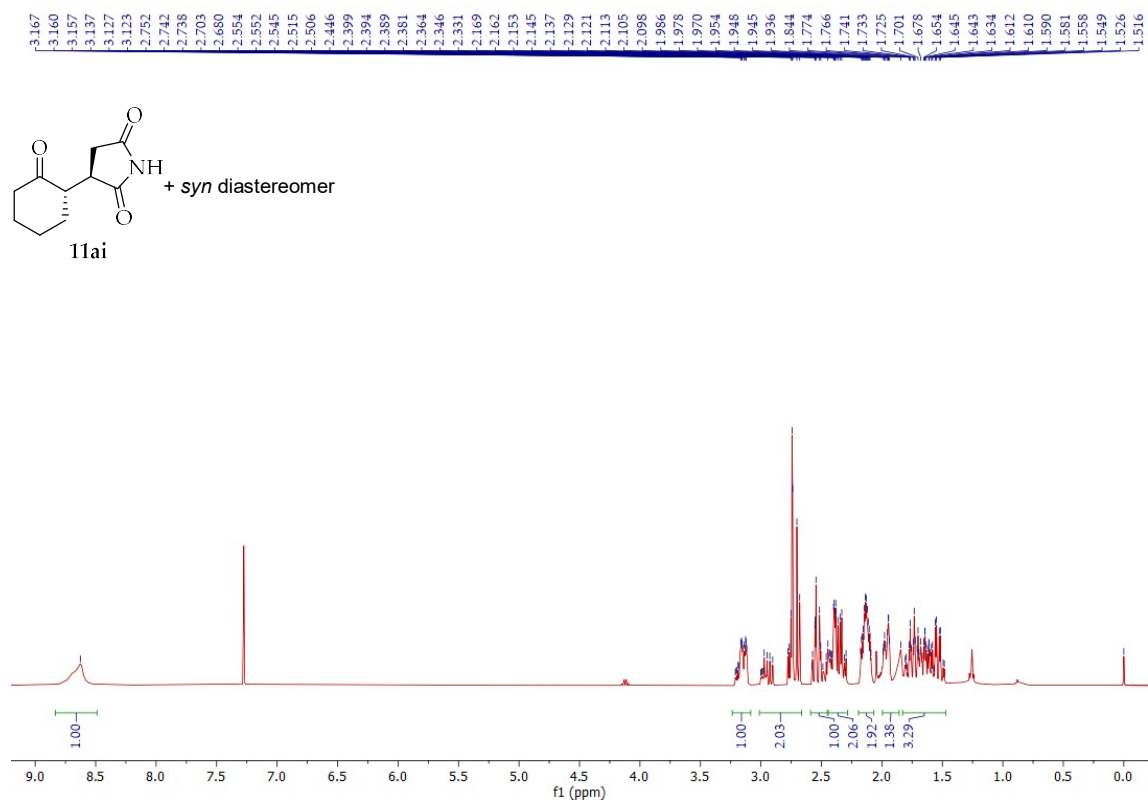


Figure S17. ¹H NMR spectrum (400 MHz) of compound **11ai**.

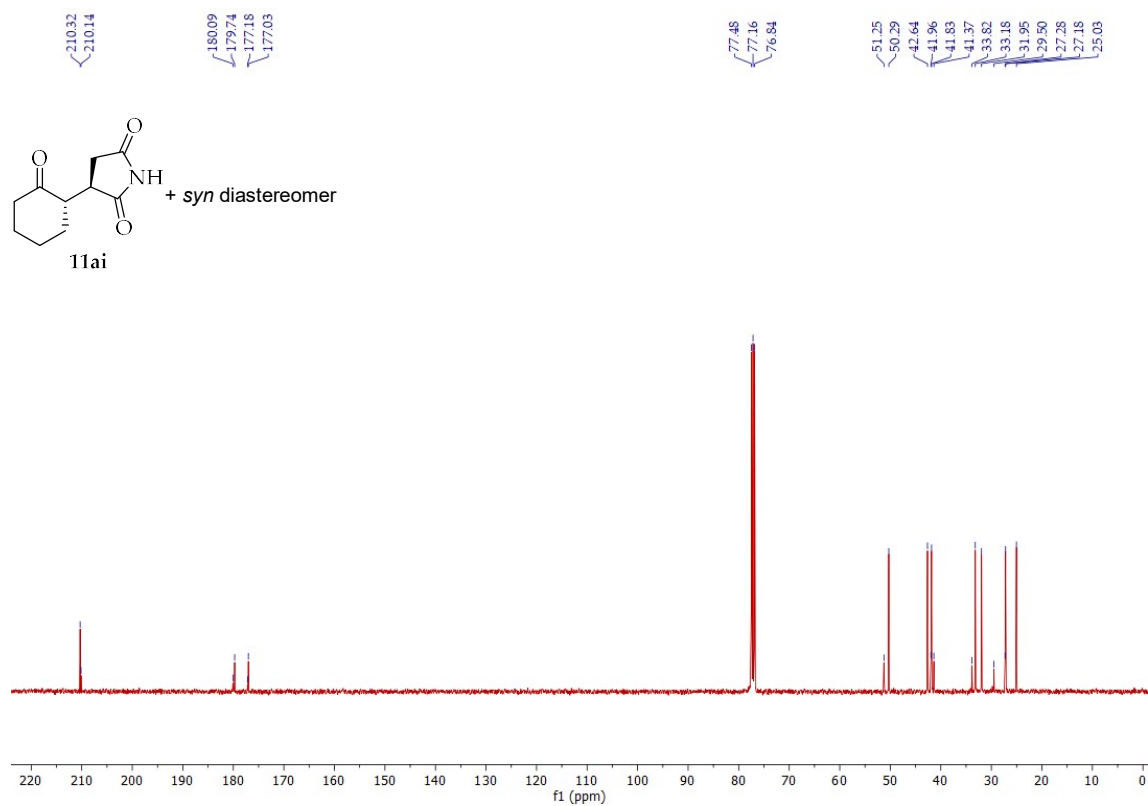


Figure S18. ¹³C NMR spectrum (101 MHz) of compound **11ai**.

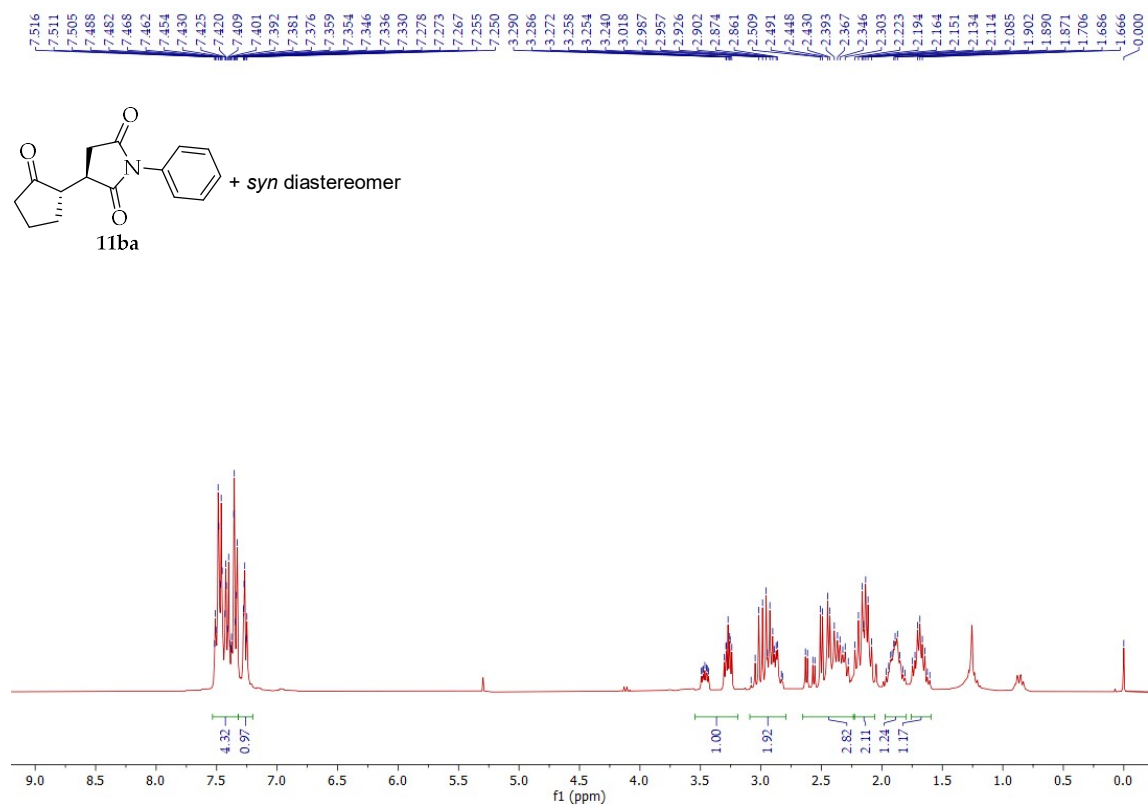


Figure S19. ¹H NMR spectrum (300 MHz) of compound **11ba**.

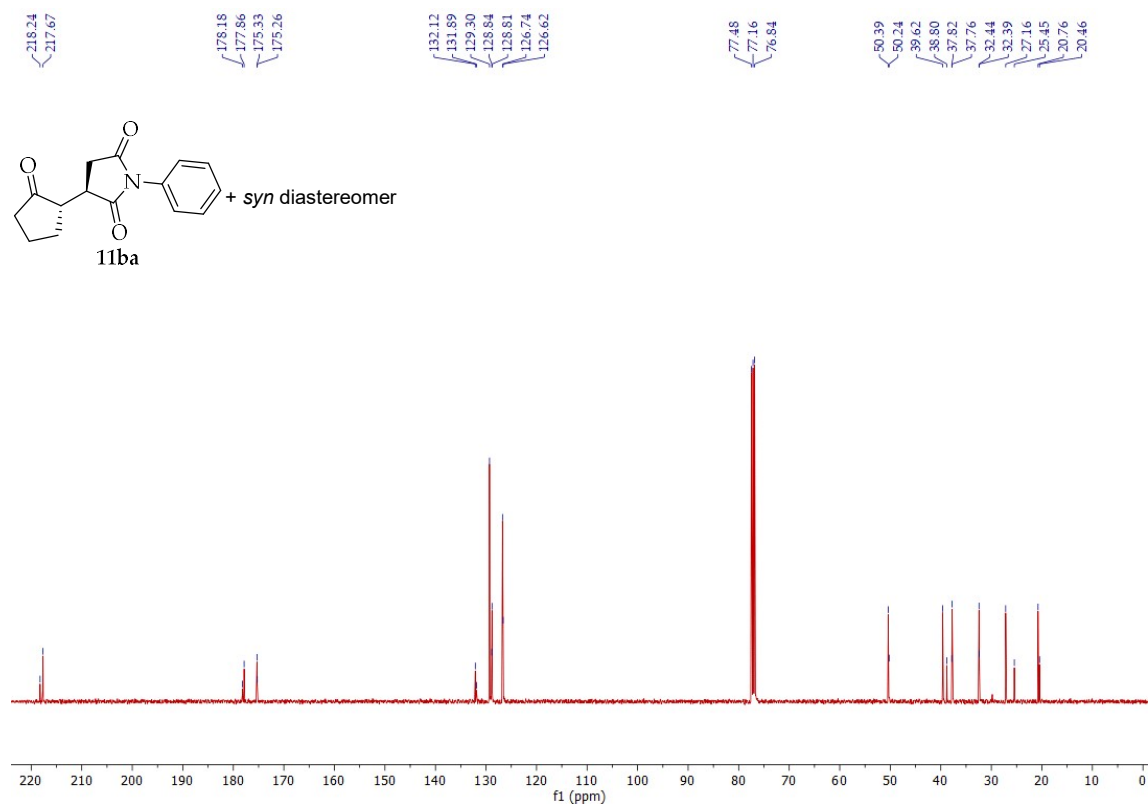


Figure S20. ¹³C NMR spectrum (75 MHz) of compound **11ba**.

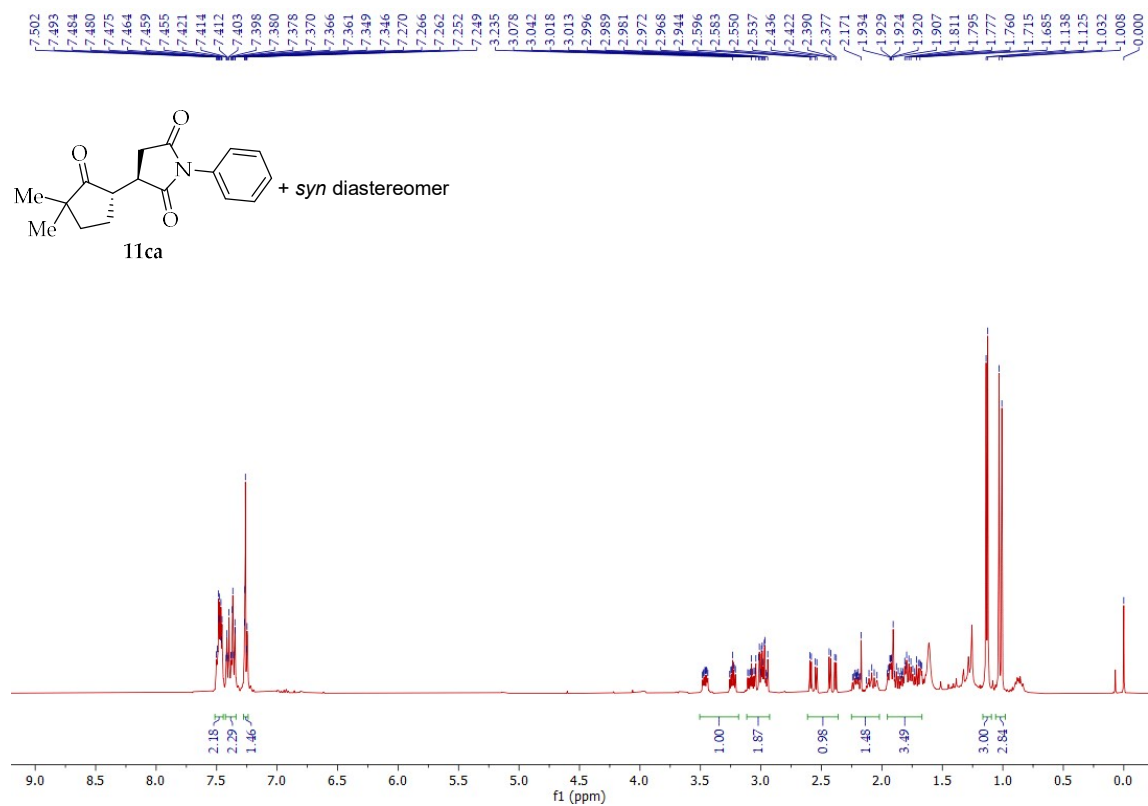


Figure S21. ¹H NMR spectrum (400 MHz) of compound 11ca.

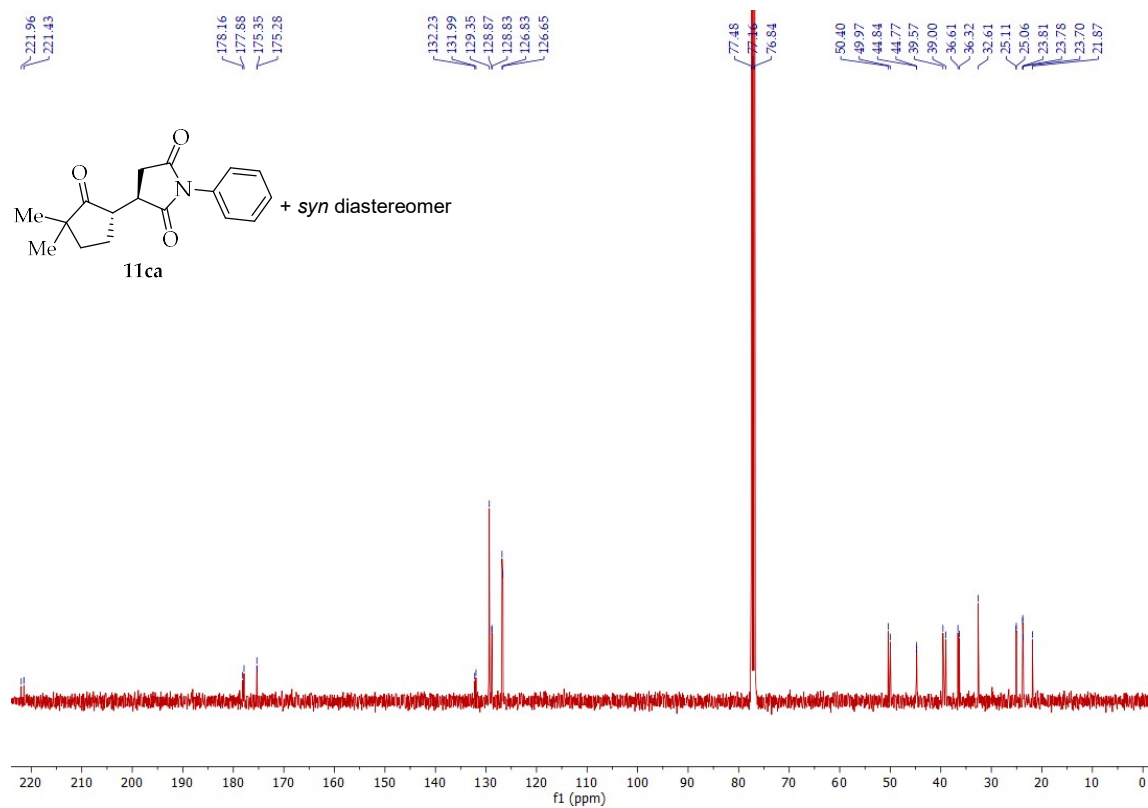


Figure S22. ¹³C NMR spectrum (101 MHz) of compound 11ca.

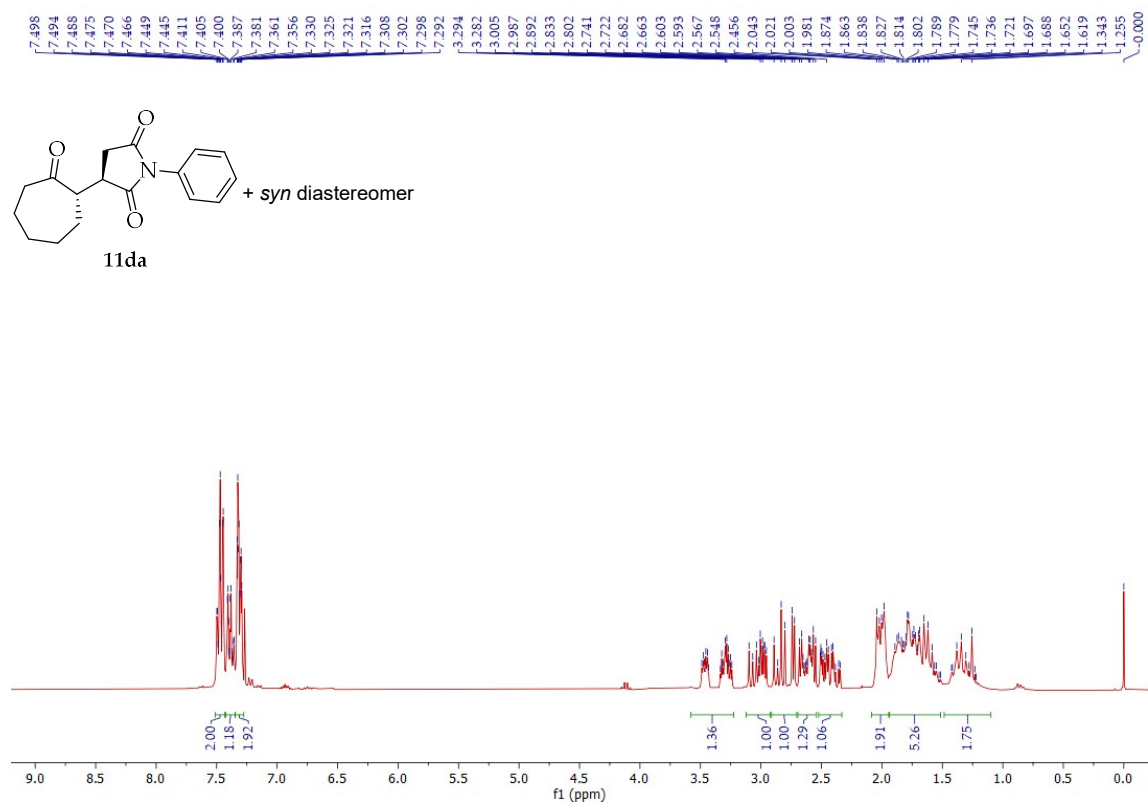


Figure S23. ¹H NMR spectrum (300 MHz) of compound **11da**.

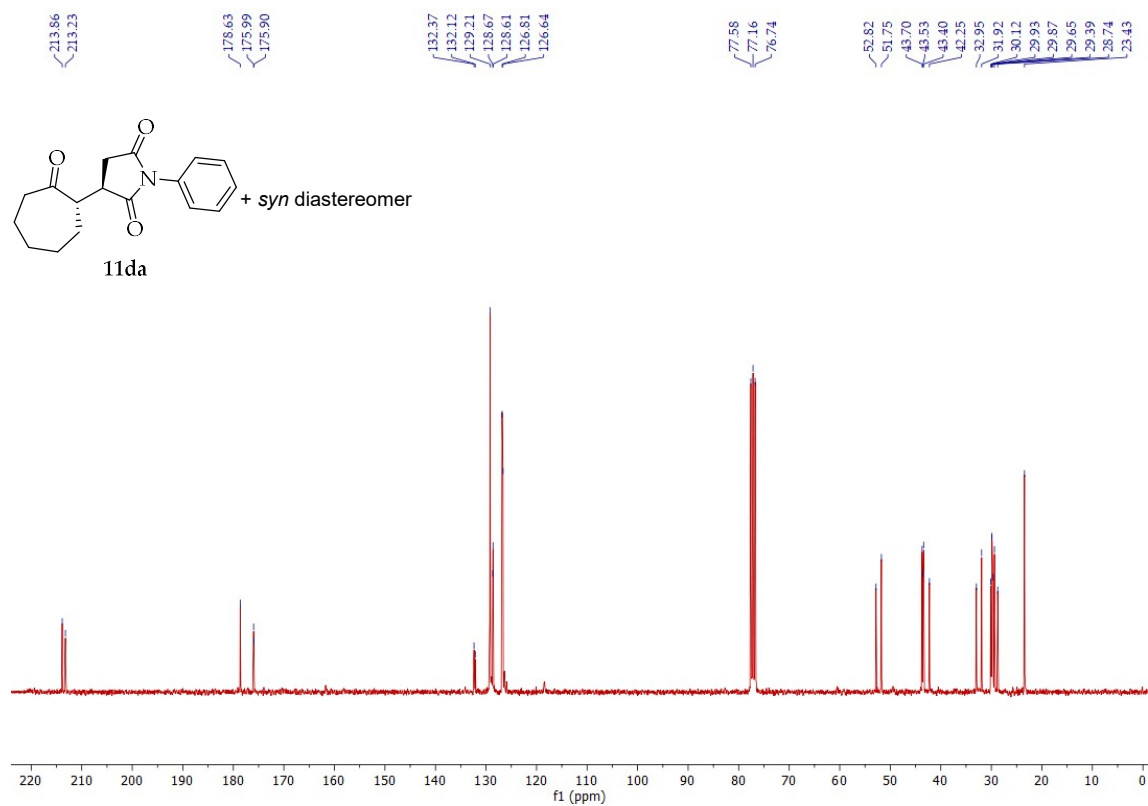


Figure S24. ¹³C NMR spectrum (75 MHz) of compound **11da**.

