

## Supplementary data

Diastereomers **4a**; Yield 72%.

**4'a. 51%** Oil; IR (neat): 1370, 1552, 3364  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 1.96-2.08 (m, 1H), 2.10-2.24 (m, 2H), 2.51-2.65 (m, 1H), 4.4 (dd, 1H,  $J = 11.6, 4.7$  Hz), 4.76-4.83 (m, 1H), 4.91 (d, 1H,  $J = 4.7$  Hz), 5.38-5.45 (m, 1H), 5.66 (dd, 1H,  $J = 11.6, 3.1$  Hz), 6.25-6.28 (m, 1H), 6.35 (dd, 1H,  $J = 3.4, 1.8$  Hz), 7.46 (dd, 1H,  $J = 1.8, 0.9$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 23.3, 27.7, 36.3, 67.6, 86.1, 87.2, 107.6, 111.4, 143.1, 151.5. Anal. Calcd. for  $\text{C}_{10}\text{H}_{12}\text{N}_2\text{O}_6$  (256.21): C, 46.88; H, 4.72; N, 10.93; Found: C, 46.99; H, 4.84; N, 10.76.

**4''a. 49%** Oil; IR (neat): 1369, 1555, 3368  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 1.90-2.24 (m, 2H), 2.36-2.52 (m, 2H), 4.06-4.34 (m, 2H), 5.04 (d, 1H,  $J = 6.6$  Hz), 5.31-5.39 (m, 1H), 5.46 (dd, 1H,  $J = 12.1, 9.5$  Hz), 6.26-6.39 (m, 2H), 7.48-7.52 (m, 1H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 27.7, 28.7, 42.4, 72.3, 86.1, 91.3, 109.1, 111.5, 144.1, 149.4. Anal. Calcd. for  $\text{C}_{10}\text{H}_{12}\text{N}_2\text{O}_6$  (256.21): C, 46.88; H, 4.72; N, 10.93; Found: C, 47.06; H, 4.91; N, 10.70.

Diastereomers **4b**; Yield 71%.

**4'b. 61%** Oil; IR (neat): 1378, 1559, 3359  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 1.99-2.37 (m, 3H), 2.50-2.78 (m, 1H), 4.29 (dd, 1H,  $J = 12.4, 4.7$  Hz), 4.84-4.95 (m, 2H), 5.31-5.40 (m, 1H), 5.89 (dd, 1H,  $J = 12.4, 2.9$  Hz), 7.21-7.41 (m, 5H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 23.5, 27.5, 40.6, 67.6, 85.9, 89.4, 127.5, 128.1, 129.2, 137.3. Anal. Calcd. for  $\text{C}_{12}\text{H}_{14}\text{N}_2\text{O}_5$  (266.25): C, 54.13; H, 5.30; N, 10.52; Found: C, 53.68; H, 5.10; N, 10.79.

**4''b. 39%** Oil; IR (neat): 1376, 1550, 3363  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 2.02-2.20 (m, 2H), 2.41-2.48 (m, 2H), 3.97 (dd, 1H,  $J = 12.2, 4.1$  Hz), 4.21-4.32 (m, 1H), 5.00 (d, 1H,  $J = 6.2$  Hz), 5.20-5.25 (m, 1H), 5.69 (dd, 1H,  $J = 12.2, 9.7$  Hz), 7.22-7.39 (m, 5H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 27.6, 28.4, 47.4, 72.0, 88.2, 90.7, 128.1, 128.7, 129.1, 134.7. Anal. Calcd. for  $\text{C}_{12}\text{H}_{14}\text{N}_2\text{O}_5$  (266.25): C, 54.13; H, 5.30; N, 10.52; Found: C, 53.75; H, 5.51; N, 10.26.

Diastereomers **4c**; Yield 83%.

