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Cerium Chloride ($CeCl_3 \cdot 7H_2O$) as a Highly Efficient Catalyst for One-Pot Three-Component Mannich Reaction

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*1,3-Diphenyl-3-p-tolylamino-propan-1-one, (**1**)*

A white solid; R_f = 0.70 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3383 (NH), 1698 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 2.47 (s, 3H, $-CH_3$), 3.62-3.45 (m, 2H), 4.47 (t, 1H), 6.91 (d, *J* 8.5 Hz, 2H, Ar-H), 6.97 (d, *J* 7.9, 2H, Ar-H), 7.07-7.03 (m, 2H, Ar-H), 7.15 (d, *J* 6.3 Hz, 2H, Ar-H), 7.32-7.28 (m, 1H, Ar-H), 7.49-7.46 (m, 2H, Ar-H), 7.69-7.66 (m, 1H, Ar-H), 7.83 (d, *J* 7.9 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 21.3, 45.5, 56.7, 113.1, 120.5, 122.5, 128.9, 128.3, 130.4, 133.1, 135.3, 144.6, 196.6. *m/z* (GC-MS, HRMS): 313.362 (M^+). Anal. Calc. for $C_{22}H_{21}NO$: C, 83.78; H, 6.71; N, 4.44. Found: C, 82.98; H, 6.81; N, 4.42.

*1,3-Diphenyl-3-phenylamino-propan-1-one, (**2**)*

A white solid; R_f = 0.68 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3386 (NH), 1671 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.47-3.32(m, 2H), 4.98 (t, 1H), 6.51 (d, *J* 8.0 Hz, 2H, Ar-H), 6.63-6.69 (m, 1H, Ar-H). 7.04-7.00 (m, 2H, Ar-H), 7.20(d, *J* 6.5 Hz, 2H, Ar-H), 7.26-7.23(m, 1H, Ar-H), 7.41-7.38 (m, 2H, Ar-H), 7.51-7.45 (m, 1H, Ar-H), 7.57-7.53(m, 2H, Ar-H), 7.84 (d, *J* 7.8 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 46.3, 54.2, 115.3, 119.4, 126.4, 128.6, 128.8, 129.5, 132.3, 135.8, 146.2, 197.0. *m/z* (GC-MS, HRMS): 301.368 (M^+). Anal. Calc. for $C_{20}H_{18}NO$: C, 83.30; H, 6.29; N, 4.86. Found: C, 82.98; H, 6.15; N, 4.23.

*1-Phenyl-3-phenylamino-3-p-tolyl-propan-1-one, (**3**)*

A white solid; R_f = 0.61 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3387 (NH), 1667 (CO). ^1H NMR (300 MHz, TMS , $CDCl_3$): δ 2.27 (s, 3H, $-CH_3$), 3.45-3.31 (m, 2H), 4.82 (t, 1H), 6.75 (d, *J* 8.1 Hz, 2H, Ar-H), 6.83-6.91 (m, 1H, Ar-H), 7.08-7.04 (m, 2H, Ar-H), 7.10 (d, *J* 7.8 Hz, 2H, Ar-H), 7.21 (d, *J* 7.38-7.27 (4 Hz, 2H, Ar-H), 7.41-7.36 (m, 2H, Ar-H), 7.49-7.41 (m, 1H, Ar-H), 7.89 (d, *J* 8.1 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 21.7, 42.7, 54.5, 111.4, 119.5, 123.6, 127.4, 128.6, 131.9, 132.3, 135.4, 143.2, 190.6. *m/z* (GC-MS, HRMS): 317.402 (M^+). Anal. Calc. for $C_{22}H_{21}NO$: C, 83.78; H, 6.71; N, 4.44. Found: C, 82.85; H, 6.56; N, 4.37.