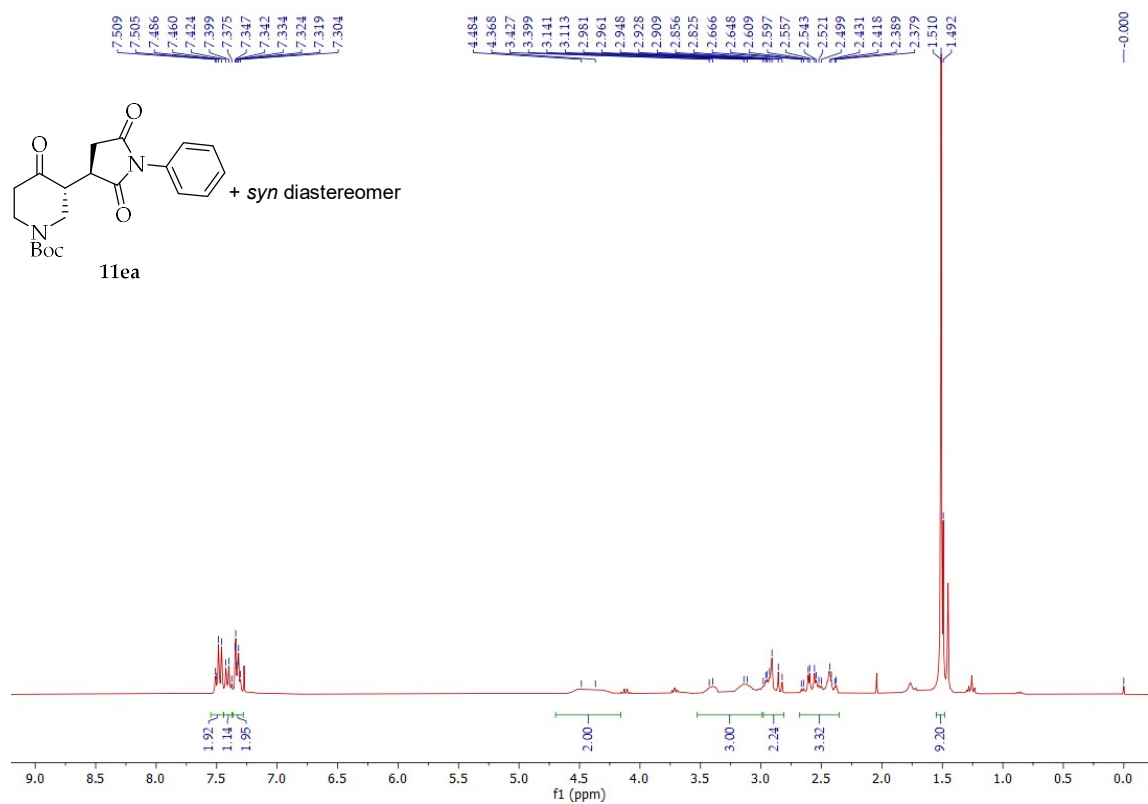


Figure S25. ¹H NMR spectrum (300 MHz) of compound **11ea**.

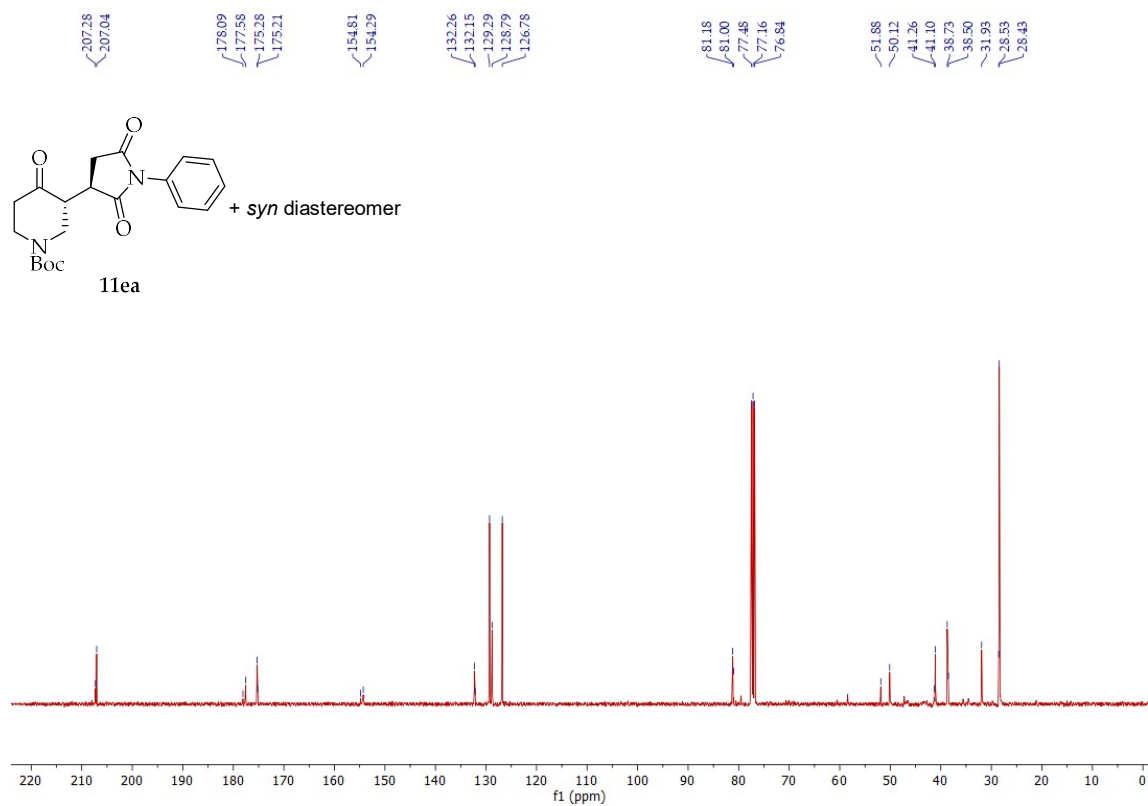


Figure S26. ¹³C NMR spectrum (75 MHz) of compound **11ea**.

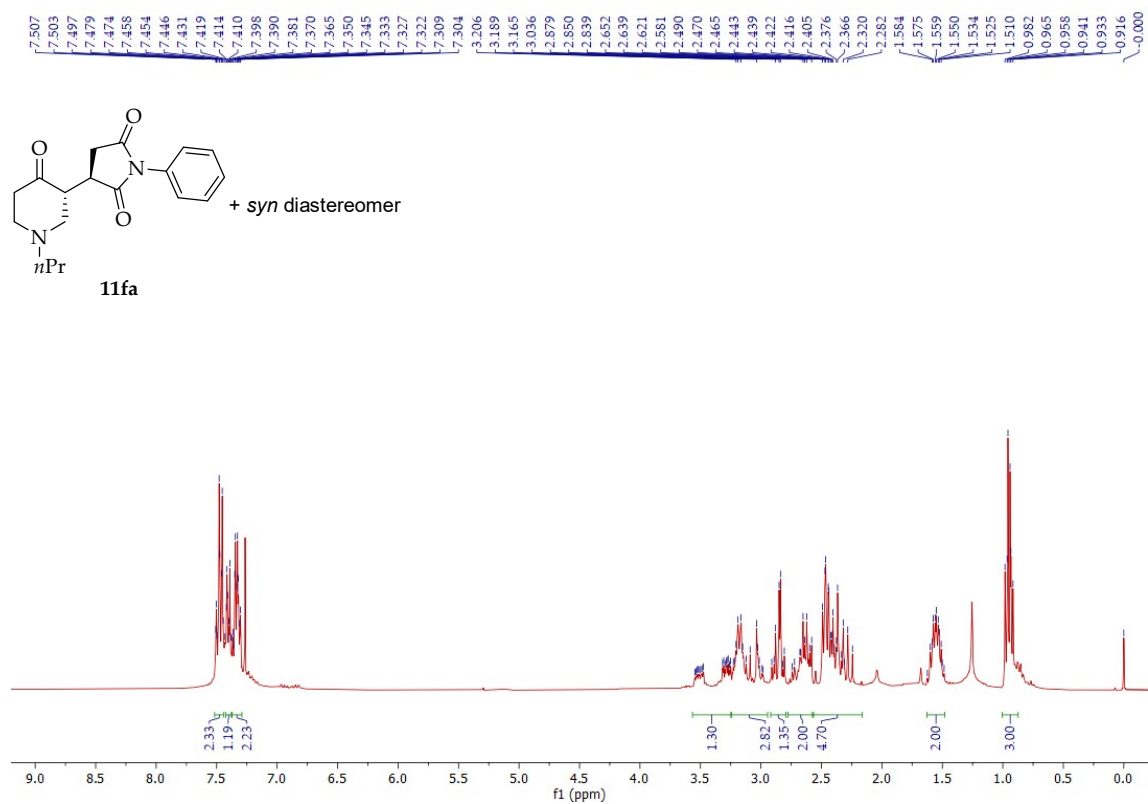


Figure S27. ¹H NMR spectrum (300 MHz) of compound **11fa**.

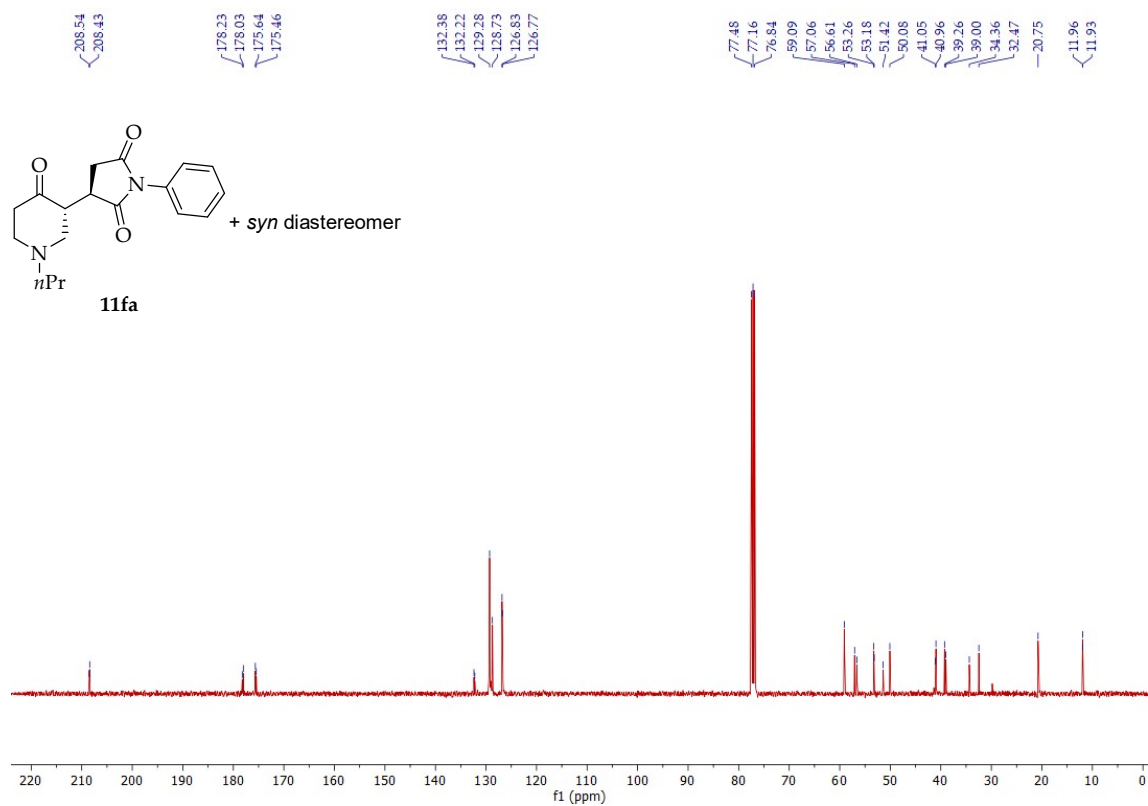


Figure S28. ¹³C NMR spectrum (75 MHz) of compound **11fa**.

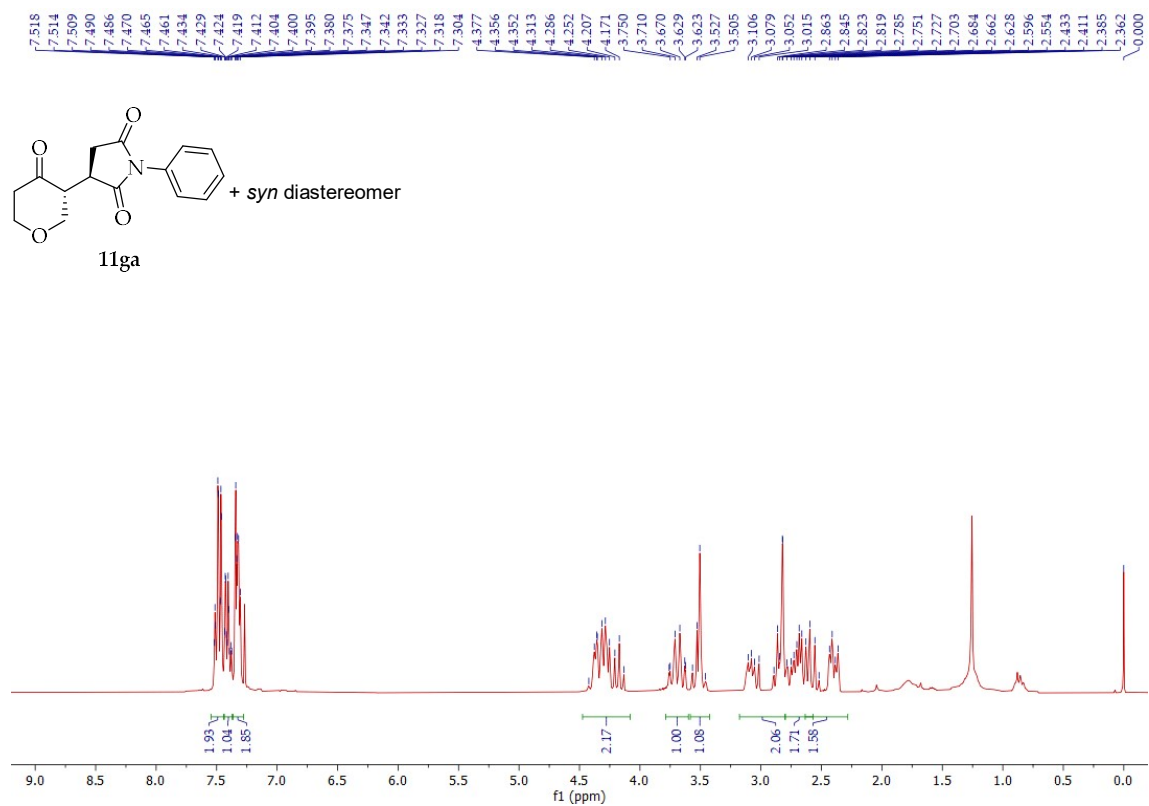


Figure S29. ¹H NMR spectrum (300 MHz) of compound **11ga**.

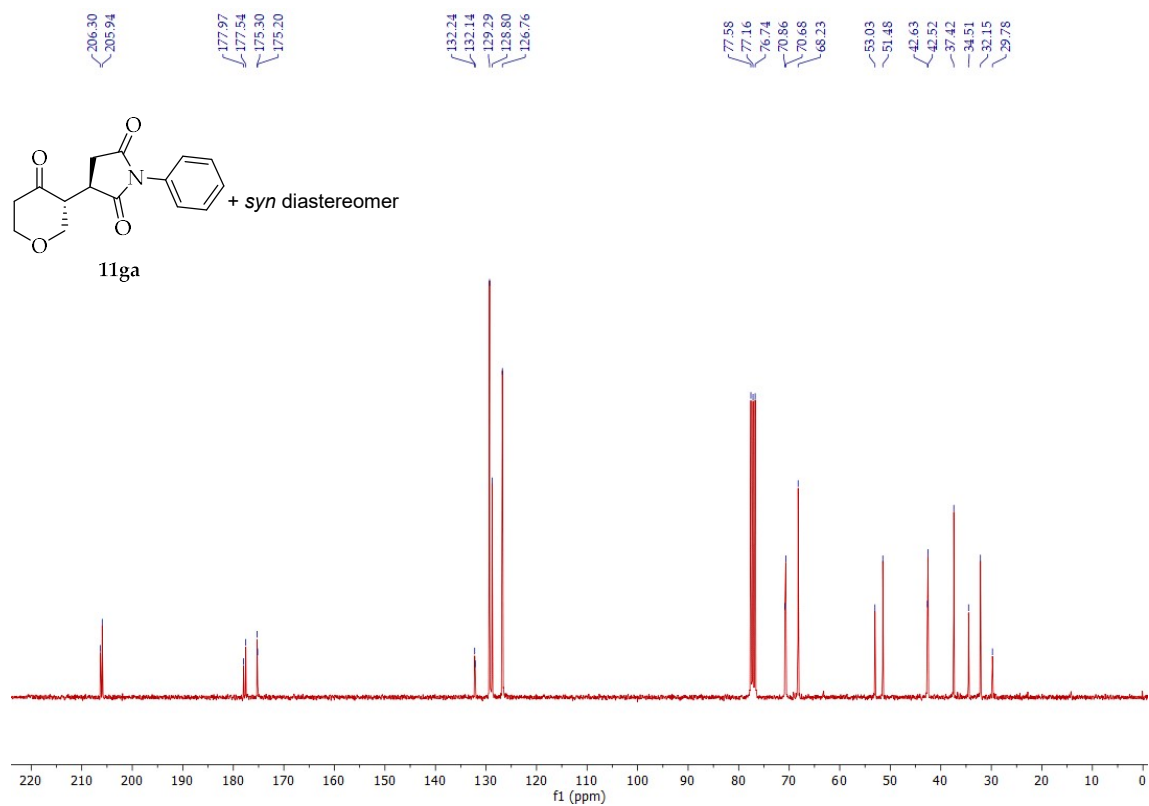


Figure S30. ¹³C NMR spectrum (75 MHz) of compound **11ga**.

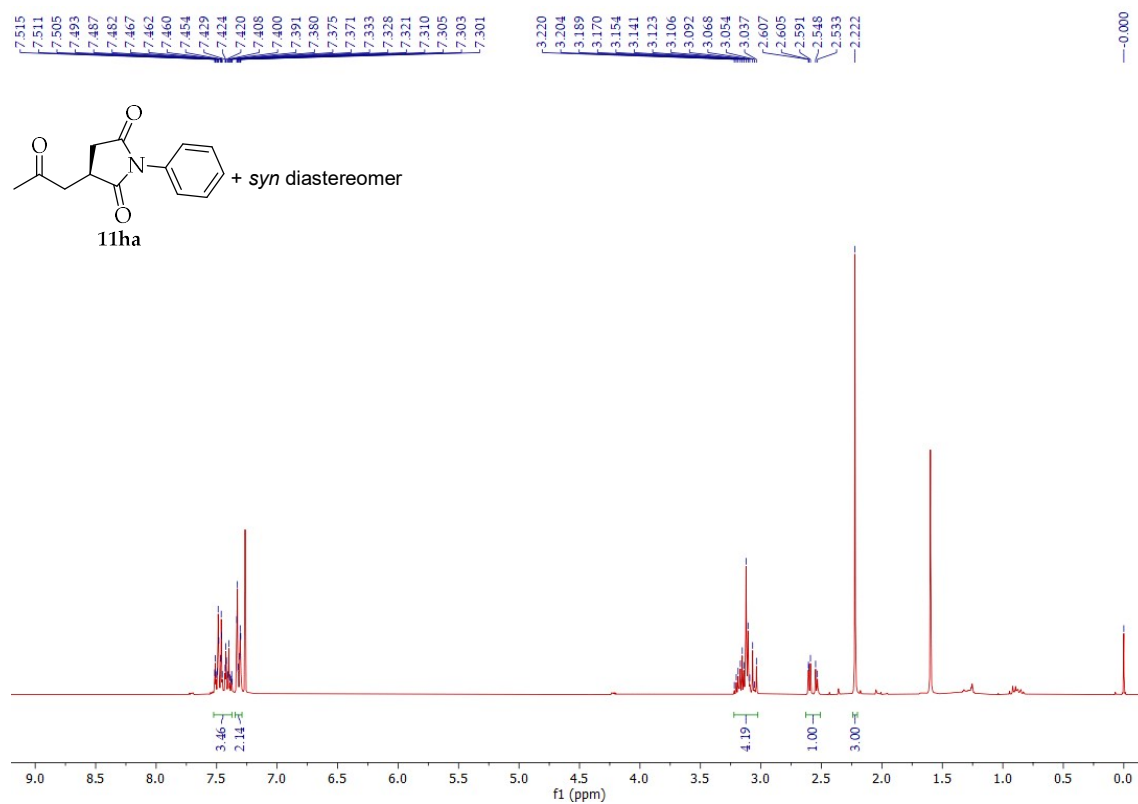


Figure S31. ¹H NMR spectrum (300 MHz) of compound **11ha**.

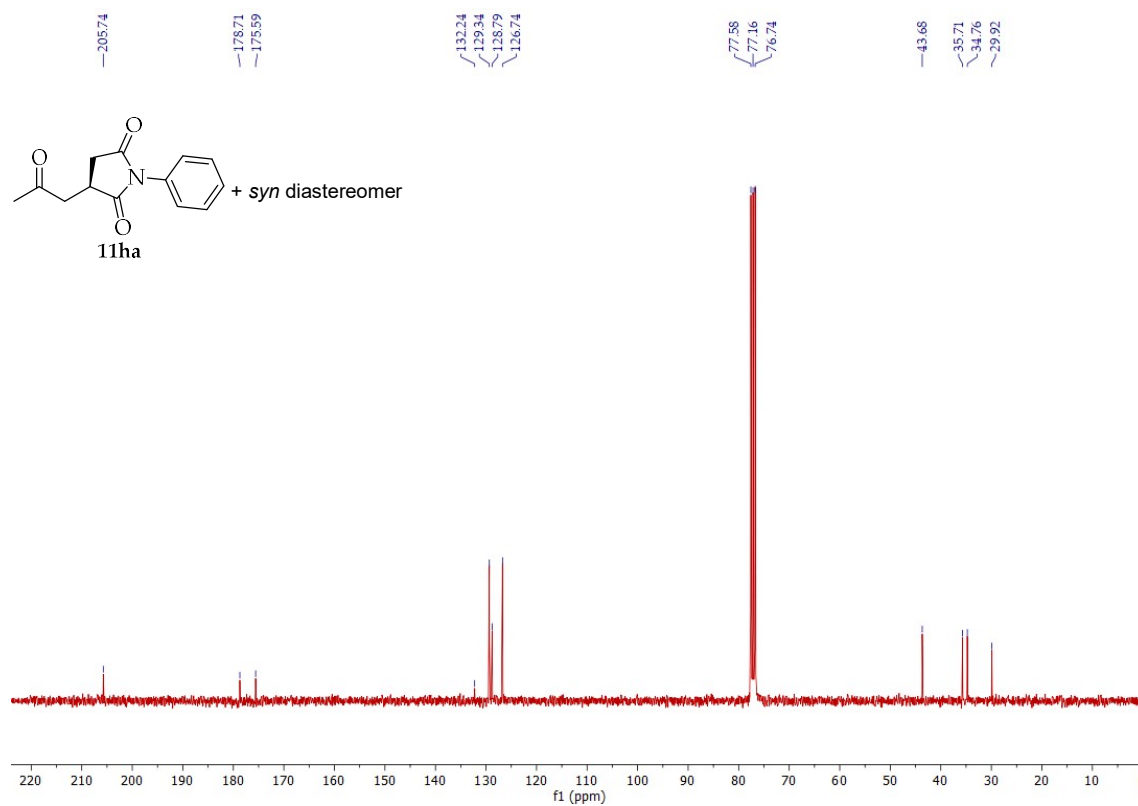


Figure S32. ¹³C NMR spectrum (75 MHz) of compound **11ha**.