**4'c. 15%** Oil; IR (neat): 1373, 1552, 3362  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.89 (t, 3H,  $J = 6.7$  Hz), 1.12-1.58 (m, 4H), 1.82-2.16 (m, 3H), 2.27-2.49 (m, 1H), 2.70-2.88 (m, 1H), 2.98-3.13 (bs, 1H), 4.47-4.57 (m, 1H), 5.01-5.12 (m, 1H), 5.19 (dd, 1H,  $J = 11.7, 2.5$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 13.9, 19.8, 23.3, 26.5, 30.3, 35.3, 67.0, 84.4, 88.8. Anal. Calcd. for  $\text{C}_9\text{H}_{16}\text{N}_2\text{O}_5$  (232.23): C, 46.55; H, 6.94; N, 12.06; Found: C, 46.37; H, 7.13; N, 12.24.

**4''c. 85%** Oil; IR (neat): 1372, 1554, 3361  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.87 (t, 3H,  $J = 6.7$  Hz), 1.04-1.57 (m, 4H), 1.65-2.54 (m, 5H), 3.04-3.35 (bs, 1H), 3.94-4.22 (m, 1H), 4.84-5.06 (m, 2H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 13.9, 19.9, 23.3, 27.8, 30.5, 30.6, 41.5, 71.7, 88.2, 93.1. Anal. Calcd. for  $\text{C}_9\text{H}_{16}\text{N}_2\text{O}_5$  (232.23): C, 46.55; H, 6.94; N, 12.06; Found: C, 46.89; H, 6.68; N, 11.87.

Diastereomers **4d**; Yield 65%.

**4'd. 20%** Oil; IR (neat): 1371, 1551, 3366  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.84 (d, 3H,  $J = 7.3$  Hz), 1.01 (d, 3H,  $J = 7.0$  Hz), 1.72-1.87 (m, 1H), 1.90-2.11 (m, 3H), 2.16-2.35 (m, 2H), 3.50-3.64 (bs, 1H), 4.00-4.19 (m, 1H), 4.98-5.05 (m, 1H), 5.29 (dd, 1H,  $J = 11.9, 9.5$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 17.2, 20.1, 27.8, 28.2, 28.3, 46.8, 72.4, 81.8, 91.2. Anal. Calcd. for  $\text{C}_9\text{H}_{16}\text{N}_2\text{O}_5$  (232.23): C, 46.55; H, 6.94; N, 12.06; Found: C, 46.81; H, 7.11; N, 11.89.

**4''d. 80%** Oil; IR (neat): 1370, 1550, 3360  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.85 (d, 3H,  $J = 7.3$  Hz), 1.04 (d, 3H,  $J = 7.0$  Hz), 1.78-1.89 (m, 1H), 1.90-2.04 (m, 2H), 2.07-2.19 (m, 1H), 2.30-2.40 (m, 1H), 2.69-2.78 (m, 1H), 2.94-3.02 (bs, 1H), 4.48-4.55 (m, 1H), 5.06-5.12 (m, 1H), 5.55 (dd, 1H,  $J = 12.2, 2.4$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 17.5, 19.9, 24.1, 26.4, 27.8, 40.4, 67.4, 83.1, 87.2. Anal. Calcd. for  $\text{C}_9\text{H}_{16}\text{N}_2\text{O}_5$  (232.23): C, 46.55; H, 6.94; N, 12.06; Found: C, 46.90; H, 7.19; N, 11.95.

Diastereomers **4e**; Yield 87%.

**4'e. 53%** Oil; IR (neat): 1370, 1552, 3363  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.86 (t, 3H,  $J = 7.0$  Hz), 1.16-1.48 (m, 16H), 1.91-2.12 (m, 2H), 2.31-2.46 (m, 1H), 2.65-2.88 (m, 1H), 4.50-4.54 (m, 1H), 5.03-5.09 (m, 1H), 5.20 (dd, 1H,  $J = 11.7, 2.6$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 14.3, 22.8, 23.3, 26.5, 28.2, 29.3, 29.4, 29.5, 32.0, 35.7, 67.0, 84.4, 88.9. Anal. Calcd. for  $\text{C}_{14}\text{H}_{26}\text{N}_2\text{O}_5$  (302.37): C, 55.61; H, 8.67; N, 9.26; Found: C, 55.84; H, 8.85; N, 9.11.