*3-(4-Methoxy-phenylamino)-1,3-diphenyl-propan-1-one, (**4**)*

A white solid; R_f = 0.64 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3385 (NH), 1675 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.44-3.39 (m, 2H), 3.58 (s, 3H, $-OCH_3$), 4.86 (t, 1H), 6.51 (d, *J* 8.6 Hz, 2H, Ar-H), 6.71 (d, *J* 8.9, 2H, Ar-H), 6.96-7.05 (m, 1H, Ar-H), 7.15 (d, *J* 8.3 Hz, 2H, Ar-H), 7.30-7.24 (m, 2H, Ar-H), 7.41-7.38 (m, 2H, Ar-H), 7.53-7.33 (m, 1H, Ar-H), 7.81 (d, *J* 7.5 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 46.2, 55.3, 58.2, 115.2, 122.7, 126.2, 127.1, 128.6, 128.8, 128.9, 129.3, 132.5, 138.5, 141.7, 1510.2, 195.6. *m/z* (GC-MS, HRMS): 332.473 (M^+). Anal. Calc. for $C_{22}H_{21}NO_2$: C, 79.73; H, 6.39; N, 4.23. Found: C, 79.58; H, 6.73; N, 4.37.

*3-(4-Nitro-phenylamino)-1,3-diphenyl-propan-1-one, (**5**)*

A white solid; R_f = 0.48 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3364 (NH), 1627 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.67 (d, *J* 6.8 Hz, 2H), 5.12 (t, 1H), 6.37 (brs, 2H, Ar-H), 6.64 (d, *J* 6.4, 2H, Ar-H), 7.24-7.20 (m, 1H, Ar-H), 7.38-7.29 (m, 2H, Ar-H), 7.37 (d, *J* 7.7 Hz, 2H, Ar-H), 7.67-7.59 (m, 1H, Ar-H), 8.01 (d, *J* 7.2 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 45.2, 53.1, 111.7, 125.9, 126.1, 127.4, 128.9, 128.2, 128.1, 130.5, 132.8, 136.7, 138.6, 140.0, 197.8. *m/z* (GC-MS, HRMS): 348.637 (M^+). Anal. Calc. for $C_{21}H_{18}N_2O_3$: C, 72.82; H, 5.24; N, 8.09. Found: C, 72.42; H, 5.76; N, 7.96.

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*3-(4-Chloro-phenylamino)-1,3-diphenyl-propan-1-one, (**6**)*

A white solid; R_f = 0.79 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3325 (NH), 1654 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.54-3.37 (m, 2H), 4.91 (t, 1H), 6.35 (d, *J* 8.4 Hz, 2H, Ar-H), 6.68 (d, *J* 8.1, 2H, Ar-H), 7.11 (d, *J* 6.6 Hz, 2H, Ar-H), 7.28-7.22 (m, 2H, Ar-H), 7.34-7.31 (m, 2H, Ar-H), 7.42-7.38 (m, 2H, Ar-H), 7.51-7.47 (m, 1H, Ar-H), 7.86 (d, *J* 7.8 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 44.08, 55.1, 116.4, 122.5, 125.7, 127.3, 128.4, 128.7, 129.3, 133.6, 137.5, 140.6, 197.4. *m/z* (GC-MS, HRMS): 335.832 (M^+). Anal. Calc. for $C_{21}H_{18}ClNO$: C, 75.11; H, 5.40; N, 4.17. Found: C, 75.41; H, 5.36; N, 4.31.

*3-(3,4-Dimethyl-phenylamino)-1,3-diphenyl-propan-1-one, (**7**)*

A white solid; R_f = 0.73 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3410 (NH), 1702 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 2.35 (s, 6H, $-CH_3$), 3.10 (d, *J* 6.1, 2H), 4.56 (t, 1H), 6.28 (s, 1H, Ar-H), 6.29 (d, *J* 6.8 Hz, 2H, Ar-H), 6.65 (d, *J* 8.1, 2H, Ar-H), 7.05-7.11 (m, 1H, Ar-H), 7.28 (d, *J* 6.7 Hz, 2H, Ar-H), 7.31-7.28 (m, 2H, Ar-H), 7.34-7.30 (m, 2H, Ar-H), 7.49-7.42 (m, 1H, Ar-H), 7.93 (d, *J* 7.8 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 17.3, 42.4, 55.7, 115.4, 123.2, 126.5, 128.6, 128.7, 129.7, 129.8, 131.3, 137.4, 141.4, 192.5. *m/z* (GC-MS, HRMS): 327.432 (M^+). Anal. Calc. for $C_{23}H_{23}NO$: C, 83.85; H, 7.04; N, 4.25. Found: C, 82.89; H, 7.18; N, 4.10.