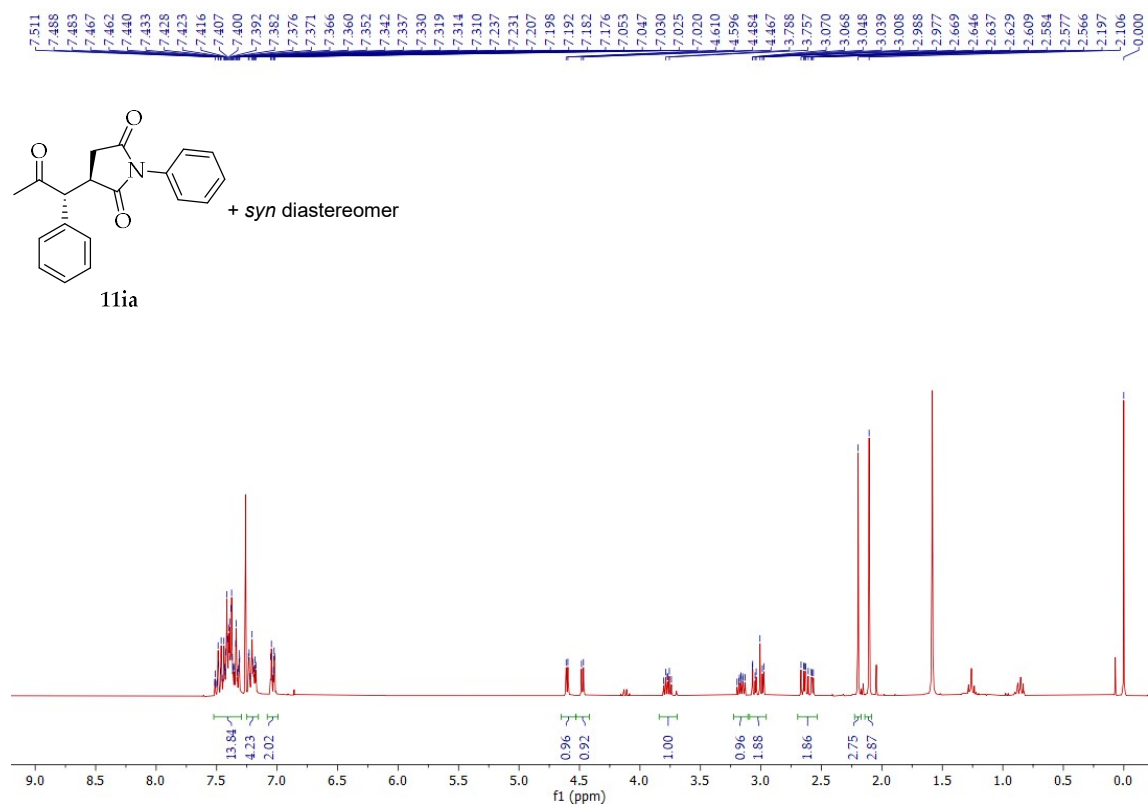


Figure S33. ¹H NMR spectrum (300 MHz) of compound **11ia**.

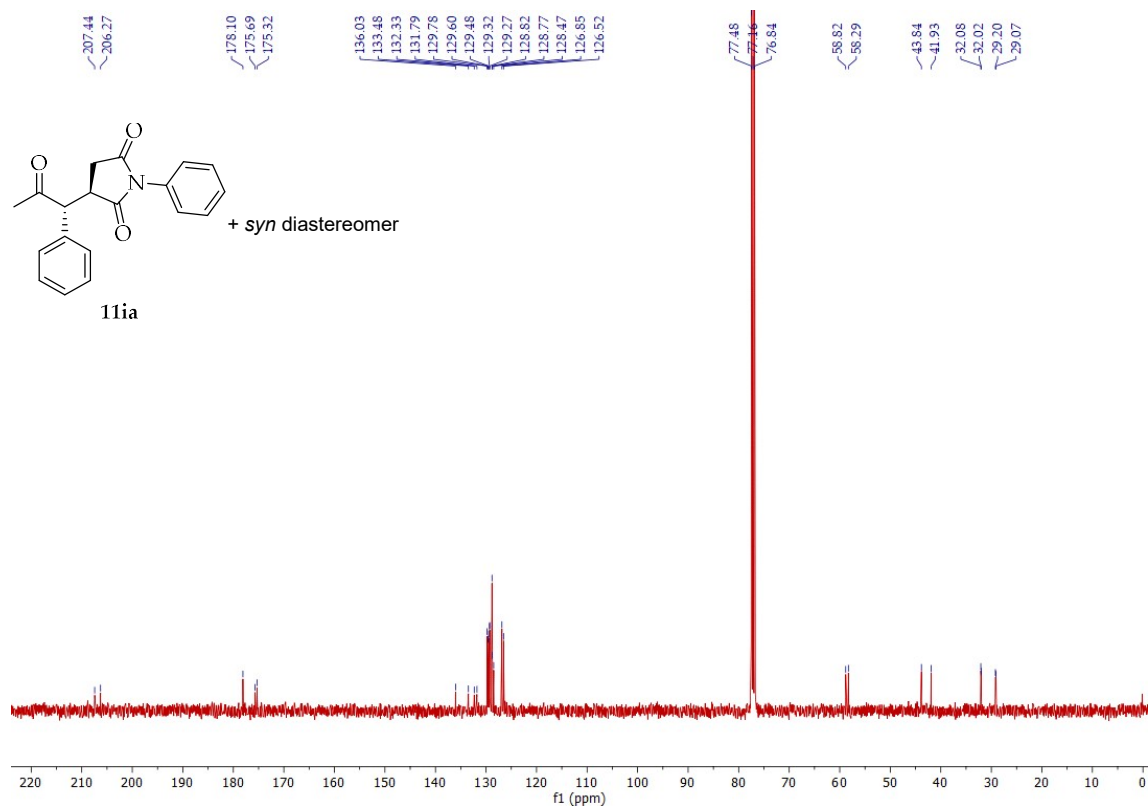


Figure S34. ¹³C NMR spectrum (75 MHz) of compound **11ia**.

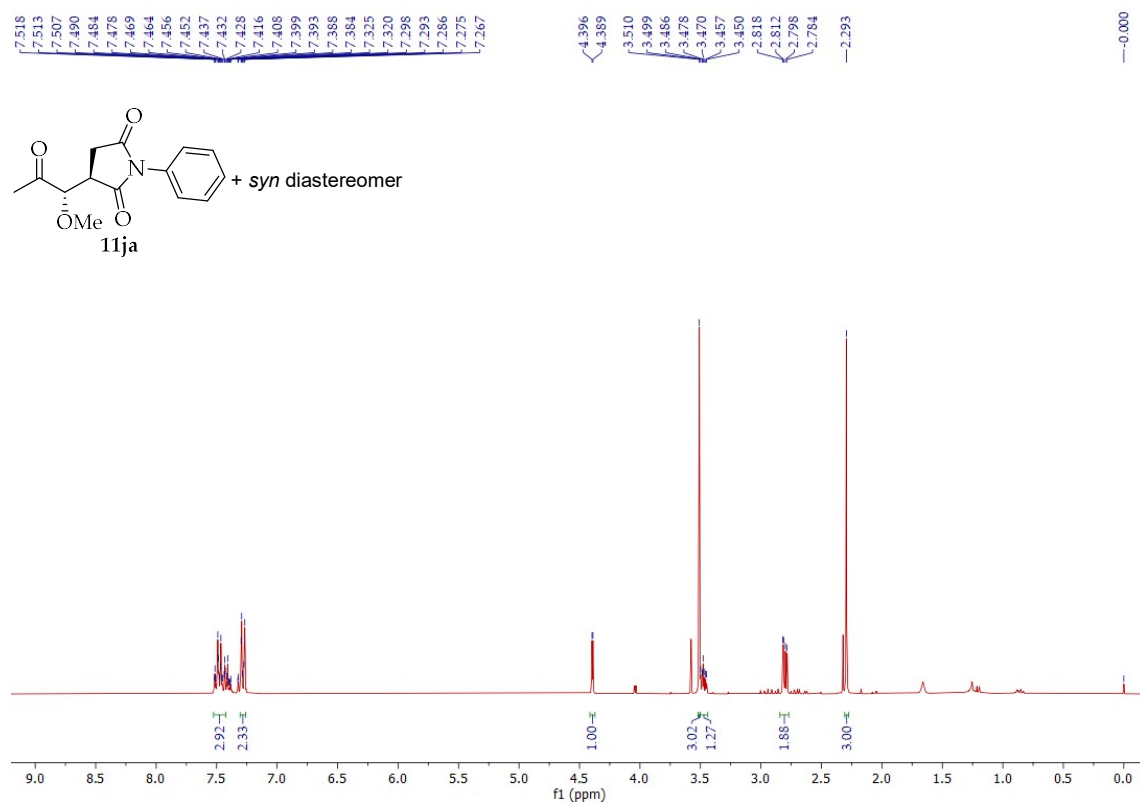


Figure S35. ¹H NMR spectrum (300 MHz) of compound **11ja**.

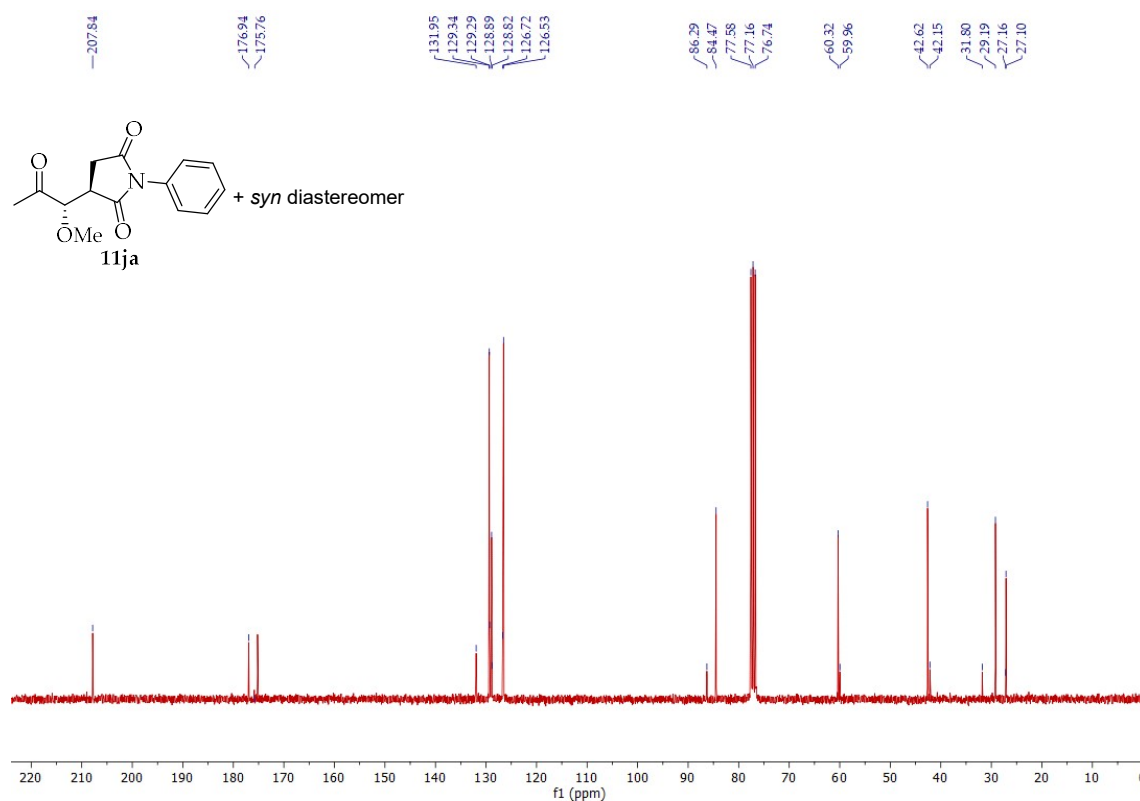


Figure S36. ¹³C NMR spectrum (75 MHz) of compound **11ja**.

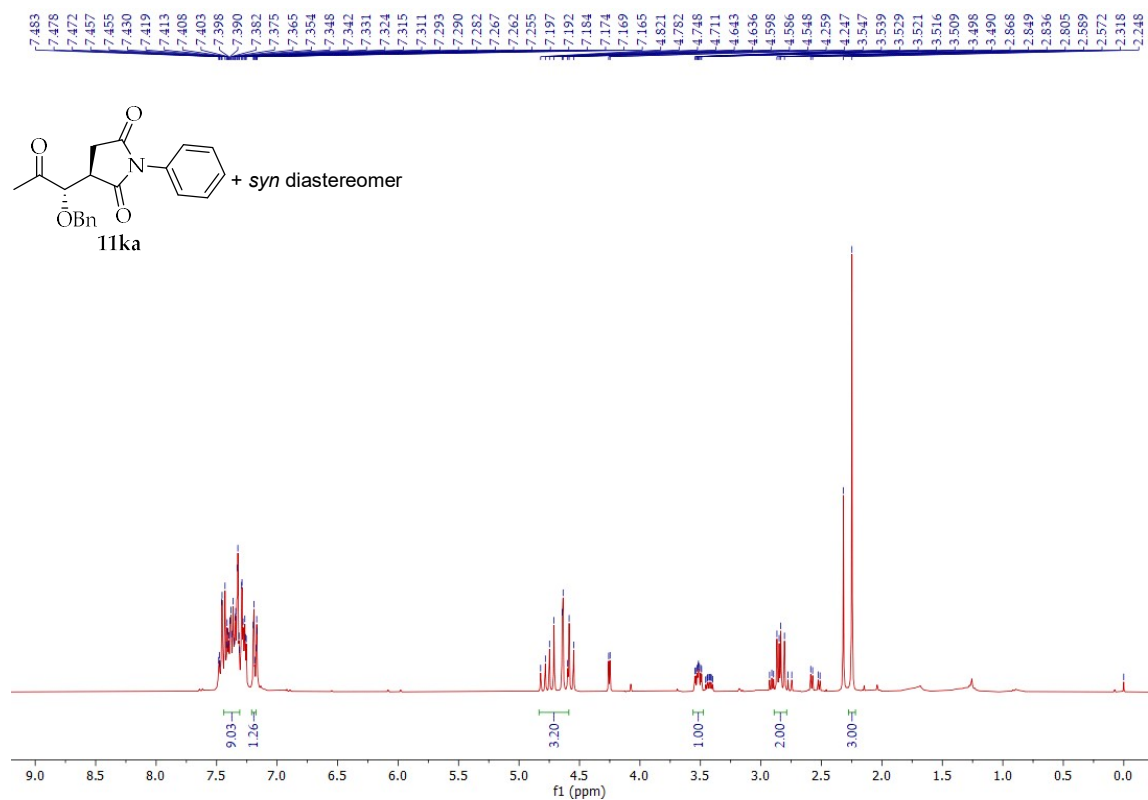


Figure S37. ¹H NMR spectrum (300 MHz) of compound **11ka**.

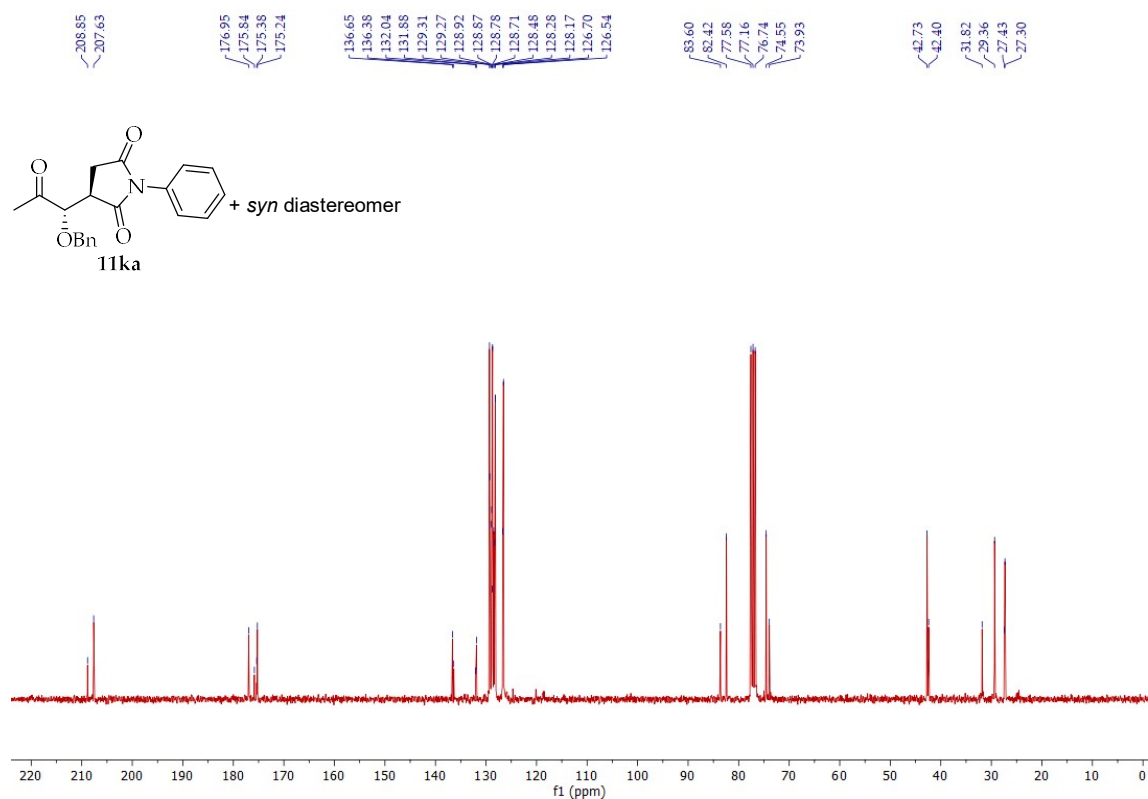


Figure S38. ¹³C NMR spectrum (75 MHz) of compound **11ka**.

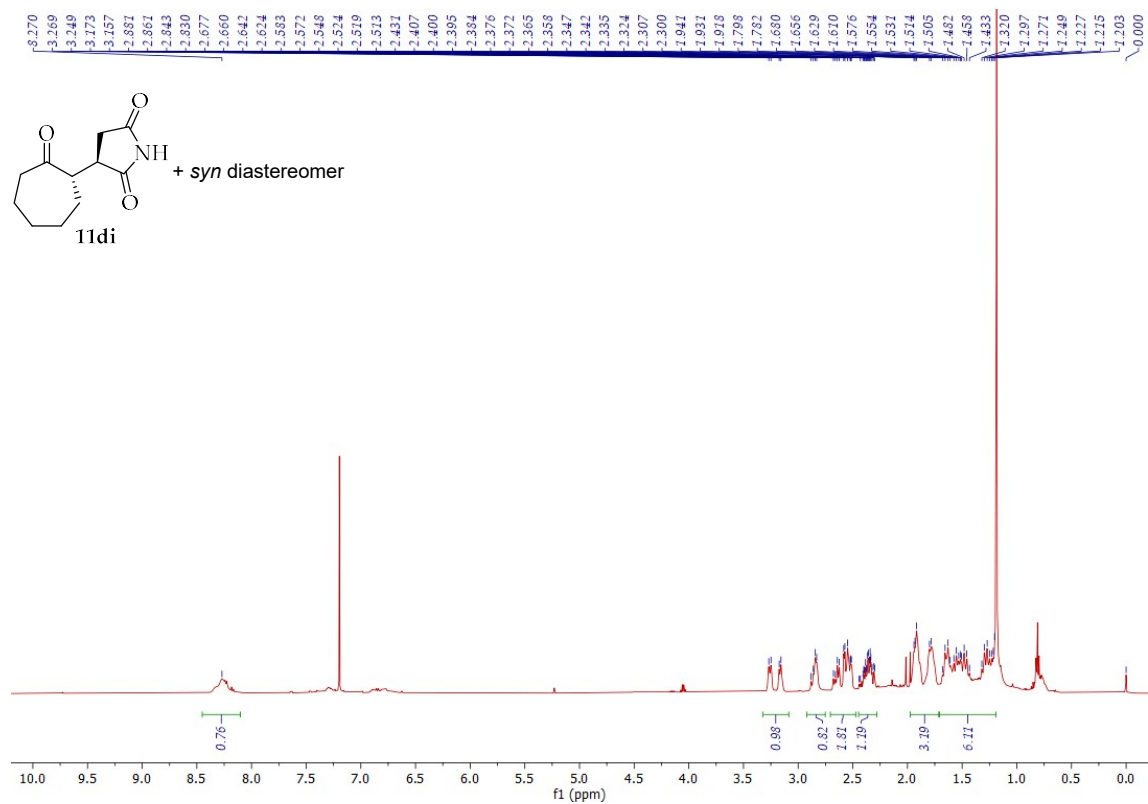


Figure S39. ¹H NMR spectrum (500 MHz) of compound **11di**.