**4''e. 47%** Oil; IR (neat): 1373, 1555, 3375  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.87 (t, 3H,  $J = 7.0$  Hz), 1.05-1.54 (m, 16H), 1.81-2.16 (m, 2H), 2.22-2.54 (m, 2H), 4.02-4.18 (m, 1H), 4.95-5.04 (m, 2H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 14.2, 22.8, 26.6, 27.7, 27.8, 28.3, 29.2, 29.3, 29.4, 31.9, 41.7, 71.7, 83.1, 93.0. Anal. Calcd. for  $\text{C}_{14}\text{H}_{26}\text{N}_2\text{O}_5$  (302.37): C, 55.61; H, 8.67; N, 9.26; Found: C, 55.90; H, 8.44; N, 9.47.

Diastereomers **4f**; Yield 70%.

**4'f. 51%** Solid: m.p. 137-139°C; IR (nujol): 1365, 1548, 3366  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 2.03-2.17 (m, 1H), 2.23-2.34 (m, 1H), 2.37-2.50 (m, 1H), 2.53-2.68 (m, 1H), 4.71 (dd, 1H,  $J = 12.2, 4.6$  Hz), 4.87-4.93 (m, 1H), 5.21 (d, 1H,  $J = 6.4$  Hz), 5.45-5.50 (m, 1H), 5.94 (dd, 1H,  $J = 12.2, 3.3$  Hz), 7.51-7.56 (m, 1H), 7.60-7.73 (m, 2H), 8.02-8.10 (m, 1H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 23.9, 28.0, 36.9, 68.3, 86.8, 88.0, 126.3, 128.2, 130.3, 131.6, 134.6, 151.6. Anal. Calcd. for  $\text{C}_{12}\text{H}_{13}\text{N}_3\text{O}_7$  (311.25): C, 46.31; H, 4.21; N, 13.50; Found: C, 46.58; H, 4.47; N, 13.19.

**4''f. 49%** Solid: m.p. 165-167°C; IR (nujol): 1373, 1558, 3373  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 2.12-2.28 (m, 2H), 2.47-2.59 (m, 2H), 4.28-4.42 (m, 2H), 5.12 (d, 1H,  $J = 6.1$  Hz), 5.41 (q, 1H,  $J = 3.6$  Hz), 5.69 (dd, 1H,  $J = 12.2, 9.5$  Hz), 7.61-7.70 (m, 2H), 7.72-7.80 (m, 1H), 8.02-8.08 (m, 1H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 27.9, 29.3, 43.2, 72.4, 87.0, 91.3, 126.3, 128.5, 129.4, 131.0, 134.6, 150.9. Anal. Calcd. for  $\text{C}_{12}\text{H}_{13}\text{N}_3\text{O}_7$  (311.25): C, 46.31; H, 4.21; N, 13.50; Found: C, 46.39; H, 4.55; N, 13.69.

Diastereomers **4g**; Yield 76%.

**4'g. 54%** Solid: m.p. 130-132°C; IR (nujol): 1365, 1547, 3370  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CD}_3\text{COCD}_3$ , ppm) 1.95-2.14 (m, 3H), 2.52-2.68 (m, 1H), 3.75 (s, 3H), 4.24 (dd, 1H,  $J = 12.2, 4.6$  Hz), 4.80-4.88 (m, 2H), 5.27 (dt, 1H,  $J = 4.88, 2.1$  Hz), 5.84 (dd, 1H,  $J = 12.2, 2.8$  Hz), 6.87 (d, 2H,  $J = 3.0$  Hz), 7.26 (d, 2H,  $J = 2.9$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CD}_3\text{COCD}_3$ , ppm) 23.7, 27.7, 40.1, 55.1, 67.8, 86.4, 89.7, 114.7, 128.9, 129.1, 159.8. Anal. Calcd. for  $\text{C}_{13}\text{H}_{16}\text{N}_2\text{O}_6$  (296.28): C, 52.70; H, 5.44; N, 9.46; Found: C, 52.99; H, 5.62; N, 9.23.