*3-(4-Methoxy-phenyl)-1-phenyl-3-phenylamino-propan-1-one, (**8**)*

A white solid; R_f = 0.67 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3401 (NH), 1679 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.47-3.40 (m, 2H), 3.62 (s, 3H, $-OCH_3$), 4.96 (t, 1H), 6.47 (d, *J* 8.1 Hz, 2H, Ar-H), 6.52 (t, 1H, Ar-H), 6.90-6.86 (m, 2H, Ar-H), 7.23 (d, *J* 8.2 Hz, 2H, Ar-H), 7.33-7.28 (m, 2H, Ar-H), 7.44-7.41 (m, 2H, Ar-H), 7.54-7.51 (m, 1H, Ar-H), 7.89 (d, *J* 7.5 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 47.6, 54.2, 56.2, 113.2, 113.9, 116.4, 128.6, 128.1, 127.9, 129.4, 132.9, 134.2, 137.7, 160.2, 198.2. *m/z* (GC-MS, HRMS): 331.423 (M^+). Anal. Calc. for $C_{22}H_{21}NO_2$: C, 79.73; H, 6.39; N, 4.23. Found: C, 79.64; H, 6.48; N, 4.31.

*3-(4-Nitro-phenyl)-1-phenyl-3-phenylamino-propan-1-one, (**9**)*

A white solid; R_f = 0.54 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3372 (NH), 1681 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.52 (d, *J* 6.1 Hz, 2H), 5.13 (t, 1H), 6.52 (d, *J* 6.5 Hz, 2H, Ar-H), 6.66-6.70 (m, 1H, Ar-H), **7**.07-7.11 (m, 2H, Ar-H), 7.48-7.43 (m, 2H, Ar-H), 7.59-7.55 (m, 2H, Ar-H), 7.65 (d, *J* 7.5 Hz, 2H, Ar-H), 7.87 (d, *J* 8.0 Hz, 2H, Ar-H), 8.16 (d, *J* 9.6 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 46.4, 54.1, 112.8, 116.8, 123.4, 128.2, 128.4, 128.6, 129.3, 132.6, 137.6, 140.2, 143.6, 146.4, 198.4. *m/z* (GC-MS, HRMS): 346.381 (M^+). Anal. Calc. for $C_{21}H_{18}N_2O_3$: C, 72.82; H, 5.24; N, 8.09. Found: C, 72.92; H, 5.13; N, 8.16.

*3-(4-Bromo-phenyl)-1-phenyl-3-phenylamino-propan-1-one, (**10**)*

A white solid; R_f = 0.59 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3385 (NH), 1670 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.41 (d, *J* 5.6, 2H), 3.69 (s, 3H, $-OCH_3$), 4.91 (t, 1H), 6.48 (d, *J* 7.6 Hz, 2H, Ar-H), 6.70 (d, *J* 6.9 Hz, 2H, Ar-H), 7.04 (d, *J* 6.7 Hz, 2H, Ar-H), 7.33 (d, *J* 7.6 Hz, 2H, Ar-H), 7.46-7.41 (m, 2H, Ar-H), 7.58-7.54 (m, 1H, Ar-H), 7.90 (d, *J* 6.7 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 47.2, 54.4, 56.8, 112.8, 113.9, 86.8, 127.8, 128.3, 128.1, 138.6, 132.9, 134.2, 137.7, 160.7, 197.8. *m/z* (GC-MS, HRMS): 457.348 (M^+). Anal. Calc. for $C_{22}H_{20}NO_2$: C, 57.78; H, 4.41; N, 3.06. Found: C, 57.92; H, 4.33; N, 3.17.

*3-(4-Chloro-phenyl)-1-phenyl-3-phenylamino-propan-1-one, (**11**)*

A white solid; R_f = 0.70 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3382 (NH), 1690 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.48 (d, *J* 5.8 Hz, 2H), 5.18 (t, 1H), 6.60 (d, *J* 6.2 Hz, 2H, Ar-H), 6.68-6.73 (m, 1H, Ar-H), 7.07-7.12 (m, 2H, Ar-H), 7.28 (d, *J* 7.6 Hz, 2H, Ar-H), 7.52 (d, *J* 8.1 Hz, 2H, Ar-H), 7.60-7.67 (m, 2H, Ar-H), 7.71-7.76 (m, 1H, Ar-H), 7.96 (d, *J* 9.1 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 47.9, 53.7, 111.5, 115.3, 128.1, 128.6, 128.7, 128.9, 129.6, 131.8, 136.5, 141.1, 144.5, 196.6. *m/z* (GC-MS, HRMS): 337.416 (M^+). Anal. Calc. for $C_{21}H_{18}ClNO$: C, 75.11; H, 5.40; N, 4.17. Found: C, 75.32; H, 5.67; N, 4.23.