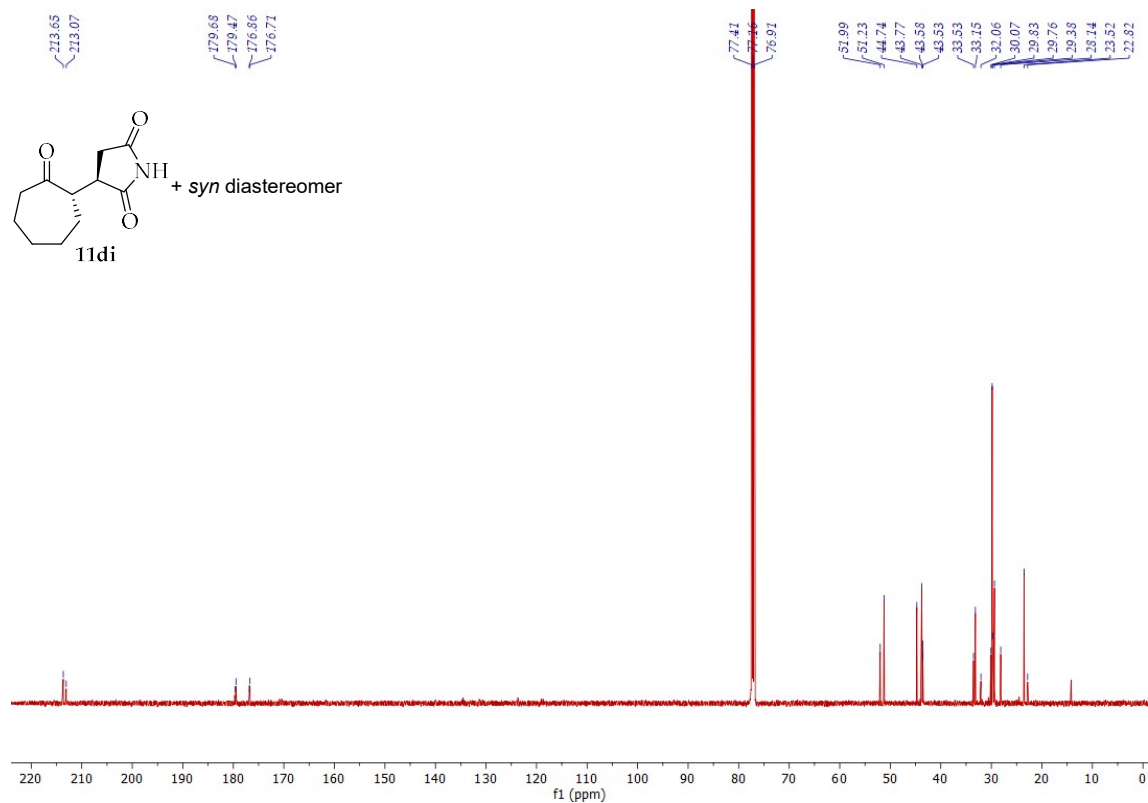


Figure S40. ¹³C NMR spectrum (125 MHz) of compound **11di**.

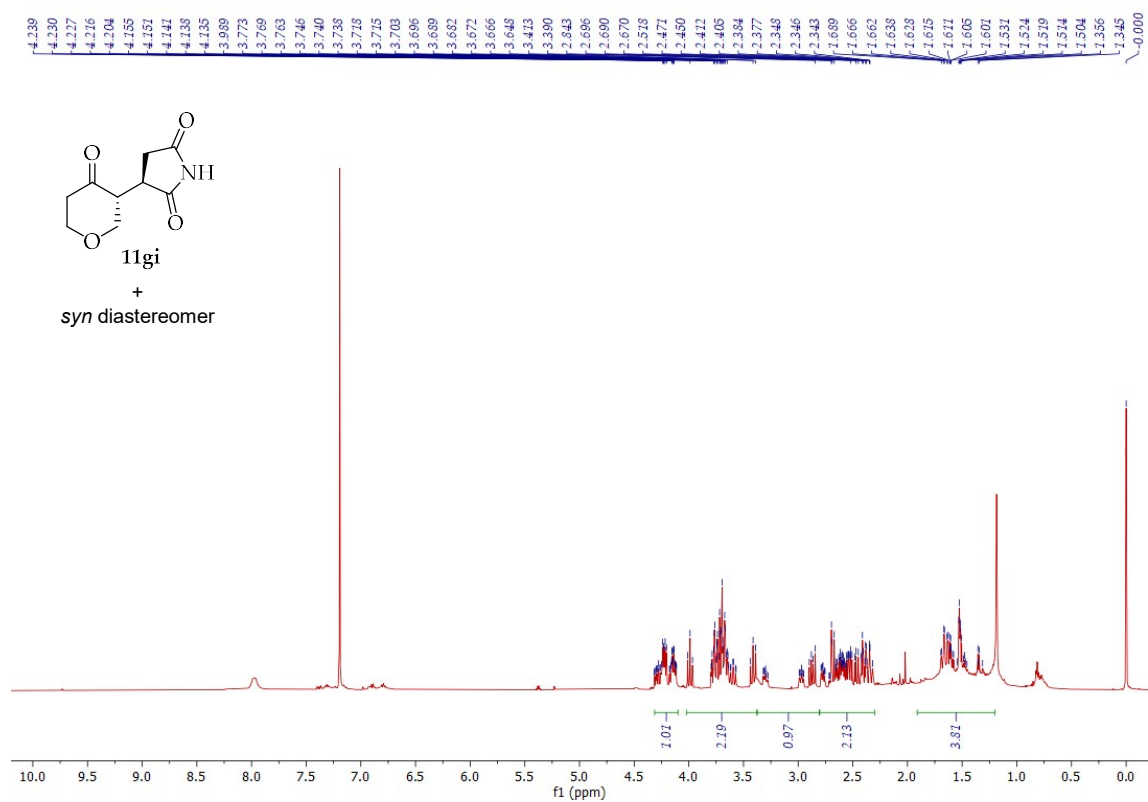


Figure S41. ¹H NMR spectrum (500 MHz) of compound **11gi**.

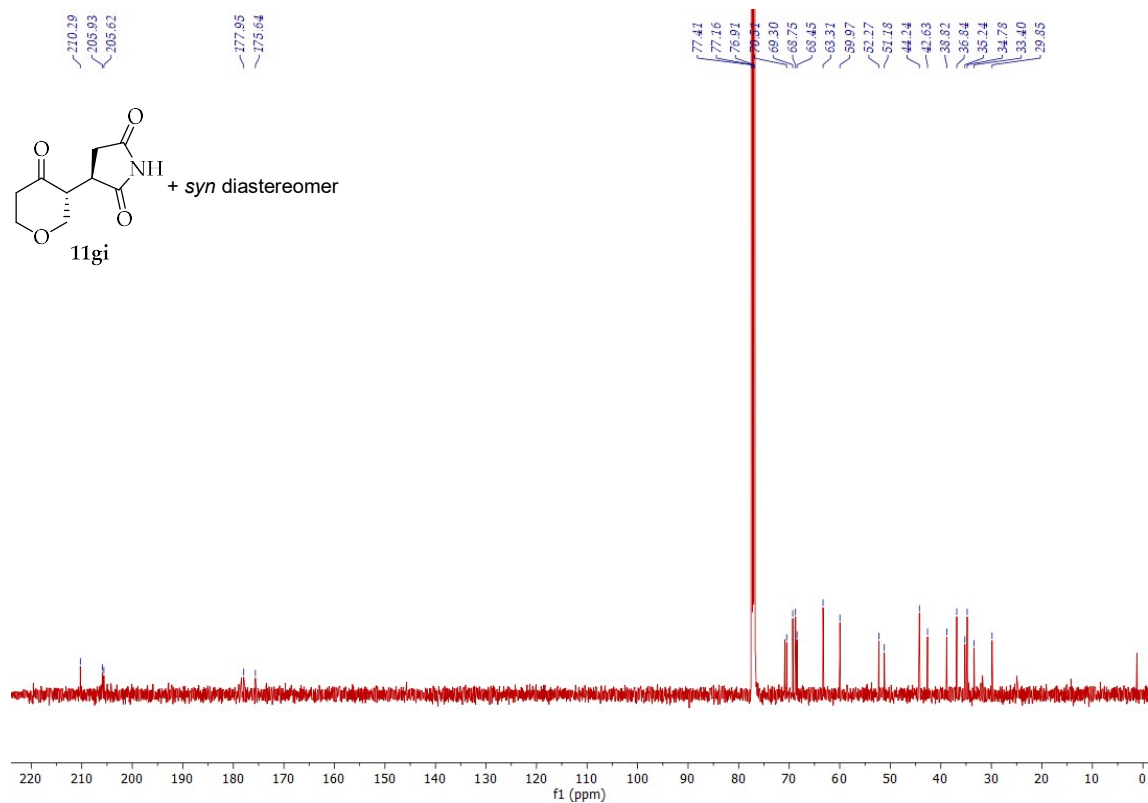


Figure S42. ¹³C NMR spectrum (125 MHz) of compound **11gi**.

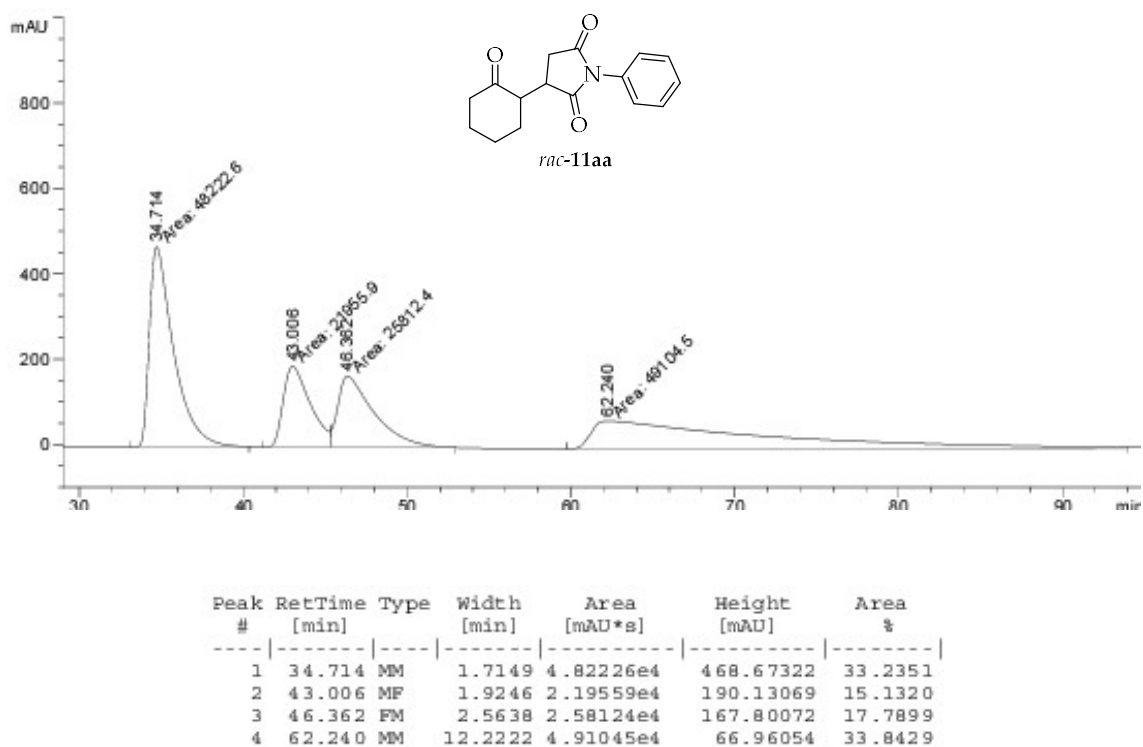


Figure S43. HPLC chromatogram of compound *rac*-11aa.

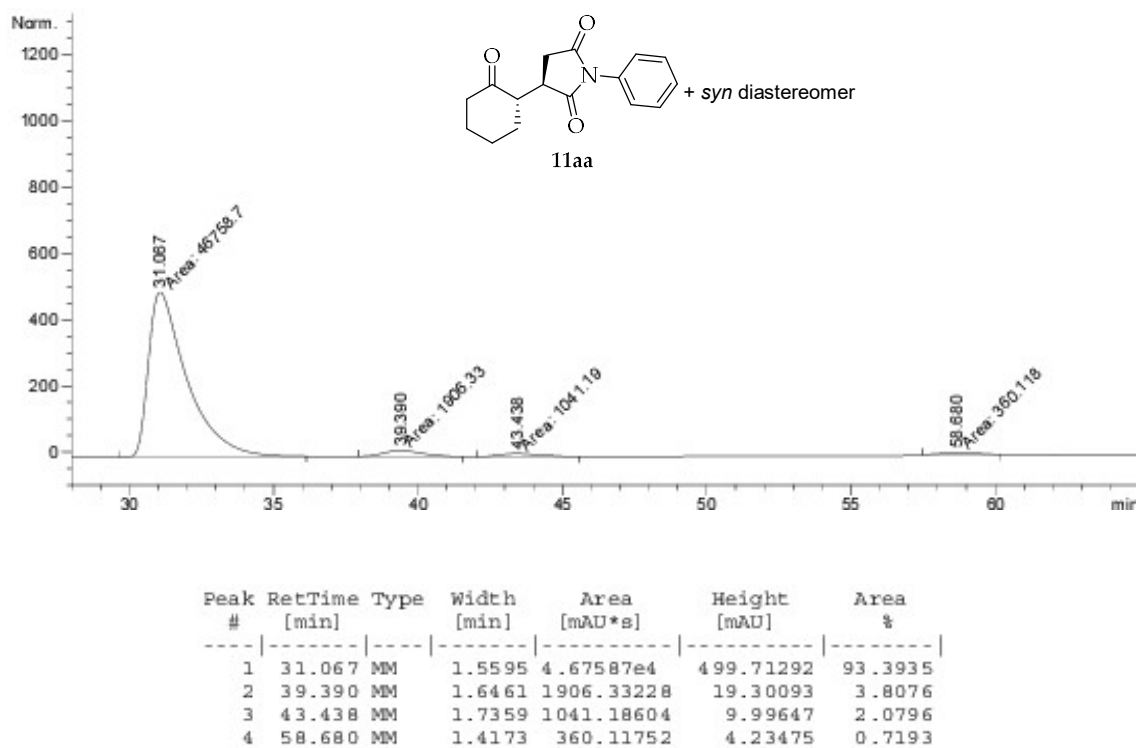


Figure S44. HPLC chromatogram of compound 11aa.

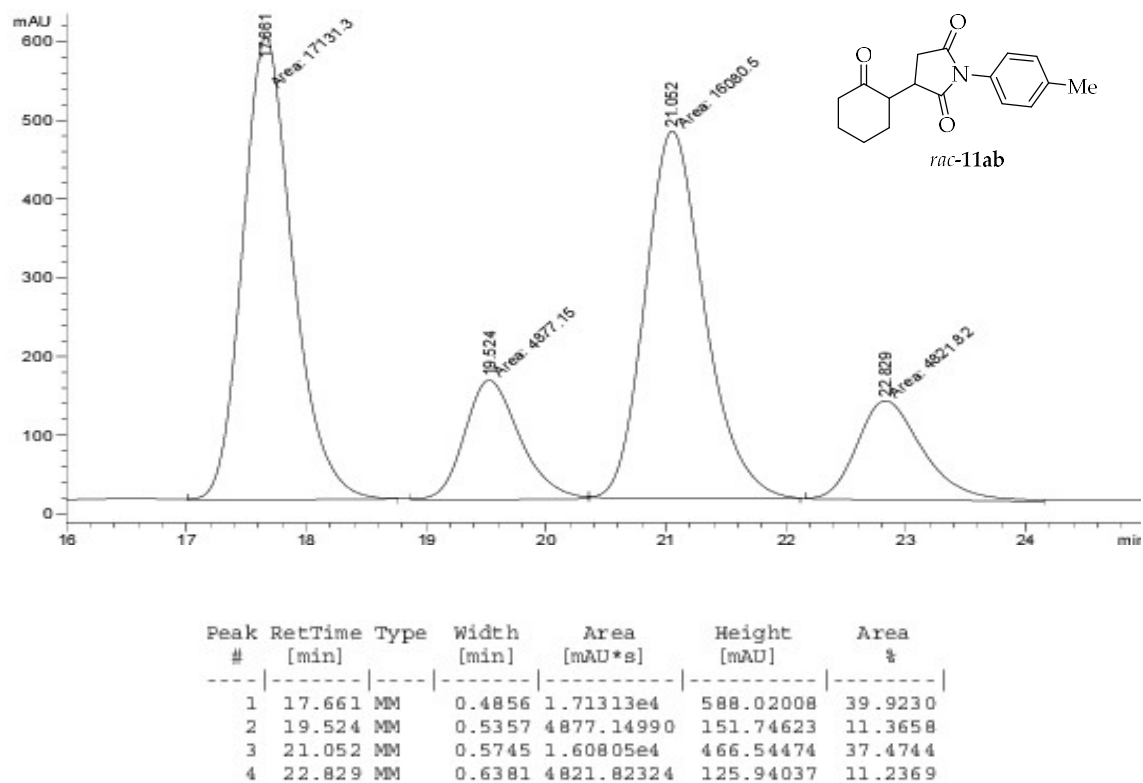


Figure S45. HPLC chromatogram of compound *rac*-11ab.

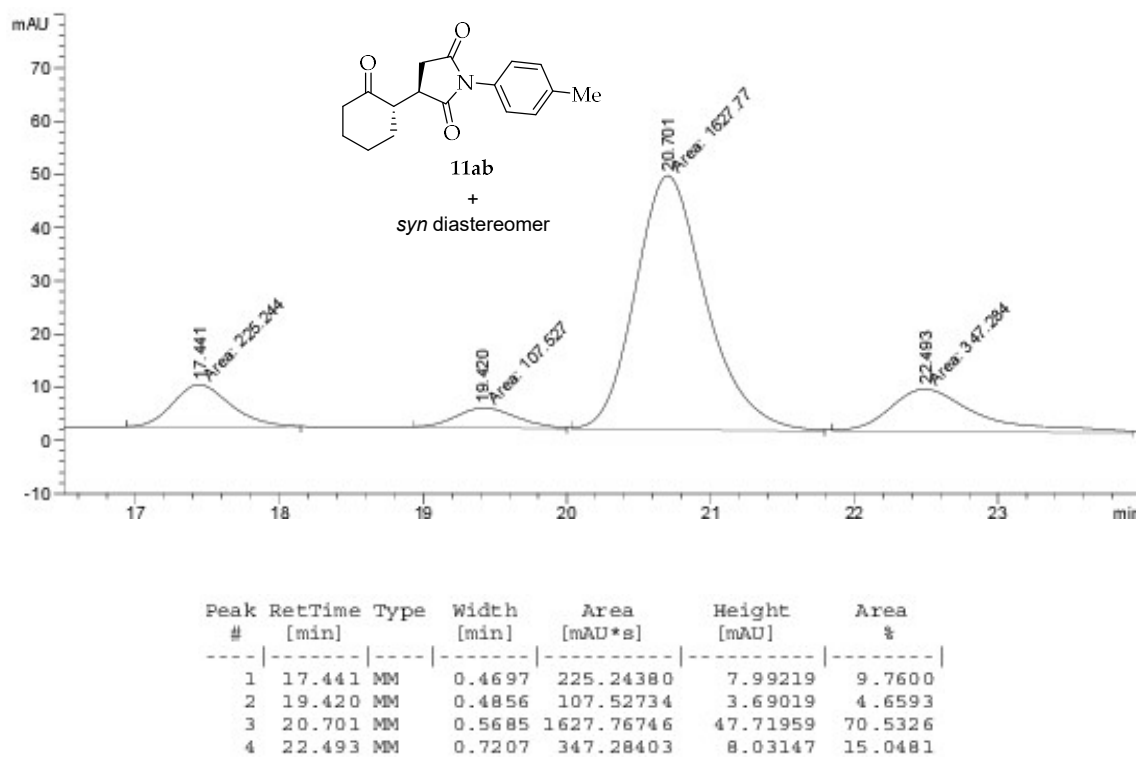


Figure S46. HPLC chromatogram of compound 11ab.

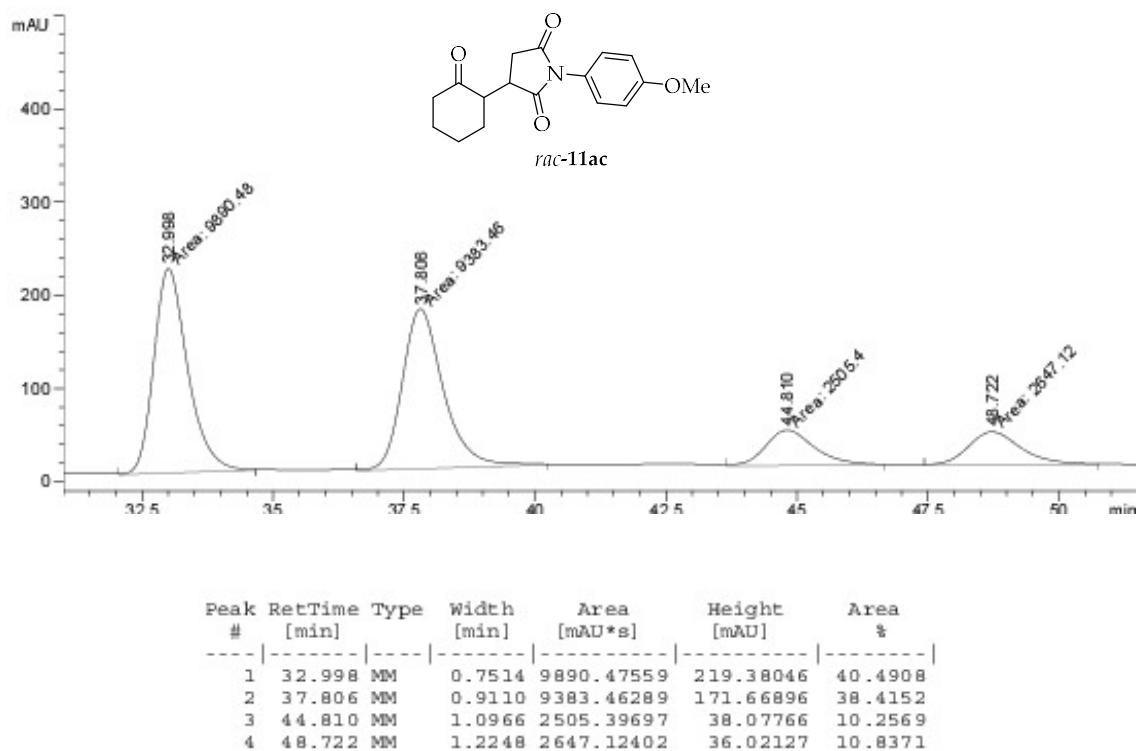


Figure S47. HPLC chromatogram of compound *rac*-11ac.