**4''g. 46%** Solid: m.p. 56-58°C; IR (nujol): 1368, 1550, 3365  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CD}_3\text{COCD}_3$ , ppm) 2.02-2.19 (m, 2H), 2.34-2.43 (m, 2H), 3.76 (s, 3H), 3.90 (dd, 1H,  $J = 12.2, 4.6$  Hz), 4.18-4.29 (m, 1H), 4.94 (d, 1H,  $J = 6.7$  Hz), 5.16 (q, 1H,  $J = 4.3$  Hz), 5.64 (dd, 1H,  $J = 12.2, 9.5$  Hz), 6.88 (d, 2H,  $J = 3.0$  Hz), 7.25 (d, 2H,  $J = 2.8$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CD}_3\text{COCD}_3$ , ppm) 28.1, 29.0, 47.4, 55.4, 72.5, 88.9, 91.6, 115.0, 127.0, 129.9, 160.6. Anal. Calcd. for  $\text{C}_{13}\text{H}_{16}\text{N}_2\text{O}_6$  (296.28): C, 52.70; H, 5.44; N, 9.46; Found: C, 52.51; H, 5.70; N, 9.58.

Diastereomers **4h**; Yield 71%.

**4'h. 56%** Oil; IR (neat): 1372, 1556, 3368  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 2.01-2.12 (m, 1H), 2.15-2.32 (m, 2H), 2.60-2.73 (m, 1H), 4.47 (dd, 1H,  $J = 12.2, 4.6$  Hz), 4.86-4.94 (m, 1H), 4.97 (d, 1H,  $J = 4.6$  Hz), 5.37-5.43 (m, 1H), 5.96 (dd, 1H,  $J = 12.2, 3.1$  Hz), 7.61-7.79 (m, 4H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 24.0, 27.9, 41.0, 68.1, 86.1, 89.5, 123.3, 126.4, 126.5, 126.6, 126.9, 129.0, 129.9, 130.4, 142.6. Anal. Calcd. for  $\text{C}_{13}\text{H}_{13}\text{F}_3\text{N}_2\text{O}_5$  (334.25): C, 46.71; H, 3.92; N, 8.38; Found: C, 46.92; H, 4.13; N, 8.11.

**4''h. 44%** Oil; IR (neat): 1366, 1549, 3365  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 2.00-2.28 (m, 2H), 2.41-2.54 (m, 2H), 4.18 (dd, 1H,  $J = 12.3, 4.2$  Hz), 4.24-4.39 (m, 1H), 5.09 (d, 1H,  $J = 6.6$  Hz),

5.32 (q, 1H,  $J = 3.7$  Hz), 5.75 (dd, 1H,  $J = 12.1, 9.5$  Hz), 7.60-7.80 (m, 4H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 28.3, 29.2, 47.8, 72.6, 88.5, 91.2, 122.4, 126.6, 127.7, 126.8, 126.9, 127.7, 129.8, 130.1, 140.1. Anal. Calcd. for  $\text{C}_{13}\text{H}_{13}\text{F}_3\text{N}_2\text{O}_5$  (334.25): C, 46.71; H, 3.92; N, 8.38; Found: C, 46.43; H, 4.15; N, 8.18.

Diastereomers **4i**; Yield 71%.