*3-(4-Iodo-phenylamino)-1,3-diphenyl-propan-1-one, (**12**)*

A white solid; R_f = 0.63 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3383 (NH), 1669 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.34 (m, 2H), 4.64 (t, 1H), 6.24 (d, *J* 7.0 Hz, 2H, Ar-H), 6.96 (d, *J* 8.1 Hz, 2H, Ar-H), 7.06-7.02 (m, 1H, Ar-H), 7.14-7.10 (m, 2H, Ar-H), 7.25 (d, *J* 6.3 Hz, 2H, Ar-H), 7.34-7.29 (m, 2H, Ar-H), 7.45-7.42 (m, 1H, Ar-H), 7.83 (d, *J* 8.1 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 46.4, 55.3, 113.2, 126.2, 126.4, 127.8, 128.5, 128.7, 128.9, 132.3, 132.5, 137.5, 138.8, 142.8, 198.2. *m/z* (GC-MS, HRMS): 346.382 (M^+). Anal. Calc. for $C_{21}H_{18}INO$: C, 59.03; H, 4.25; N, 3.28. Found: C, 59.12; H, 4.17; N, 3.34.

*3-Phenyl-3-phenylamino-1-p-tolyl-propan-1-one, (**13**)*

A white solid; R_f = 0.74 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3380 (NH), 1670 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 2.42 (s, 3H, $-CH_3$), 3.45 (d, *J* 5.9 Hz, 2H), 4.93 (t, 1H), 6.43 (d, *J* 7.8 Hz, 2H, Ar-H), 6.58 (m, 1H, Ar-H). 6.98 (m, 2H, Ar-H), 7.11 (d, *J* 6.4 Hz, 2H, Ar-H), 7.27-7.19 (m, 3H, Ar-H), 7.43 (d, 7.8 Hz, 2H, Ar-H), 7.86 (d, *J* 7.2 Hz, 2H, Ar-H); ^{13}C NMR (75 MHz, $CDCl_3$): δ 20.7, 44.2, 52.3, 109.2, 113.5, 124.2, 126.3, 127.3, 127.5, 128.1, 128.4, 131.5, 140.2, 141.7, 194.3. *m/z* (GC-MS, HRMS): 316.374 (M^+). Anal. Calc. for $C_{22}H_{21}NO$: C, 83.78; H, 6.71; N, 4.44. Found: C, 83.92; H, 6.61; N, 4.37.

*1-(4-Nitro-phenyl)-3-phenyl-3-phenylamino-propan-1-one, (**14**)*

A white solid; R_f = 0.49 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3400 (NH), 1678 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$): δ 3.44-3.57 (m, 2H), 5.10 (t, 1H), 6.48 (d, *J* 6.2 Hz, 2H, Ar-H), 6.69-6.63 (m, 2H, Ar-H). 6.80-6.83 (m, 1H, Ar-H), 7.14 (d, *J* 7.6 Hz, 2H, Ar-H), 7.23-7.26 (m, 1H, Ar-H), 7.31-7.35 (m, 2H, Ar-H), 7.62 (d, *J* 6.3 Hz, 2H, Ar-H); 7.92 (d, *J* 7.2 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 46.2, 53.4, 110.1, 114.9, 122.7, 123.5, 126.1, 127.9, 128.3, 128.8, 142.6, 141.3, 151.8, 196.4. *m/z* (GC-MS, HRMS): 346.217 (M^+). Anal. Calc. for $C_{21}H_{18}N_2O_3$: C, 72.82; H, 5.24; N, 8.09. Found: C, 72.96; H, 5.34; N, 8.11.