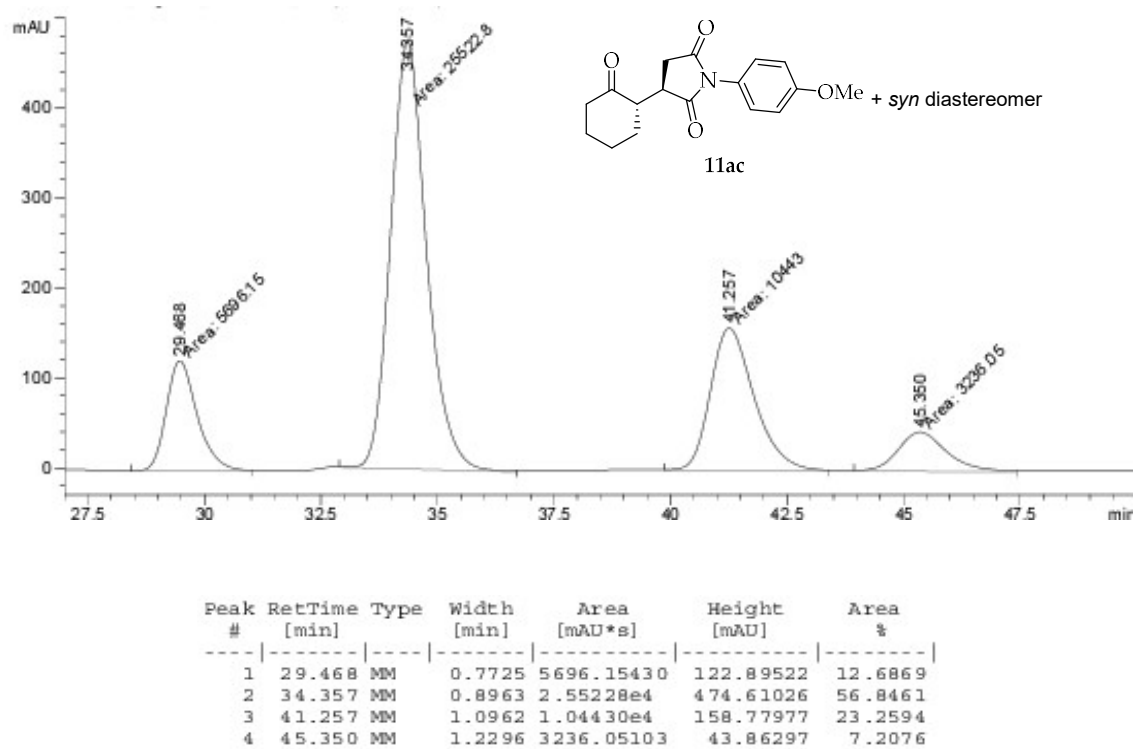


Figure S48. HPLC chromatogram of compound 11ac.

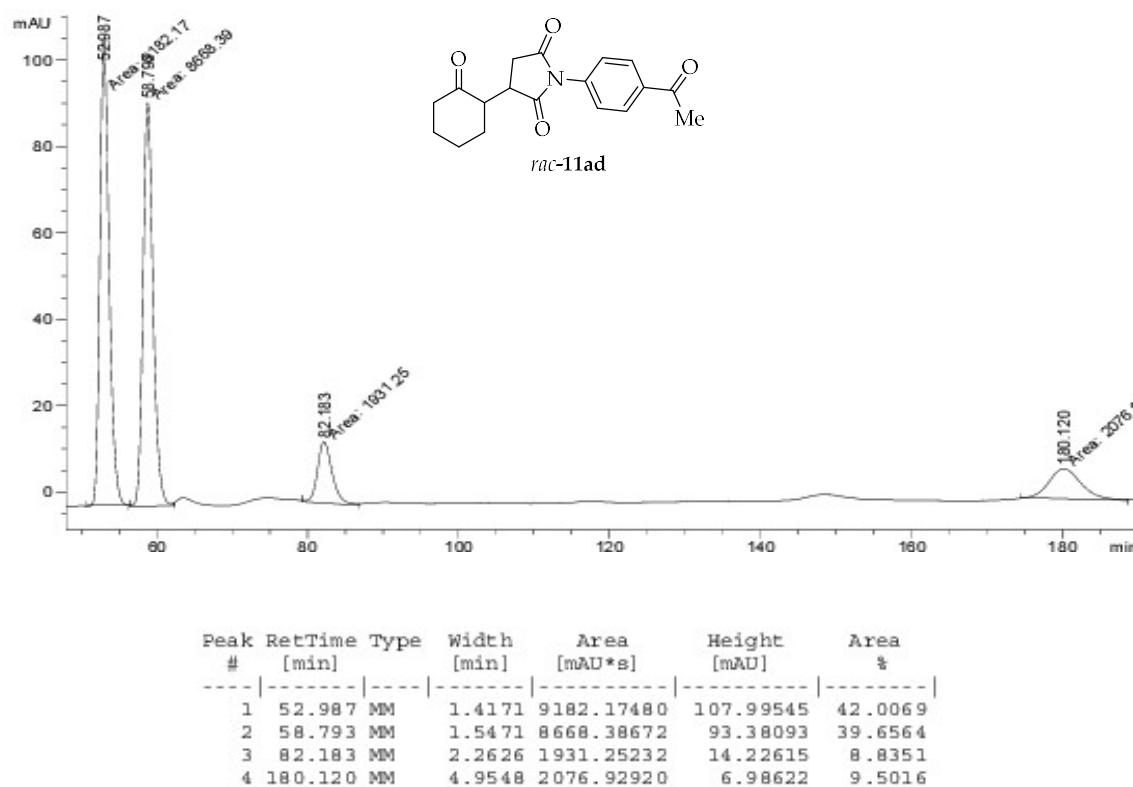


Figure S49. HPLC chromatogram of compound *rac*-11ad.

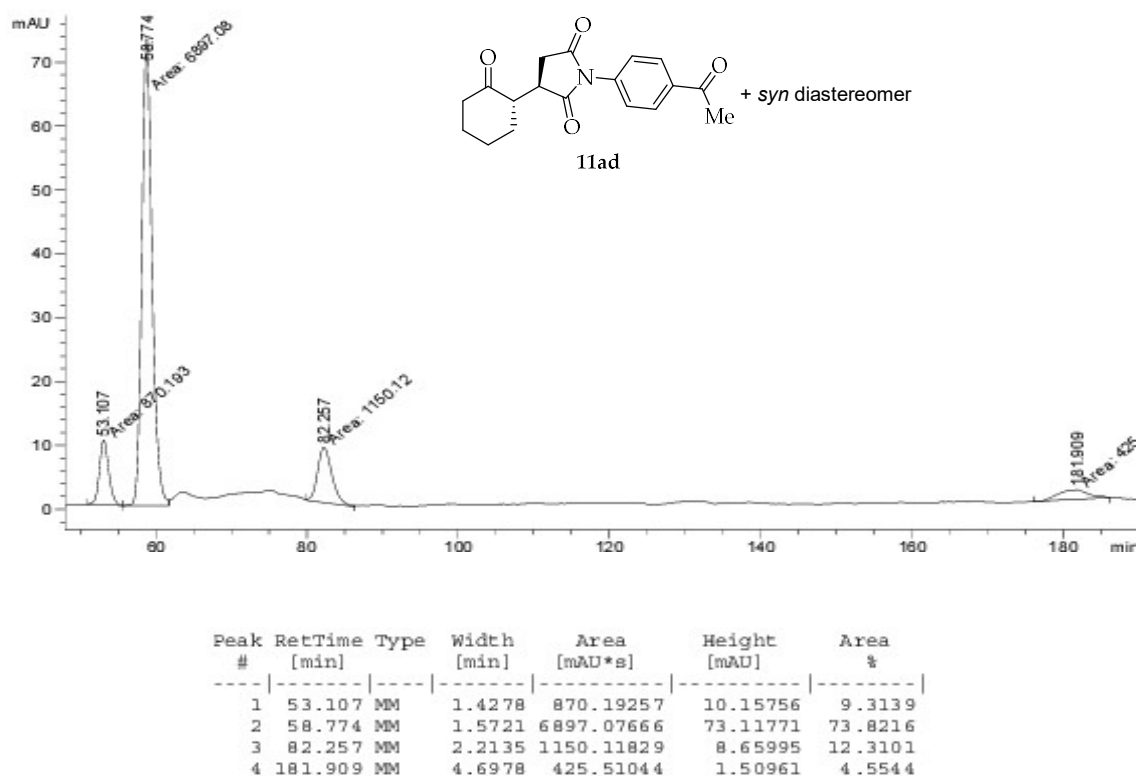


Figure S50. HPLC chromatogram of compound 11ad.

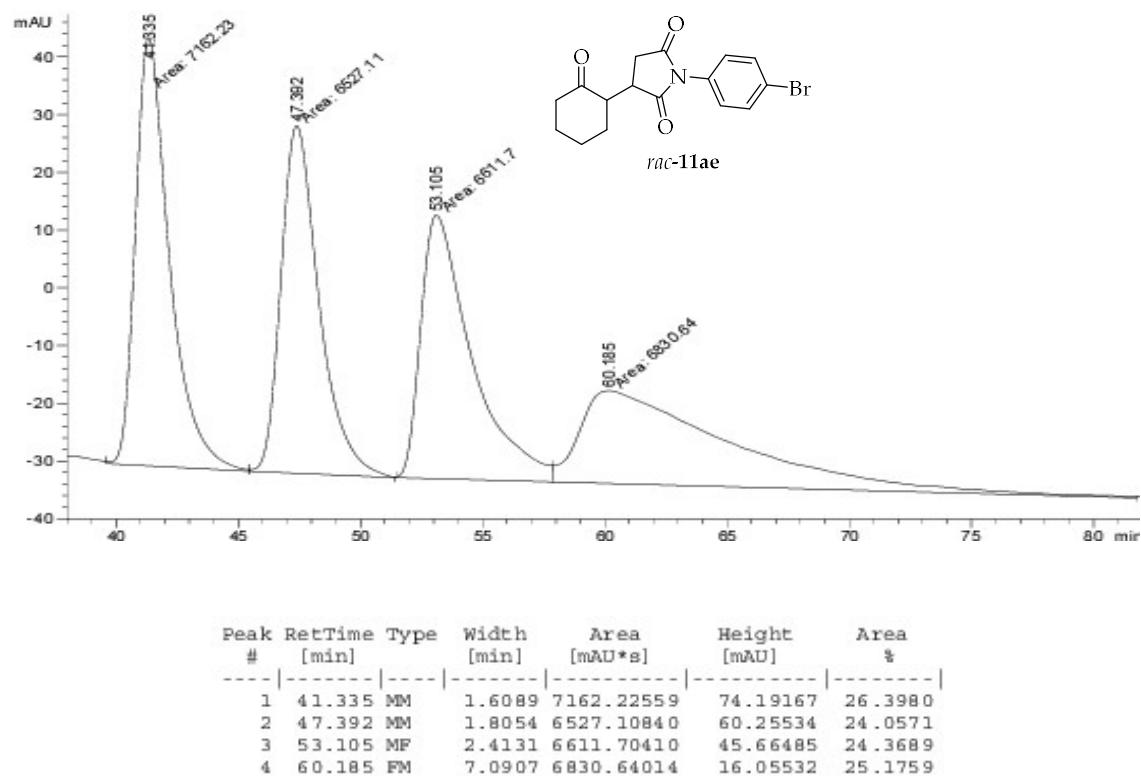


Figure S51. HPLC chromatogram of compound *rac*-11ae.

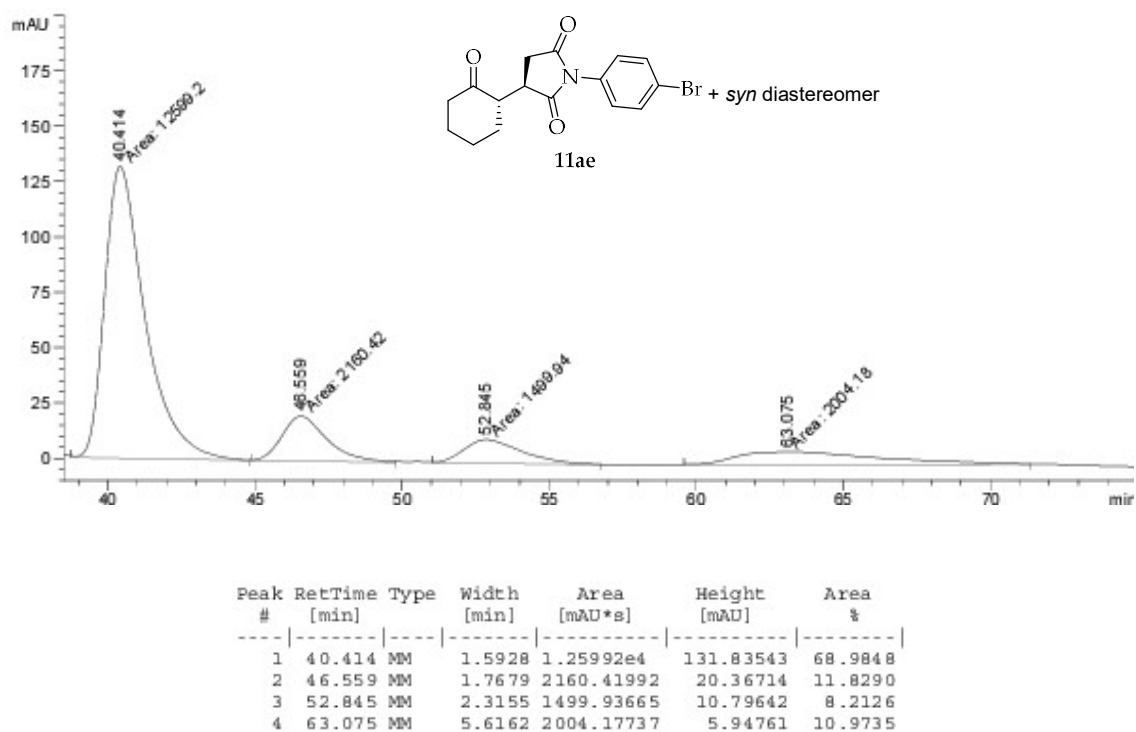


Figure S52. HPLC chromatogram of compound 11ae.

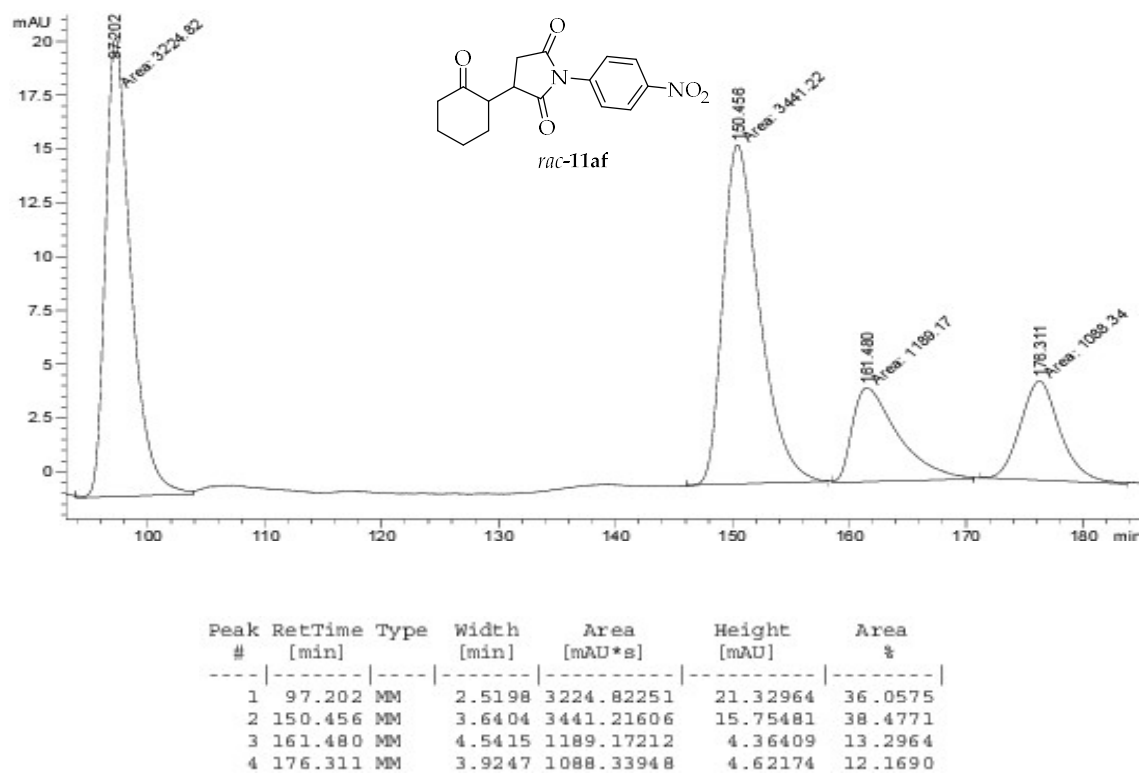


Figure S53. HPLC chromatogram of compound *rac*-11af.

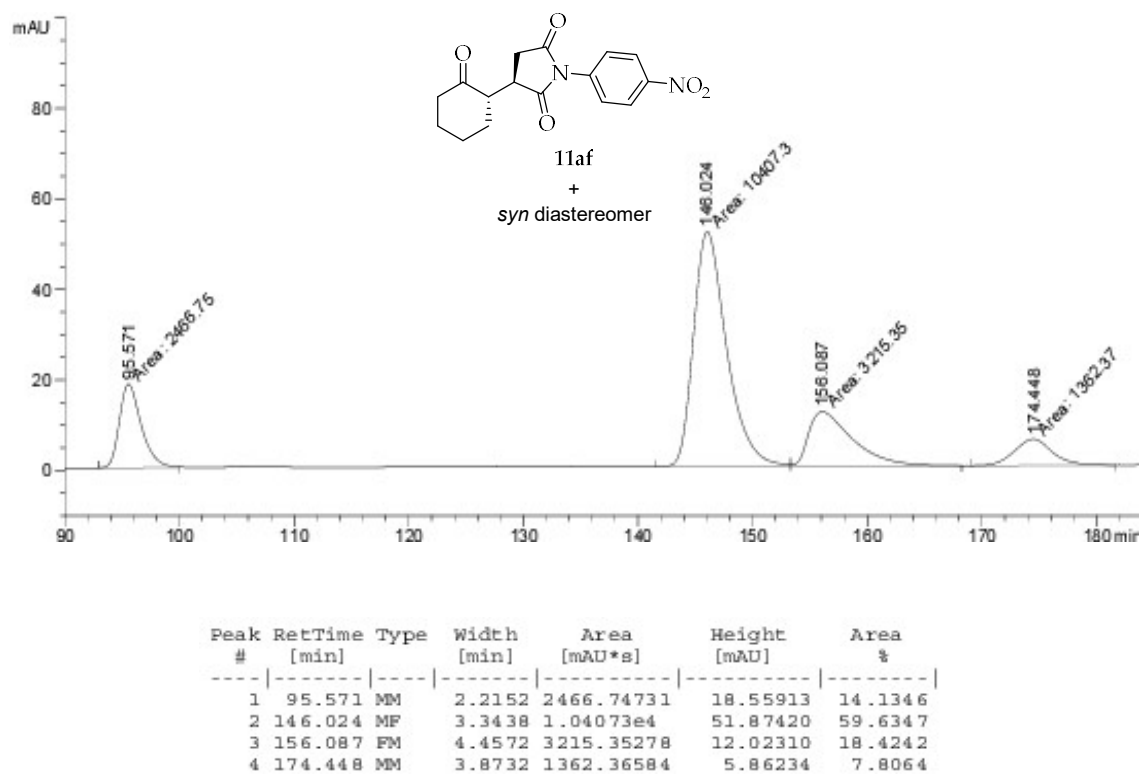


Figure S54. HPLC chromatogram of compound 11af.

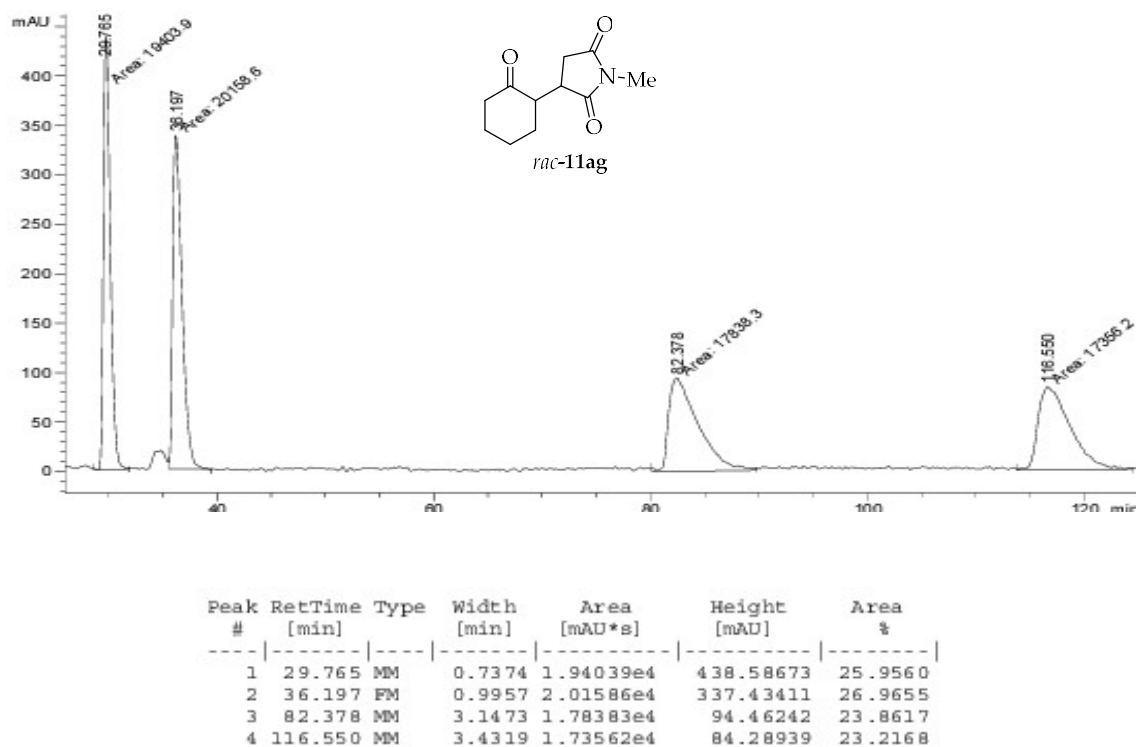


Figure S55. HPLC chromatogram of compound *rac*-11ag.