**4'i**. 30% Oil; IR (neat): 1368, 1557, 3008, 3543  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.89 (t, 3H,  $J = 6.7$  Hz), 1.18-1.48 (m, 9H), 1.87-2.20 (m, 6H), 2.28-2.49 (m, 1H), 2.75-2.93 (m, 2H), 4.50-4.58 (m, 1H), 5.02-5.08 (m, 1H), 5.21 (dd, 1H,  $J = 12.2, 4.2$  Hz), 5.27-5.50 (m, 2H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 14.2, 22.7, 23.2, 24.0, 26.5, 27.4, 28.0, 29.5, 31.7, 35.0, 67.0, 84.3, 88.7, 127.0, 132.4. Anal. Calcd. for  $\text{C}_{15}\text{H}_{26}\text{N}_2\text{O}_5$  (314.38): C, 57.31; H, 8.34; N, 8.91; Found: C, 57.69; H, 8.09; N, 9.10.

**4''i**. 70% Oil; IR (neat): 1371, 1550, 3006, 3538  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.90 (t, 3H,  $J = 6.7$  Hz), 1.12-1.57 (m, 9H), 1.88-2.23 (m, 7H), 2.25-2.55 (m, 2H), 4.03-4.20 (m, 1H), 4.92-5.09 (m, 2H), 5.11-5.28 (m, 1H), 5.37-5.52 (m, 1H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 14.3, 22.7, 24.0, 27.4, 27.7, 27.8, 28.0, 29.5, 31.7, 41.0, 71.8, 83.0, 92.9, 126.7, 132.7. Anal. Calcd. for  $\text{C}_{15}\text{H}_{26}\text{N}_2\text{O}_5$  (314.38): C, 57.31; H, 8.34; N, 8.91; Found: C, 57.59; H, 8.61; N, 8.75.

Diastereomers **4j**; Yield 84%.

**4'j**. 22% Solid; m.p. 139-140°C; IR (nujol): 1367, 1549, 3370  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.84-0.97 (m, 1H), 1.00-1.14 (m, 2H), 1.16-1.35 (m, 2H), 1.38-1.49 (m, 1H), 1.53-1.84 (m, 5H), 1.92-2.03 (m, 2H), 2.06-2.17 (m, 1H), 2.31-2.43 (m, 1H), 2.68-2.86 (m, 2H), 4.50-4.55 (m, 1H), 5.03-5.09 (m, 1H), 5.60 (dd, 1H,  $J = 12.4, 2.2$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 24.2, 26.2, 26.3, 26.9, 27.0, 28.2, 30.4, 38.6, 40.4, 67.4, 83.5, 86.7. Anal. Calcd. for  $\text{C}_{12}\text{H}_{20}\text{N}_2\text{O}_5$  (272.30): C, 52.93; H, 7.40; N, 10.29; Found: C, 53.14; H, 7.63; N, 9.98.

**4''j**. 78% Solid; m.p. 164-164°C; IR (nujol): 1371, 1552, 3369  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 0.77-0.89 (m, 1H), 1.01-1.46 (m, 5H), 1.49-1.82 (m, 6H), 1.87-2.15 (m, 3H), 2.16-2.36 (m, 2H), 4.10-4.18 (m, 1H), 4.98-5.03 (m, 1H), 5.38 (dd, 1H,  $J = 12.4, 9.5$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 26.2, 26.8, 26.9, 27.1, 27.8, 28.4, 30.8, 38.8, 46.8, 72.7, 82.0, 90.6. Anal. Calcd. for  $\text{C}_{12}\text{H}_{20}\text{N}_2\text{O}_5$  (272.30): C, 52.93; H, 7.40; N, 10.29; Found: C, 53.29; H, 7.71; N, 10.01.

Diastereomers **4k**; Yield 68%.