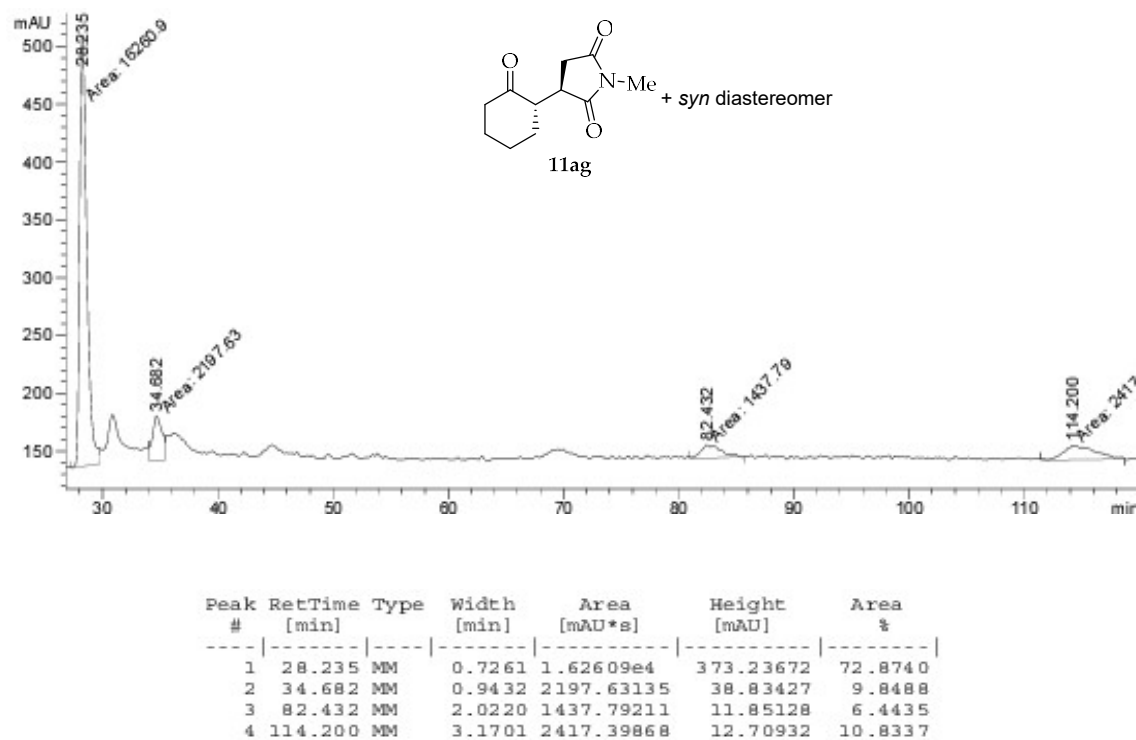
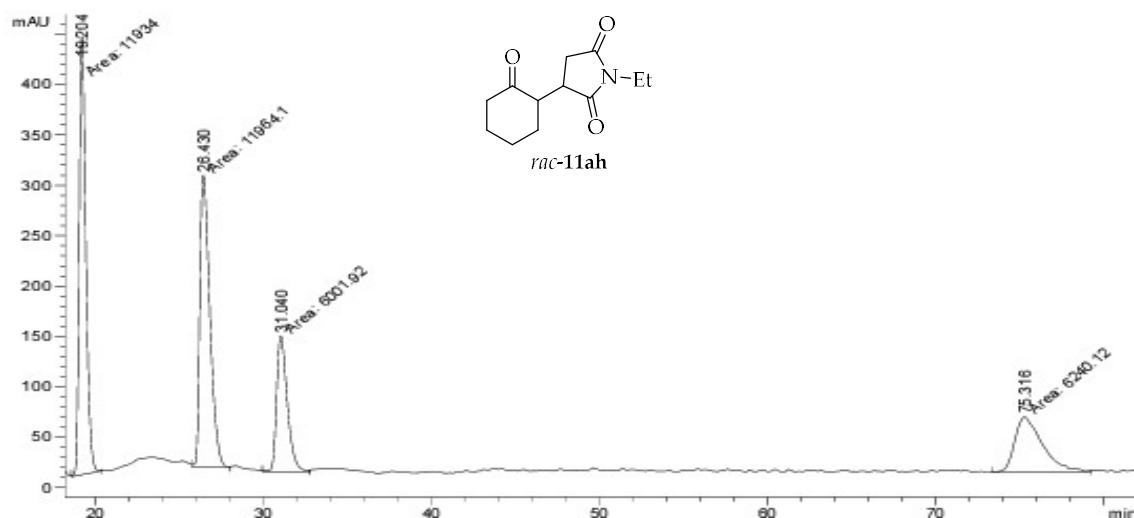
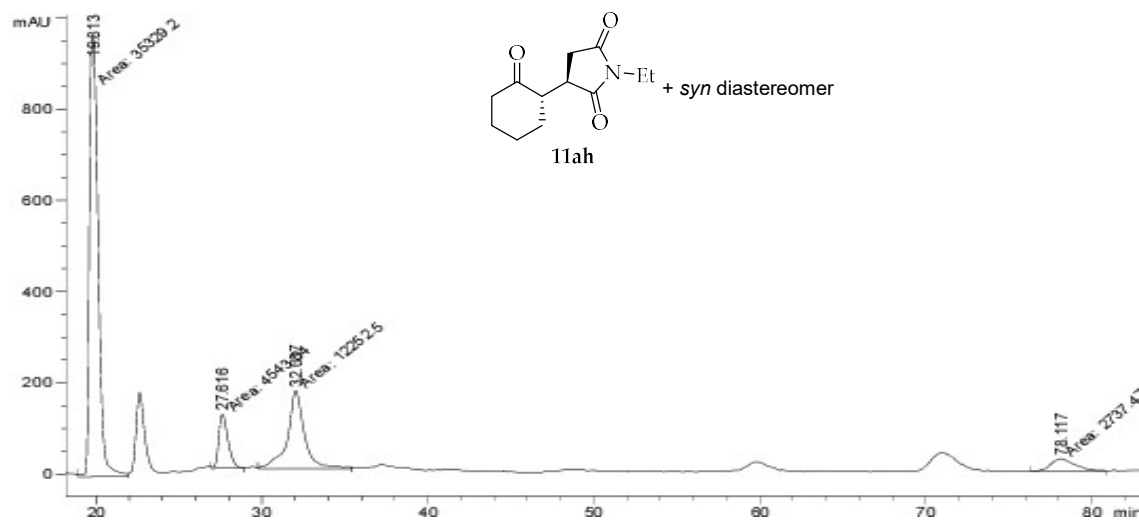


Figure S56. HPLC chromatogram of compound 11ag.



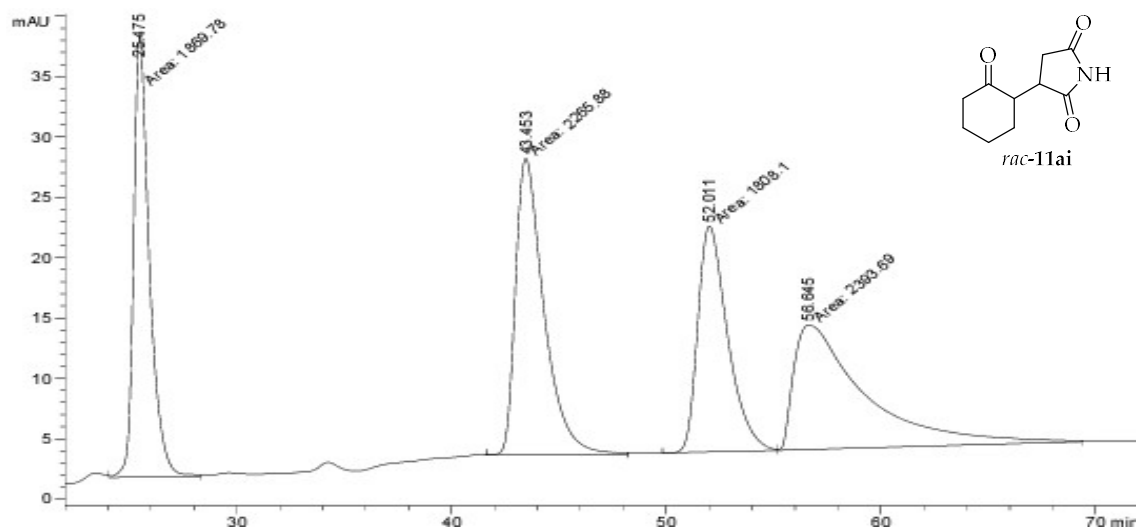
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	19.204	MM	0.4571	1.19340e4	435.16562	33.0214
2	26.430	MM	0.6882	1.19641e4	289.75534	33.1048
3	31.040	MM	0.7408	6001.91650	135.03879	16.6073
4	75.316	MM	1.9015	6240.11523	54.69476	17.2664

Figure S57. HPLC chromatogram of compound *rac*-11ah.



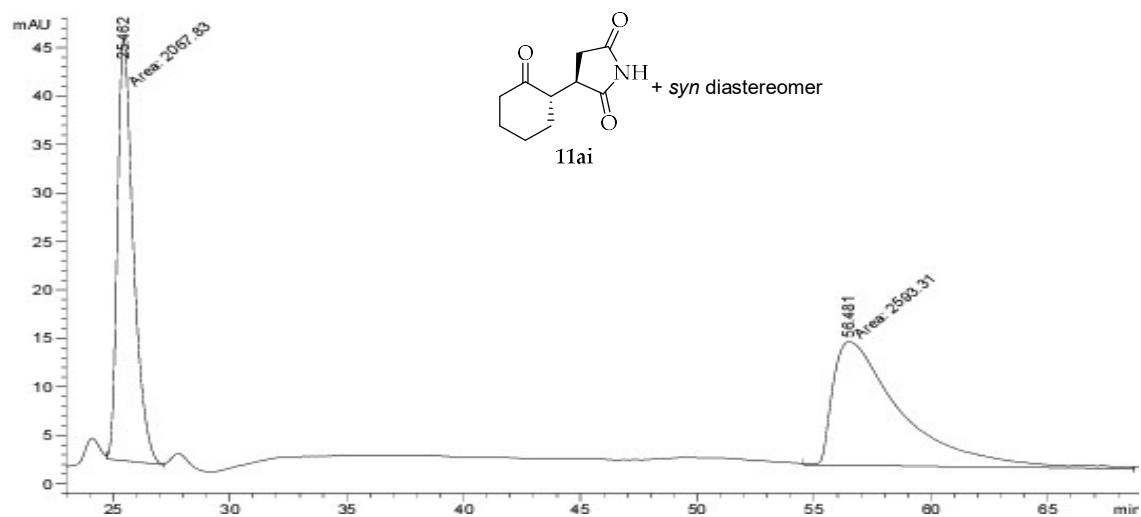
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	19.813	MM	0.6103	3.53292e4	964.76843	64.3963
2	27.616	MM	0.6403	4543.04492	118.24818	8.2808
3	32.037	MM	1.1954	1.22525e4	170.82472	22.3332
4	78.117	MM	1.6943	2737.47412	26.92798	4.9897

Figure S58. HPLC chromatogram of compound 11ah.



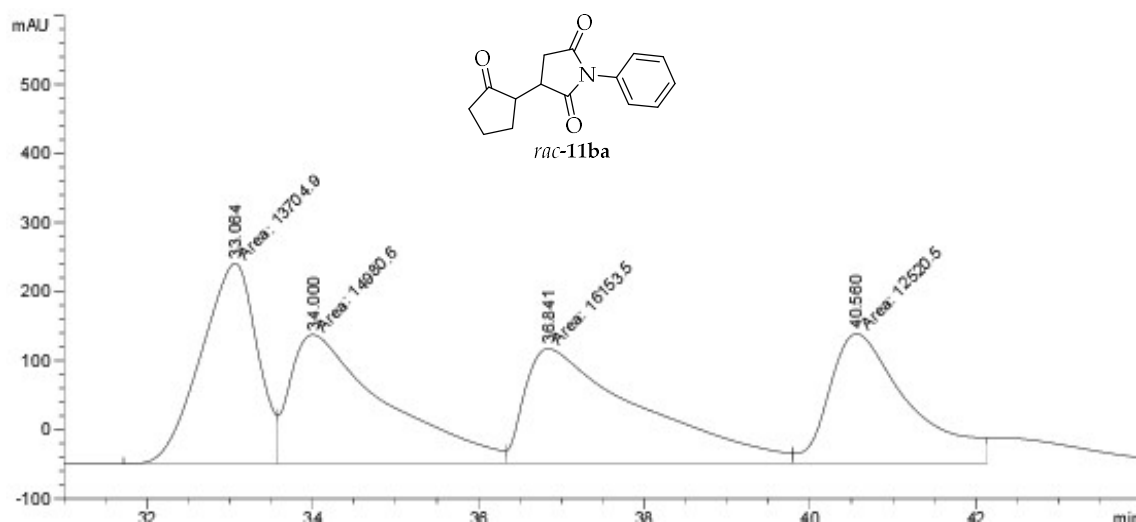
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	25.475	MM	0.8539	1869.77734	36.49651	22.4263
2	43.453	MM	1.5384	2265.87646	24.54864	27.1771
3	52.011	MM	1.6111	1808.09961	18.70457	21.6865
4	56.645	MM	3.8589	2393.69263	10.33835	28.7101

Figure S59. HPLC chromatogram of compound *rac*-11ai.



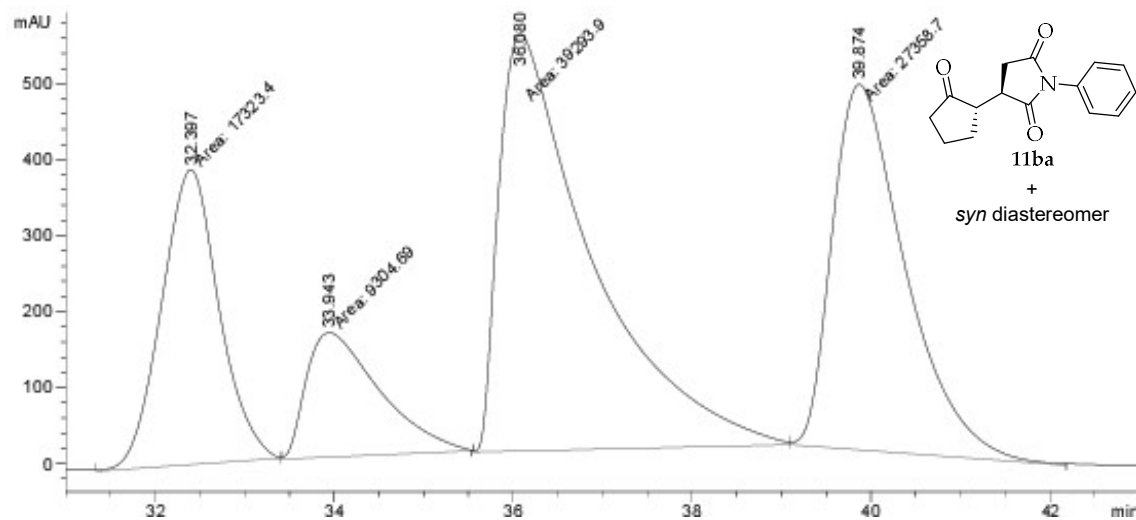
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	25.462	MM	0.7921	2067.83130	43.51075	44.3632
2	56.481	MM	3.3836	2593.31201	12.77402	55.6368

Figure S60. HPLC chromatogram of compound 11ai.



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	33.064	MF	0.7848	1.37049e4	291.06421	23.8930
2	34.000	MF	1.3326	1.49806e4	187.35893	26.1171
3	36.841	MF	1.6140	1.61535e4	166.80431	28.1618
4	40.560	FM	1.1097	1.25205e4	188.04073	21.8281

Figure S61. HPLC chromatogram of compound *rac*-11ba.



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	32.397	MM	0.7435	1.73234e4	388.33466	18.5713
2	33.943	MM	0.9463	9304.69336	163.88423	9.9749
3	36.080	MM	1.1945	3.92939e4	548.26361	42.1244
4	39.874	MM	0.9474	2.73587e4	481.31326	29.3294

Figure S62. HPLC chromatogram of compound 11ba.

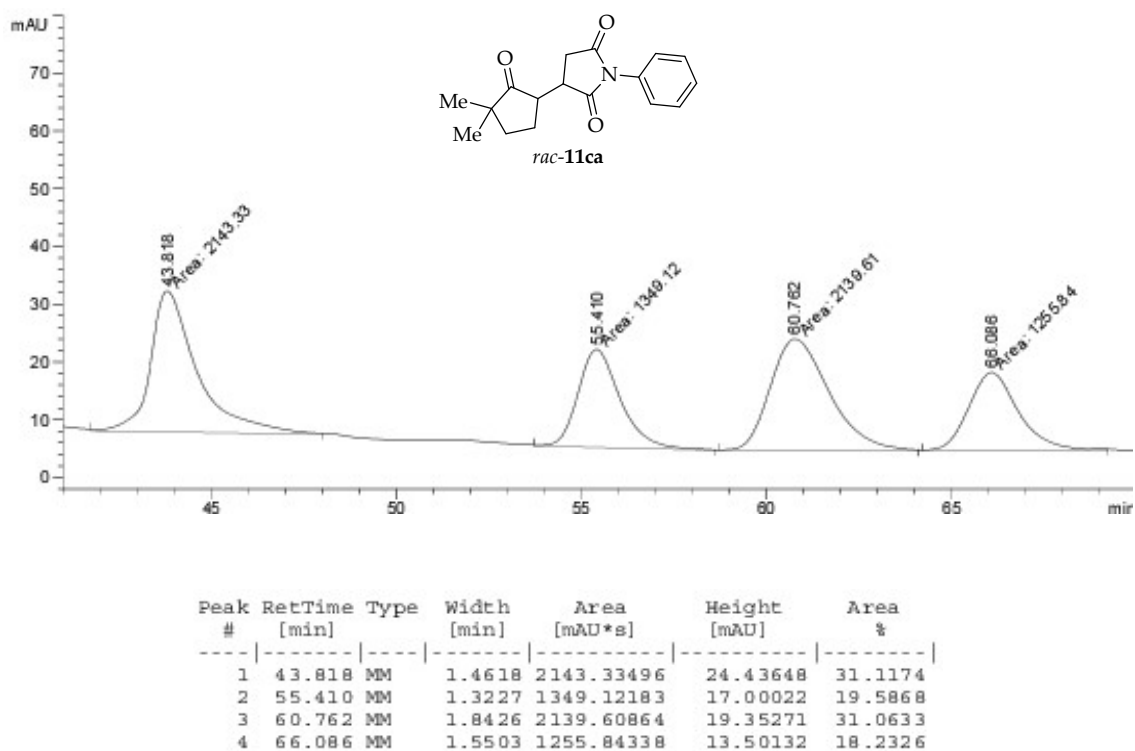


Figure S63. HPLC chromatogram of compound *rac-11ca*.

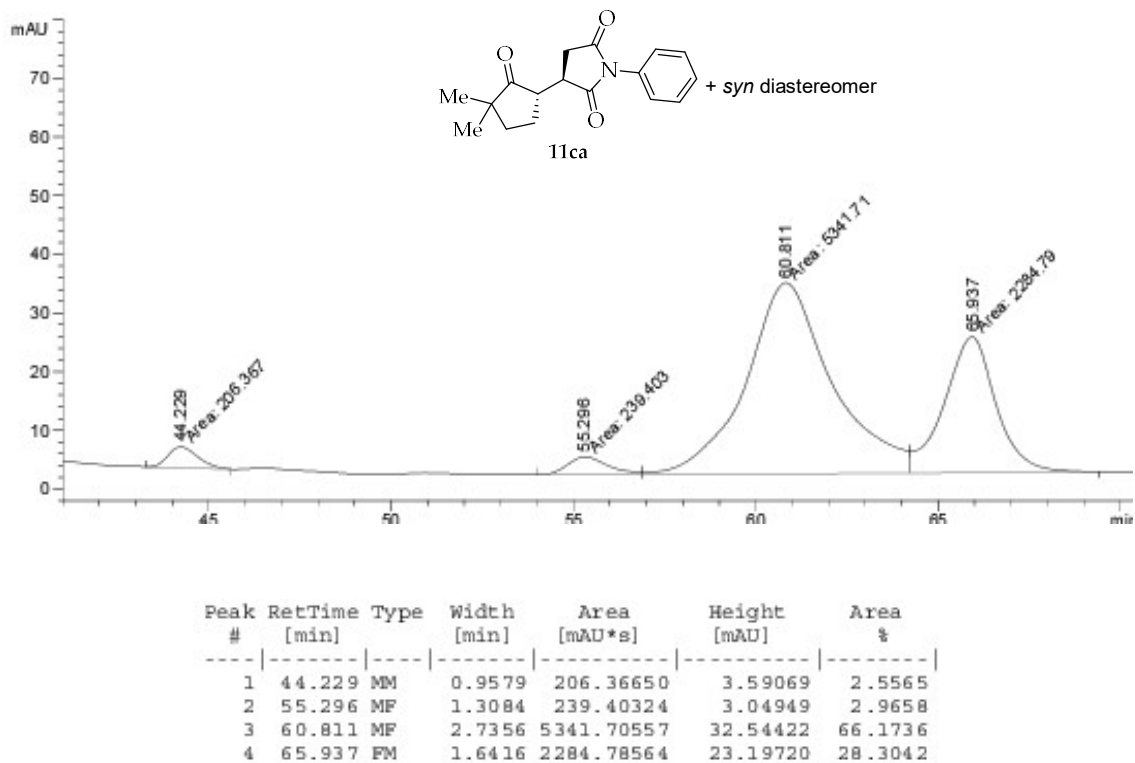


Figure S64. HPLC chromatogram of compound **11ca**.

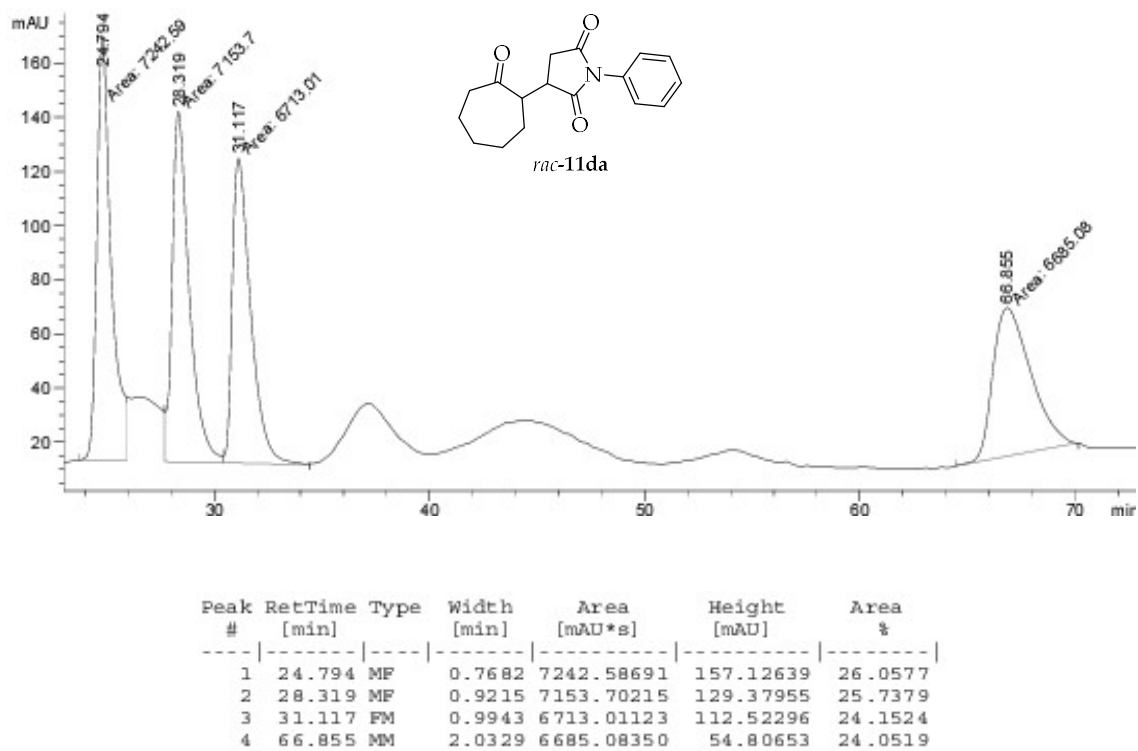


Figure S65. HPLC chromatogram of compound *rac*-11da.