**4'k**. 53% Waxy Solid; IR (nujol): 1366, 1550, 3372  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 1.92-2.01 (m, 1H), 2.09-2.24 (m, 2H), 2.45-2.63 (m, 1H), 4.39 (dd, 1H,  $J = 12.3, 4.6$  Hz), 4.75-4.79 (m, 1H), 4.80-4.83 (s, 1H), 5.24-5.29 (m, 1H), 5.98 (dd, 1H,  $J = 9.6, 3.3$  Hz), 7.54 (t, 1H,  $J = 7.7$  Hz), 7.71 (d, 1H,  $J = 8.7$  Hz), 8.12 (d, 1H,  $J = 8.2$  Hz), 8.24 (t, 1H,  $J = 2.3$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 23.1, 26.8, 40.2, 67.1, 85.2, 88.4, 122.3, 122.5, 129.9, 133.3, 139.2, 148.5. Anal. Calcd. for  $\text{C}_{12}\text{H}_{13}\text{N}_3\text{O}_7$  (311.25): C, 46.31; H, 4.21; N, 13.50; Found: C, 46.61; H, 4.45; N, 13.19.

**4''k**. 47% Waxy Solid; IR (nujol): 1372, 1557, 3370  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 1.94-2.06 (m, 1H), 2.08-2.25 (m, 2H), 2.37-2.46 (m, 1H), 3.00-3.10 (bs, 1H), 3.81 (dd, 1H,  $J = 11.5, 3.6$  Hz), 4.10-4.18 (m, 1H), 4.97-5.03 (m, 1H), 5.74 (dd, 1H,  $J = 12.1, 9.4$  Hz), 7.50 (t, 1H,  $J = 8.7$  Hz), 7.60 (d, 1H,  $J = 7.9$  Hz), 8.08-8.17 (m, 2H);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CDCl}_3$ , ppm) 27.2, 27.7, 46.6, 71.3, 87.1, 90.0, 122.9, 123.2, 130.0, 133.8, 136.5, 148.4. Anal. Calcd. for  $\text{C}_{12}\text{H}_{13}\text{N}_3\text{O}_7$  (311.25): C, 46.31; H, 4.21; N, 13.50; Found: C, 46.72; H, 4.08; N, 13.27.

Diastereomers **4l**; Yield 70%.

**4'l**. 50% Oil; IR (neat): 1367, 1547, 2243, 3370  $\text{cm}^{-1}$ ;  $^1\text{H}$  NMR  $\delta$  ( $\text{CD}_3\text{COCD}_3$ , ppm) 2.00-2.08 (m, 1H), 2.16-2.24 (m, 2H), 2.58-2.69 (m, 1H), 4.45 (dd, 1H,  $J = 12.5, 4.7$  Hz), 4.87-4.92 (m, 1H), 4.99 (d, 1H,  $J = 4.6$  Hz), 5.39 (dt, 1H,  $J = 4.7, 2.3$  Hz), 5.95 (dd, 1H,  $J = 11.8, 3.2$  Hz), 7.63 (d, 2H,  $J = 8.7$  Hz), 7.78 (d, 2H,  $J = 8.6$  Hz);  $^{13}\text{C}$  NMR  $\delta$  ( $\text{CD}_3\text{COCD}_3$ , ppm) 23.2, 27.1, 40.4, 67.3, 85.1, 88.6,

111.6, 118.1, 128.4, 132.6, 142.7. Anal. Calcd. for  $C_{13}H_{13}N_3O_5$  (291.26): C, 53.61; H, 4.50; N, 14.43; Found: C, 53.88; H, 4.21; N, 14.58.