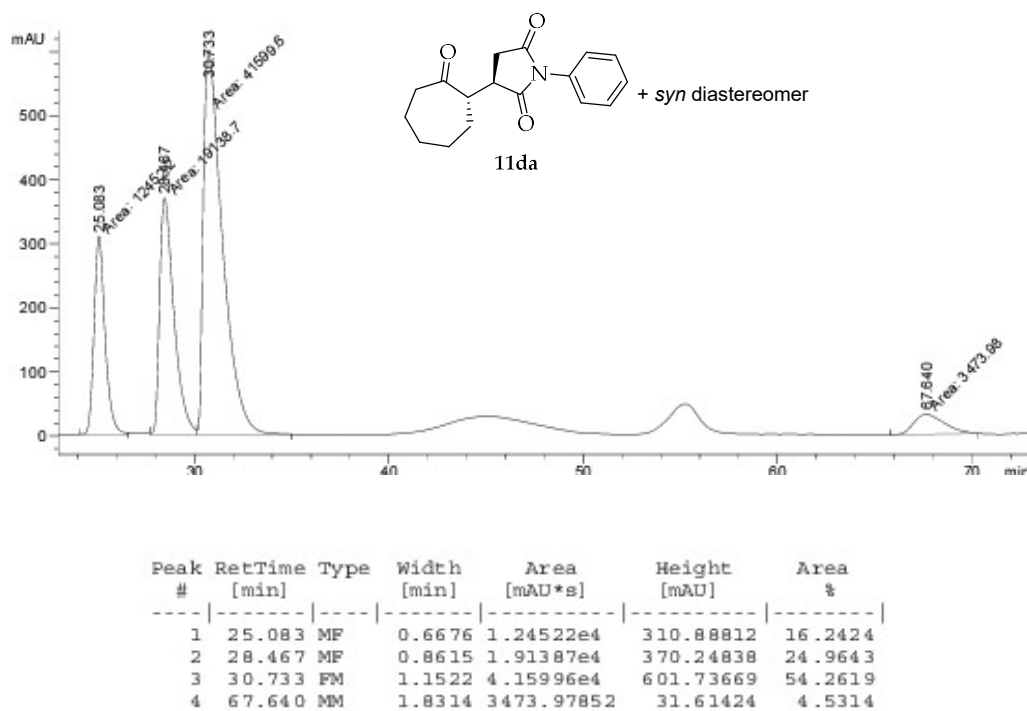


Figure S66. HPLC chromatogram of compound 11da.

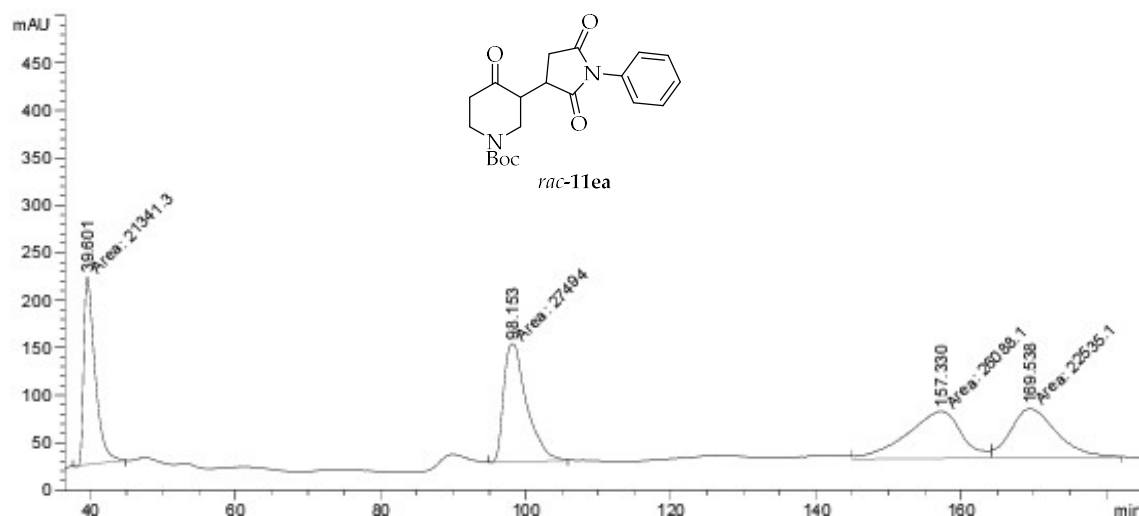


Figure S67. HPLC chromatogram of compound *rac*-11ea.

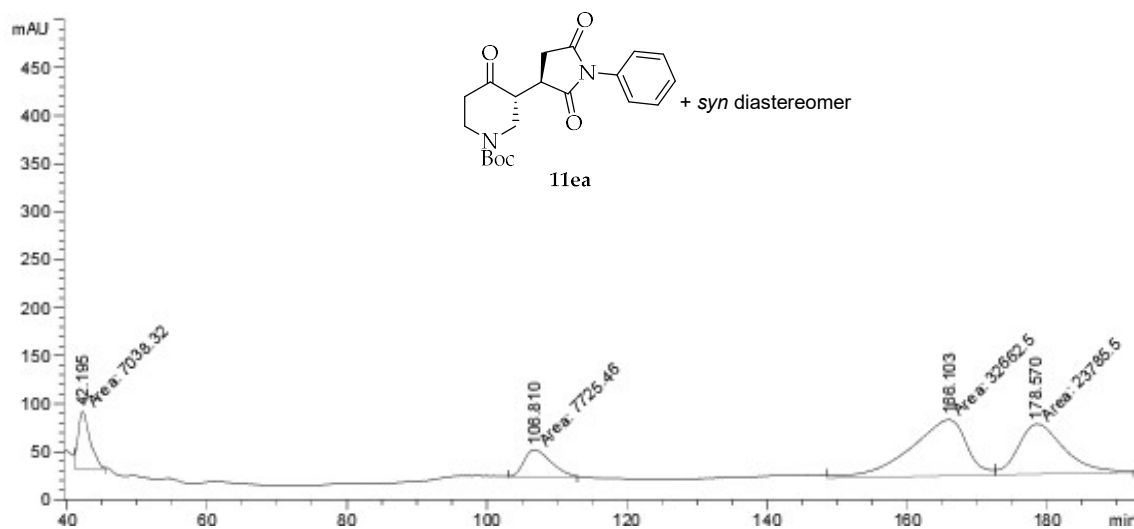
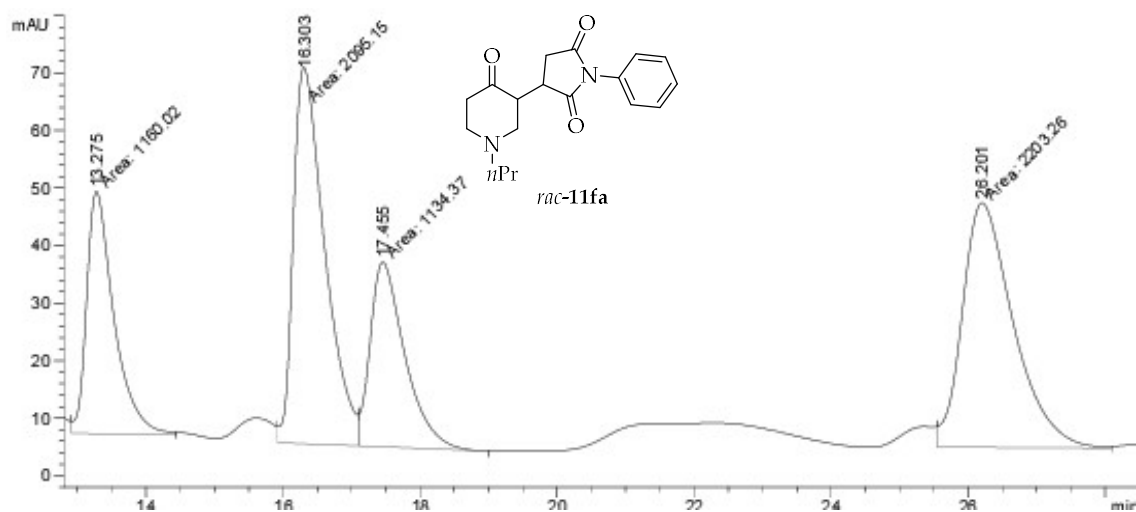
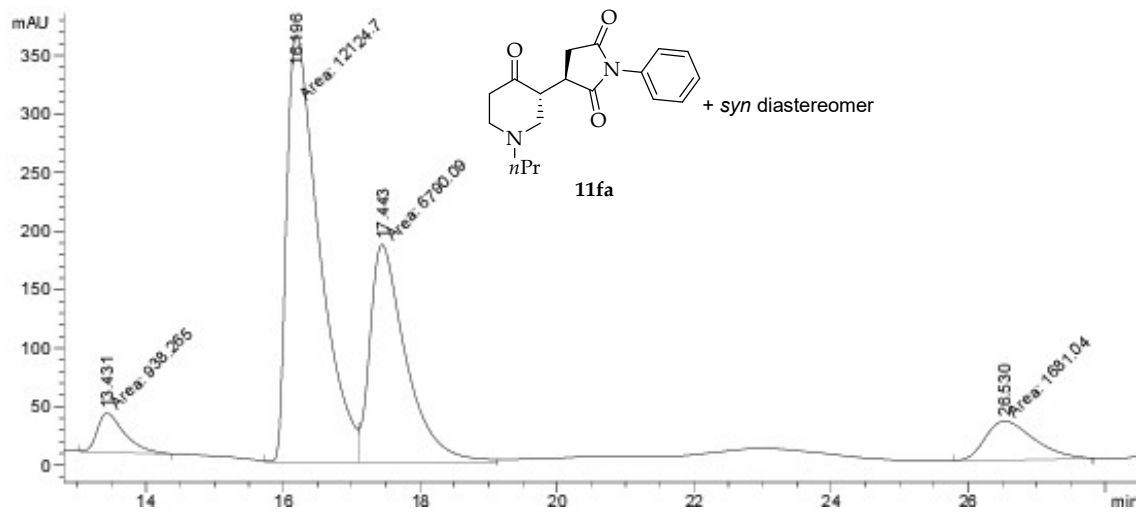


Figure S68. HPLC chromatogram of compound 11ea.



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.275	MM	0.4597	1160.01953	42.05348	17.5952
2	16.303	MF	0.5333	2095.14502	65.48257	31.7793
3	17.455	FM	0.5887	1134.37354	32.11398	17.2062
4	26.201	FM	0.8631	2203.26147	42.54479	33.4192

Figure S69. HPLC chromatogram of compound *rac*-11fa.



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	13.431	MM	0.4662	938.26538	33.54221	4.3571
2	16.196	MF	0.5529	1.21247e4	365.48090	56.3046
3	17.443	FM	0.6077	6790.09473	186.23572	31.5319
4	26.530	MM	0.8354	1681.03662	33.53699	7.8064

Figure S70. HPLC chromatogram of compound 11fa.

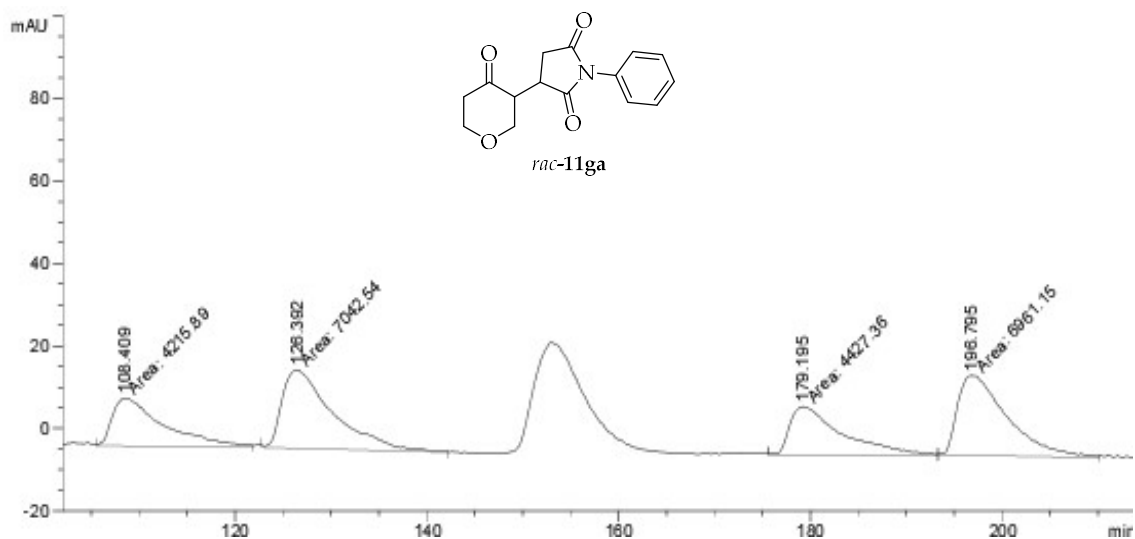


Figure S71. HPLC chromatogram of compound *rac*-11ga.

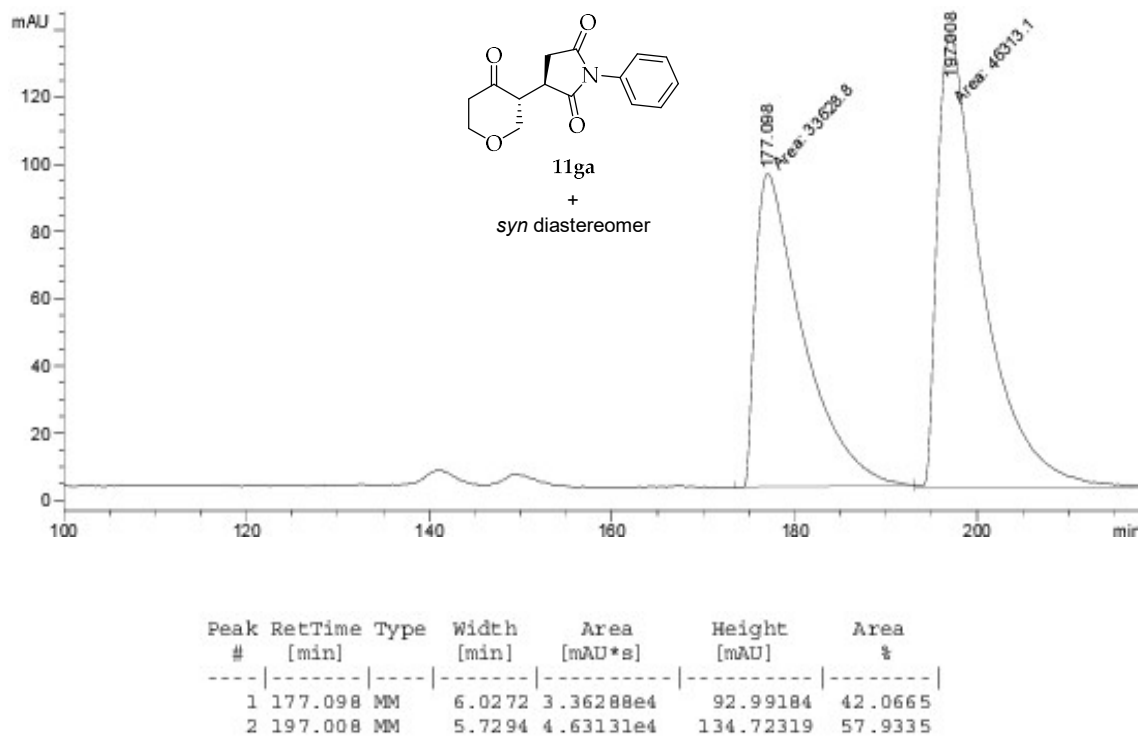


Figure S72. HPLC chromatogram of compound 11ga.

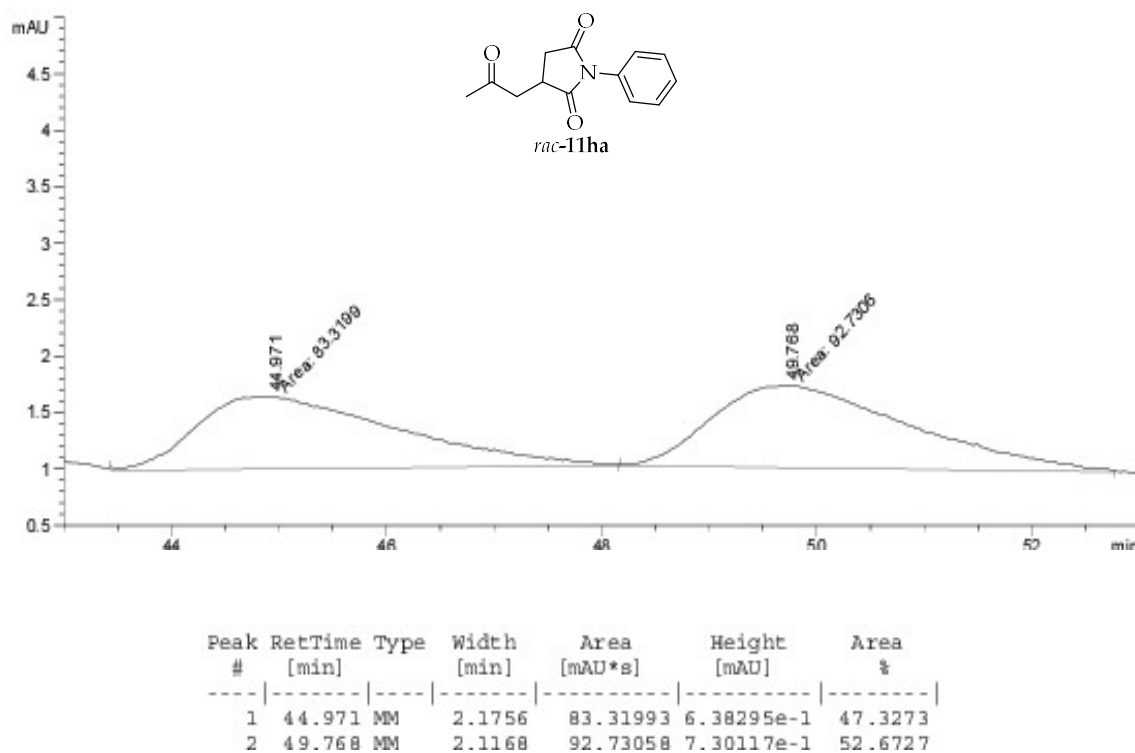


Figure S73. HPLC chromatogram of compound *rac*-11ha.

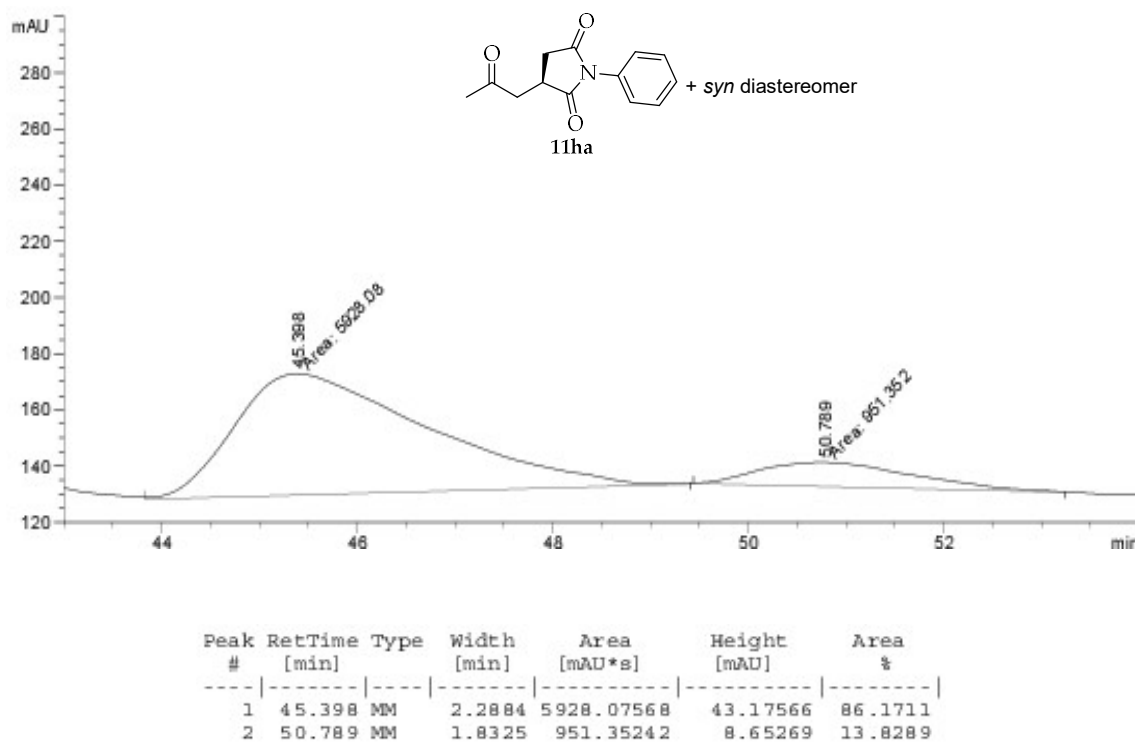


Figure S74. HPLC chromatogram of compound 11ha.

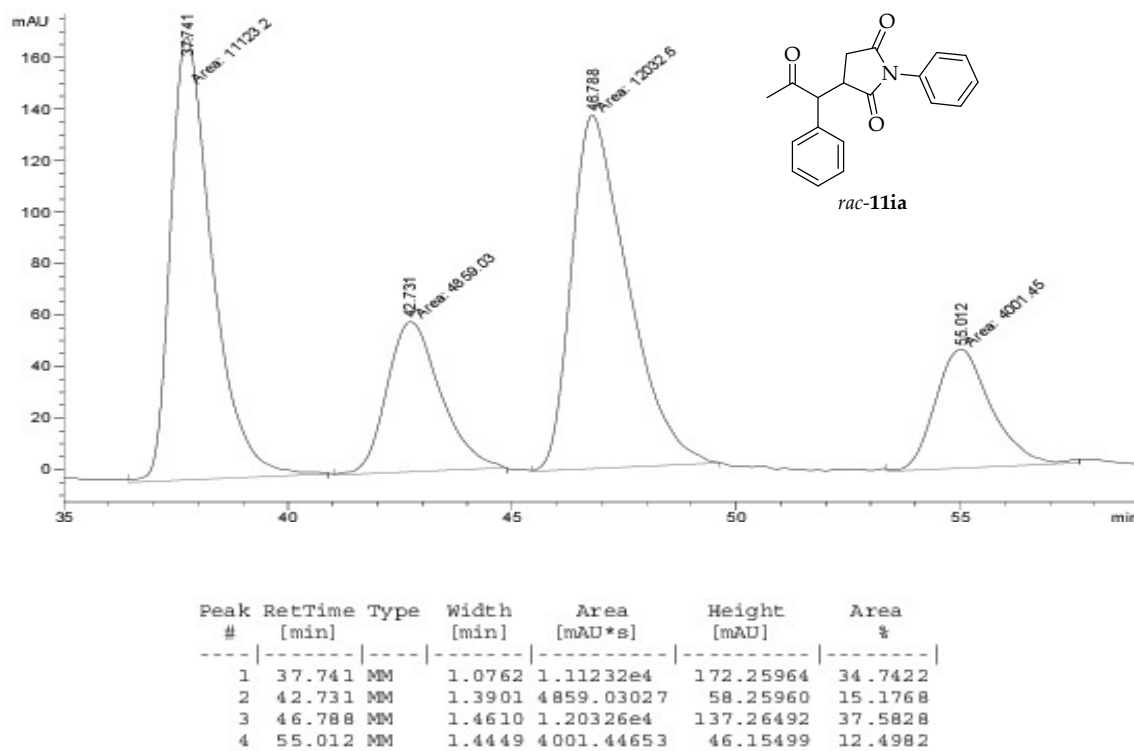


Figure S75. HPLC chromatogram of compound *rac*-11ia.