**4''i. 50%** Oil; IR (neat): 1365, 1552, 2238, 3373  $cm^{-1}$ ;  $^1H$  NMR  $\delta$  ( $CD_3COCD_3$ , ppm) 2.02-2.07 (m, 1H), 2.15-2.24 (m, 1H), 2.42-2.49 (m, 2H), 4.17 (dd, 1H,  $J = 11.6, 3.6$  Hz), 4.23-4.32 (m, 1H), 5.08 (d, 1H,  $J = 7.3$  Hz), 5.28-5.32 (m, 1H), 5.71 (dd, 1H,  $J = 12.4, 9.5$  Hz), 7.60 (d, 2H,  $J = 7.6$  Hz), 7.80 (d, 2H,  $J = 8.4$  Hz);  $^{13}C$  NMR  $\delta$  ( $CD_3COCD_3$ , ppm) 27.4, 28.1, 46.9, 71.6, 87.3, 90.1, 112.4, 117.9, 129.1, 132.8, 139.8. Anal. Calcd. for  $C_{13}H_{13}N_3O_5$  (291.26): C, 53.61; H, 4.50; N, 14.43; Found: C, 53.79; H, 4.74; N, 14.17.

Diastereomers **4m**; Yield 74%.

**4'm. 35%** Oil; IR (neat): 1372, 1554, 3367  $cm^{-1}$ ;  $^1H$  NMR  $\delta$  ( $CDCl_3$ , ppm) 1.31-1.88 (m, 2H), 1.91-2.17 (m, 3H), 2.26-2.43 (m, 1H), 2.50-2.71 (m, 2H), 2.73-2.93 (m, 2H), 4.51-4.57 (m, 1H), 5.05-5.13 (m, 1H), 5.23 (dd, 1H,  $J = 11.7, 2.6$  Hz), 7.10-7.19 (m, 5H);  $^{13}C$  NMR  $\delta$  ( $CDCl_3$ , ppm) 23.2, 26.7, 30.0, 32.7, 35.0, 67.1, 84.4, 88.7, 126.7, 128.4, 128.9, 140.1. Anal. Calcd. for  $C_{14}H_{18}N_2O_5$  (294.31): C, 57.14; H, 6.16; N, 9.52; Found: C, 57.41; H, 6.34; N, 9.28.

**4''m. 65%** Oil; IR (neat): 1373, 1555, 3375  $cm^{-1}$ ;  $^1H$  NMR  $\delta$  ( $CDCl_3$ , ppm) 1.59-2.12 (m, 5H), 2.25-2.91 (m, 5H), 4.00-4.19 (m, 1H), 4.94-5.10 (m, 2H), 7.06-7.17 (m, 5H);  $^{13}C$  NMR  $\delta$  ( $CDCl_3$ , ppm) 27.6, 27.7, 29.8, 32.5, 40.8, 71.6, 83.1, 92.8, 126.8, 128.3, 128.9, 139.6. Anal. Calcd. for  $C_{14}H_{18}N_2O_5$  (294.31): C, 57.14; H, 6.16; N, 9.52; Found: C, 57.39; H, 6.41; N, 9.19.

Diastereomers **4n**; Yield 71%.

**4'n. 63%** Waxy Solid; IR (nujol): 1365, 1557, 3372  $cm^{-1}$ ;  $^1H$  NMR  $\delta$  ( $CDCl_3$ , ppm) 1.90-1.98 (m, 1H), 2.03-2.22 (m, 2H), 2.42-2.53 (m, 1H), 4.30 (dd, 1H,  $J = 11.7, 5.0$  Hz), 4.68-4.75 (m, 1H), 5.05-5.18 (m, 1H), 5.20-5.25 (m, 1H), 5.88 (dd, 1H,  $J = 11.7, 2.9$  Hz), 7.09 (dd, 1H,  $J = 7.2, 5.8$  Hz), 7.21 (d, 1H,  $J = 8.0$  Hz), 7.59 (dt, 1H,  $J = 8.0, 2.3$  Hz), 8.38 (d, 1H,  $J = 3.2$  Hz);  $^{13}C$  NMR  $\delta$  ( $CDCl_3$ , ppm) 23.5, 27.4, 42.2, 67.3, 85.2, 87.5, 122.4, 122.9, 137.2, 149.6, 155.9. Anal. Calcd. for  $C_{11}H_{13}N_3O_5$  (267.24): C, 49.44; H, 4.90; N, 15.72; Found: C, 49.72; H, 5.14; N, 15.39.