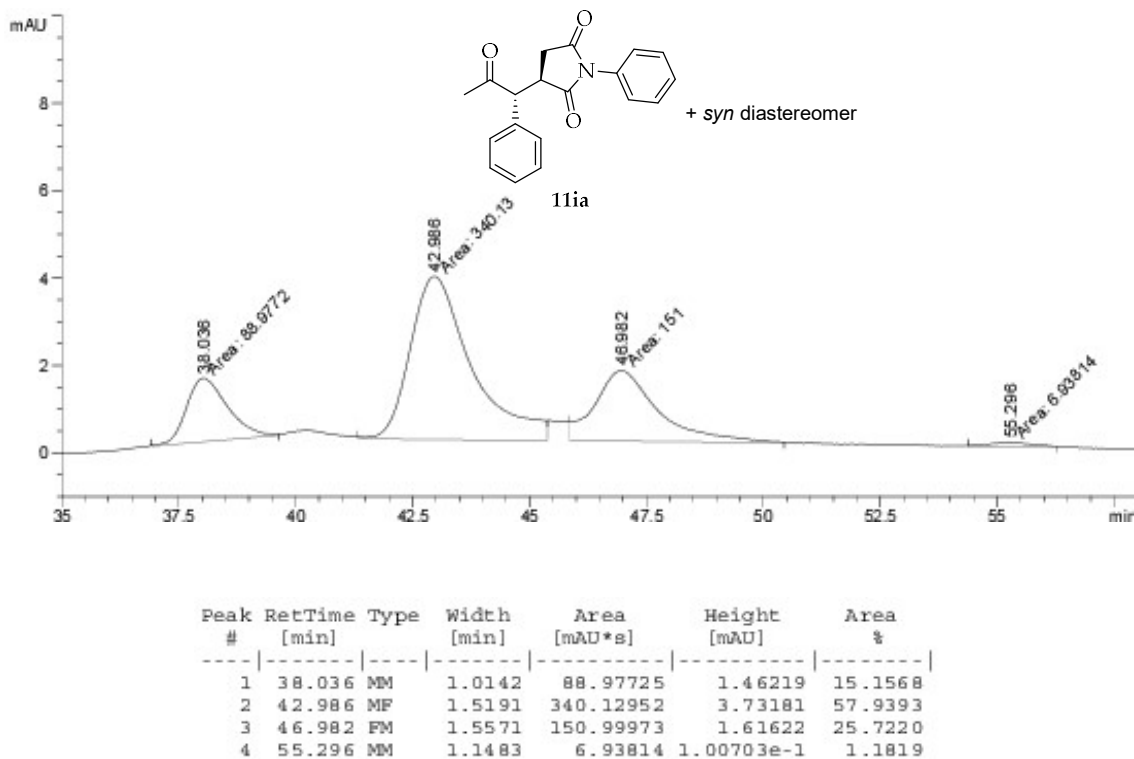
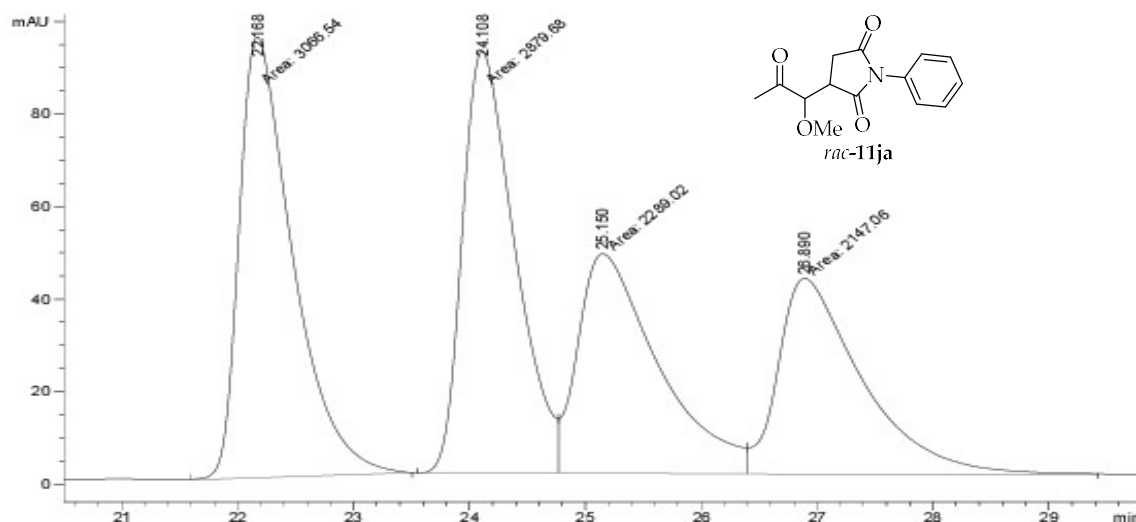
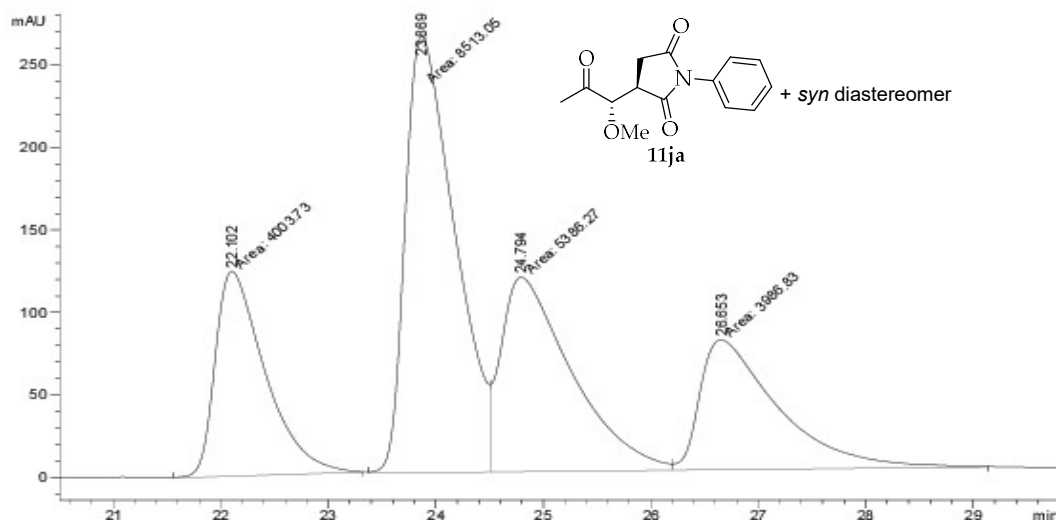


Figure S76. HPLC chromatogram of compound 11ia.



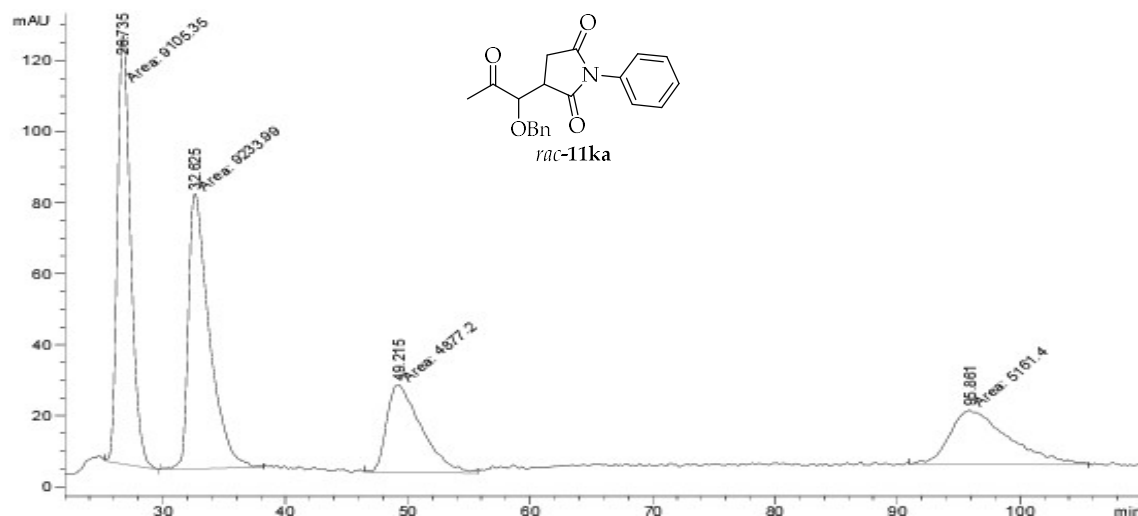
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	22.168	MM	0.5358	3066.54150	95.39330	29.5362
2	24.108	MF	0.5266	2879.68188	91.14449	27.7364
3	25.150	MF	0.8037	2289.02393	47.46743	22.0473
4	26.890	FM	0.8462	2147.06226	42.28981	20.6800

Figure S77. HPLC chromatogram of compound *rac*-11ja.



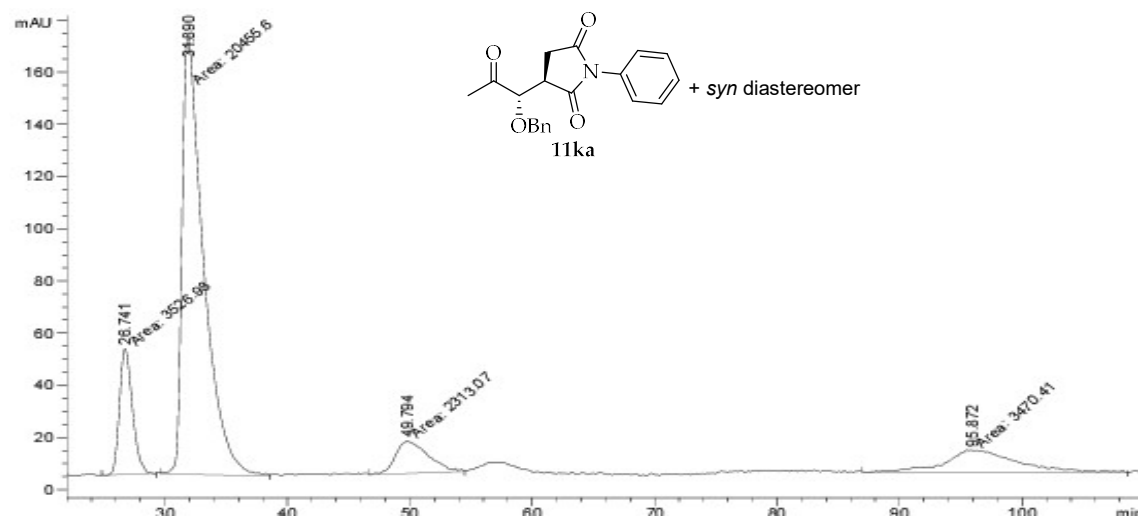
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	22.102	MM	0.5368	4003.73315	124.31665	18.2903
2	23.869	MF	0.5357	8513.05273	264.87021	38.8904
3	24.794	MF	0.7611	5386.26709	117.94196	24.6062
4	26.653	FM	0.8435	3986.83032	78.77255	18.2131

Figure S78. HPLC chromatogram of compound 11ja.



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	26.735	MM	1.2567	9105.34961	120.76128	32.0860
2	32.625	MM	1.9859	9233.99414	77.49511	32.5393
3	49.215	MM	3.2849	4877.20361	24.74577	17.1866
4	95.861	MM	5.5841	5161.39893	15.40511	18.1881

Figure S79. HPLC chromatogram of compound *rac*-11ka.



Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	26.741	MM	1.2192	3526.97998	48.21417	11.8490
2	31.890	MM	2.0365	2.04556e4	167.41229	68.7212
3	49.794	MM	3.0551	2313.07349	12.61871	7.7708
4	95.872	MM	6.7771	3470.40771	8.53461	11.6589

Figure S80. HPLC chromatogram of compound 11ka.

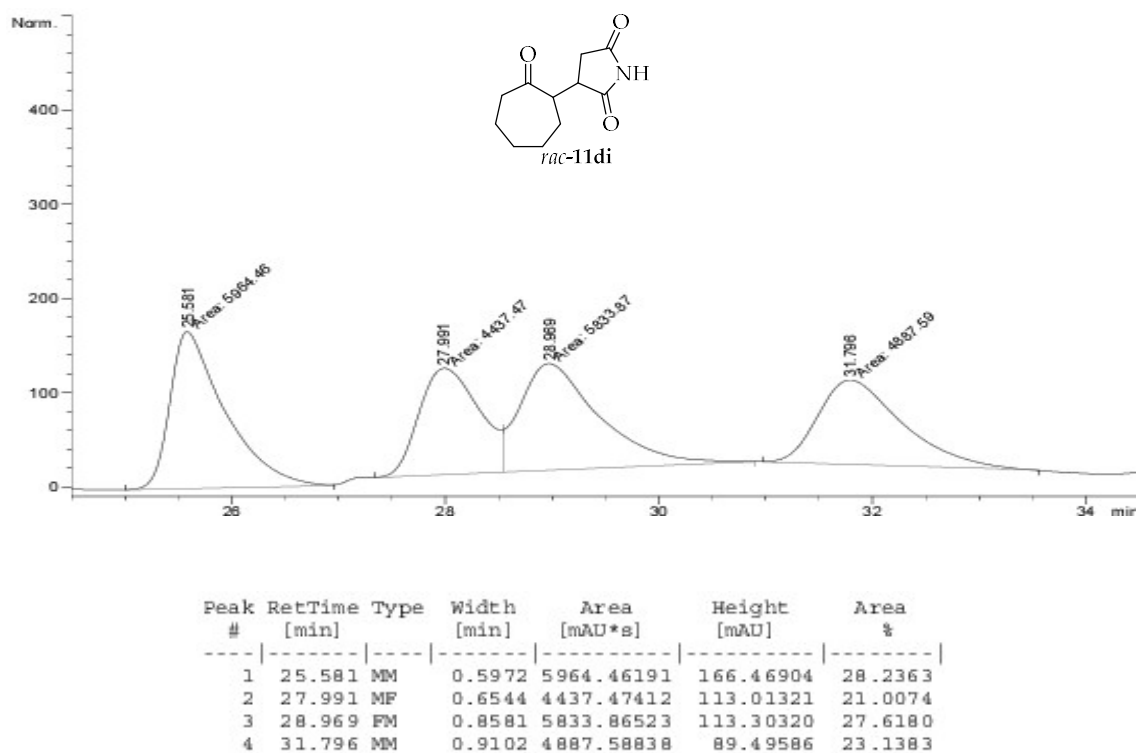


Figure S81. HPLC chromatogram of compound *rac*-11di.

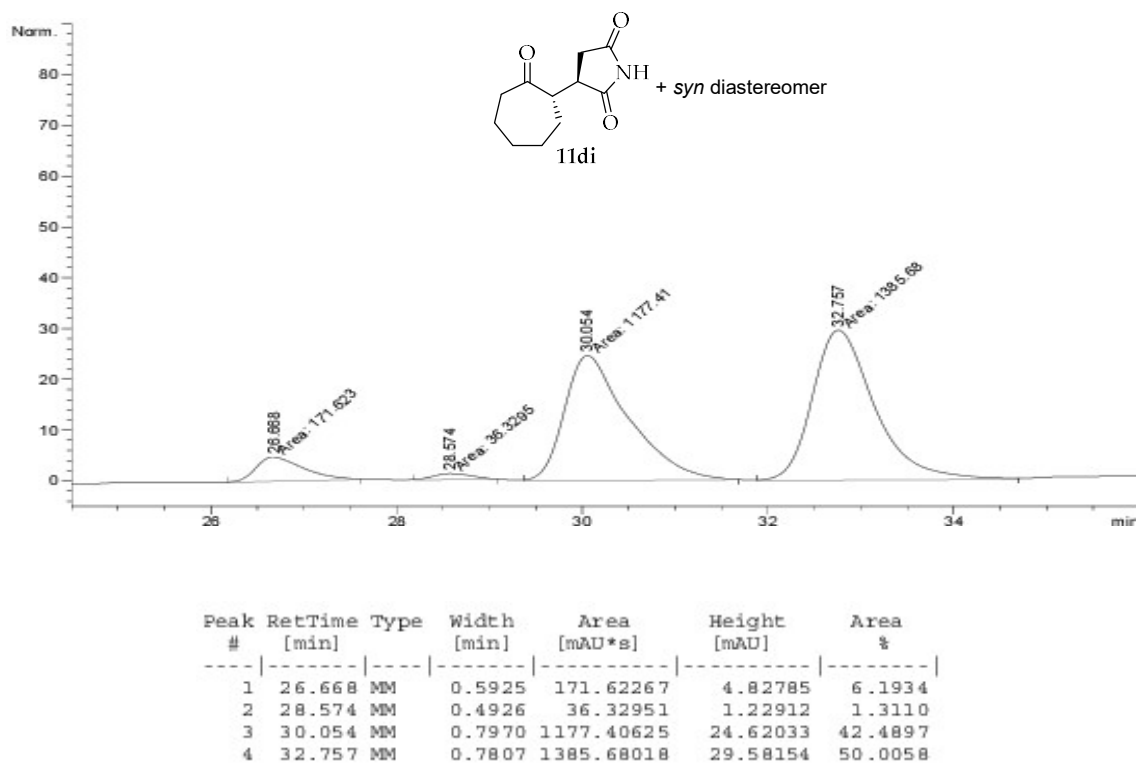


Figure S82. HPLC chromatogram of compound 11di.

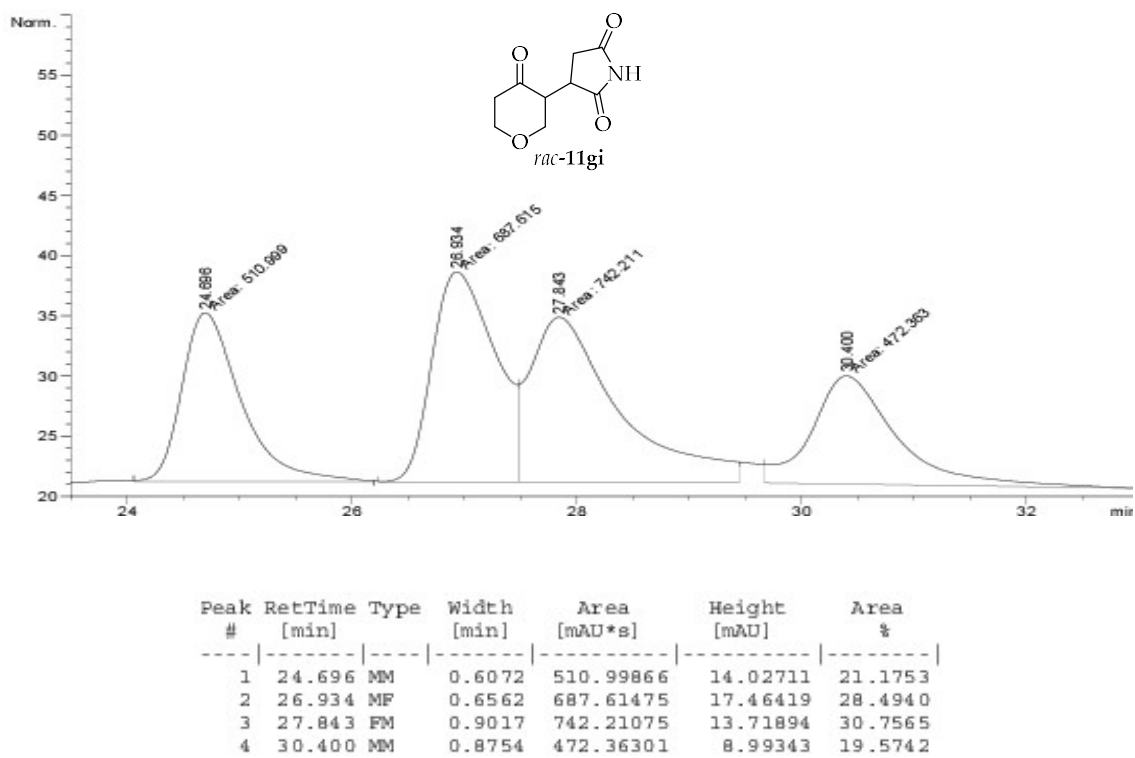


Figure S83. HPLC chromatogram of compound *rac*-11gi.

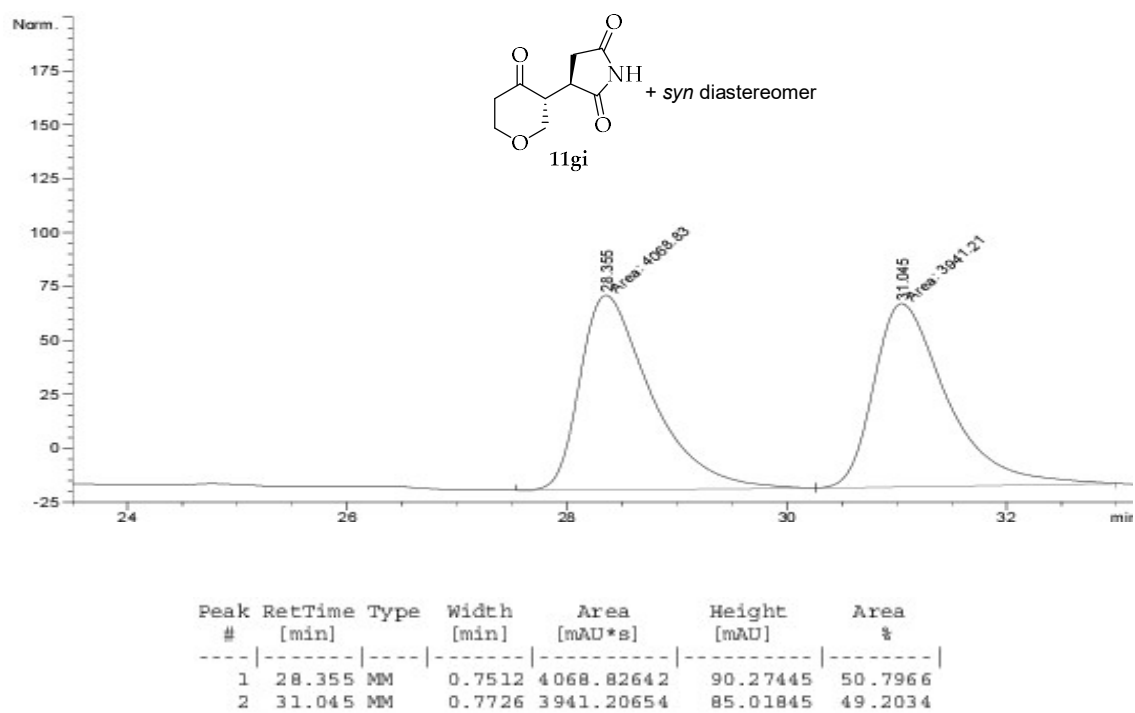


Figure S84. HPLC chromatogram of compound 11gi.