**4''n. 37%** Solid: m.p. 127-129°C; IR (nujol): 1370, 1559, 3373  $cm^{-1}$ ;  $^1H$  NMR  $\delta$  ( $CDCl_3$ , ppm) 2.07-2.20 (m, 2H), 2.38-2.45 (m, 2H), 4.17 (dd, 1H,  $J = 11.7, 3.5$  Hz), 4.19-4.30 (m, 1H), 4.98 (d, 1H,  $J = 7.0$  Hz), 5.38-5.42 (m, 1H), 5.77 (dd, 1H,  $J = 12.5, 10.2$  Hz), 7.25-7.30 (m, 1H), 7.45 (d, 1H,  $J = 8.0$  Hz), 7.78 (dt, 1H,  $J = 8.0, 2.3$  Hz), 8.47 (d, 1H,  $J = 5.8$  Hz);  $^{13}C$  NMR  $\delta$  ( $CDCl_3$ , ppm) 27.1, 28.6, 48.2, 71.8, 86.3, 89.6, 122.7, 123.1, 137.1, 149.4, 154.8. Anal. Calcd. for  $C_{11}H_{13}N_3O_5$  (267.24): C, 49.44; H, 4.90; N, 15.72; Found: C, 49.64; H, 4.68; N, 15.53.

Diastereomers **4o**; Yield 72%.

**4'o. 48%** Solid: m.p. 168-169°C; IR (nujol): 1371, 1557, 3390  $cm^{-1}$ ;  $^1H$  NMR  $\delta$  ( $CDCl_3$ , ppm) 1.91-1.99 (m, 1H), 2.01-2.09 (m, 1H), 2.11-2.24 (m, 1H), 2.39-2.53 (m, 1H), 2.81-3.25 (bs, 1H), 3.76 (s, 3H), 4.03 (dd, 1H,  $J = 12.4, 4.6$  Hz), 4.68-4.73 (m, 1H), 4.99-5.05 (m, 1H), 5.74-6.00 (bs, 1H), 5.82 (dd, 1H,  $J = 12.4, 3.0$  Hz), 6.64-6.79 (m, 3H);  $^{13}C$  NMR  $\delta$  ( $CDCl_3$ , ppm) 23.3, 26.7, 40.5, 56.0, 67.5, 86.1, 88.7, 111.3, 114.0, 118.7, 127.9, 146.0, 146.7. Anal. Calcd. for  $C_{13}H_{16}N_2O_7$  (312.28): C, 50.00; H, 5.16; N, 8.97; Found: C, 50.28; H, 4.95; N, 9.11.

**4''o. 52%** Oil; IR (neat): 1366, 1556, 3392  $cm^{-1}$ ;  $^1H$  NMR  $\delta$  ( $CDCl_3$ , ppm) 1.78-2.01 (m, 2H), 2.05-2.17 (m, 1H), 2.25-2.34 (m, 1H), 3.43 (dd, 1H,  $J = 11.7, 3.8$  Hz), 3.61-3.67 (bs, 1H), 3.64 (s, 3H), 3.91-4.00 (m, 1H), 4.78-4.84 (m, 1H), 5.50 (dd, 1H,  $J = 12.5, 9.5$  Hz), 6.48-6.72 (m, 3H), 7.20-8.00 (bs, 1H);  $^{13}C$  NMR  $\delta$  ( $CDCl_3$ , ppm) 27.4, 27.7, 46.8, 55.6, 71.5, 87.4, 90.3, 111.3, 114.7, 118.7, 126.0, 146.2, 147.3. Anal. Calcd. for  $C_{13}H_{16}N_2O_7$  (312.28): C, 50.00; H, 5.16; N, 8.97; Found: C, 50.35; H, 5.33; N, 8.69.