*2-(Phenyl-phenylamino-methyl)-cyclohexanone, (**15**)*

A white solid; R_f = 0.68 (Petroleum Ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3390 (NH), 1690 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$, syn/anti = 48:52): δ 1.25-1.76 (m, 6H), 2.28-2.44 (m, 2H), 2.73-2.78 (m, 1H), 4.62 (d, 0.52H, *J* 7.6 Hz), 4.70 (brs, 1H), 4.79 (d, 0.48H, *J* 4.8 Hz), 6.37 (d, *J* 7.3 Hz, 2H, Ar-H), 6.51-6.63 (m, 1H, Ar-H), 7.02-7.07 (m, 2H, Ar-H), 7.19-7.26 (m, 1H, Ar-H), 7.29-7.37 (m, 2H, Ar-H), 7.60 (d, *J* 7.8 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 23.2, 24.5, 28.3, 36.7, 52.1, 57.4, 108.6, 113.5, 123.1, 127.5, 128.9, 138.6, 140.4, 203.8. *m/z* (GC/MS, HRMS): 283.329 (M^+). Anal. Calc. for $C_{19}H_{21}NO$: C, 81.68; H, 7.58; N, 5.01. Found: C, 81.34; H, 7.45; N, 5.23.

*2-(phenyl-p-tolylamino-methyl)-cyclohexanone, (**16**)*

A white solid; R_f = 0.62 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3406 (NH), 1702 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$, syn/anti = 34:66): δ 1.33-1.89 (m, 6H), 2.14 (s, 3H, $-CH_3$), 2.36-2.57 (m, 2H), 2.97-3.04 (m, 1H), 4.52 (d, 0.34H, *J* 5.2 Hz), 4.52 (d, 0.66H, *J* 6.8 Hz), 4.77 (brs, 1H), 6.45 (d, *J* 7.5 Hz, 2H, Ar-H), 6.84 (d, *J* 8.2 Hz, 2H, Ar-H), 7.02-7.18 (m, 1H, Ar-H), 7.32-7.42 (m, 2H, Ar-H), 7.62 (d, *J* 7.1 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 21.0, 23.2, 25.7, 32.9, 43.3, 55.1, 57.3, 113.3, 127.6, 126.8, 126.4, 127.1, 128.9, 140.4, 142.5, 209.2. *m/z* (GC/MS, HRMS): 296.106 (M^+). Anal. Calc. for $C_{20}H_{23}NO$: C, 81.87; H, 7.90; N, 4.77. Found: C, 81.69; H, 7.56; N, 4.13.

*(2-(4-Methoxy-phenyl)-phenylamino-methyl)-cyclohexanone, (**17**)*

A white solid; R_f = 0.69 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3332 (NH), 1690 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$, syn/anti = 42:58): δ 1.68-1.93 (m, 6H), 2.42-2.47 (m, 2H), 2.72-2.76 (m, 1H), 3.89 (s, 3H, OCH_3), 4.08 (d, 0.58H, *J* 7.3 Hz), 4.63 (d, 0.42H, *J* 4.4 Hz), 4.71 (br, s, 1H), 6.64-6.61 (m, 1H, Ar-H), 6.68 (d, *J* 8.3 Hz, 2H, Ar-H), 7.10-7.03 (m, 2H, Ar-H), 7.16 (d, *J* 7.6 Hz, 2H, Ar-H), 7.27 (d, *J* 8.4 Hz, 2H, Ar-H); ^{13}C NMR (75 MHz, $CDCl_3$): δ 20.8, 23.2, 27.8, 30.9, 41.3, 57.2, 56.3, 113.1, 117.2, 126.8, 128.6, 128.8, 136.4, 138.2, 147.0, 212.7. *m/z* (GC/MS, HRMS): (M^+). Anal. Calc. for $C_{20}H_{23}NO_2$: C, 77.64; H, 7.49; N, 4.53. Found: C, 77.43; H, 7.58; N, 4.59.

*(2-(4-Chloro-phenylamino)-phenyl-methyl)-cyclohexanone, (**18**)*

A yellowish solid; R_f = 0.73 (petroleum ether/AcOEt = 80:20); IR (KBr) ν_{max}/cm^{-1}: 3378 (NH), 1674 (CO). ^1H NMR (300 MHz, TMS, $CDCl_3$, syn/anti = 28:72): δ 1.60-1.92 (m, 6H), 2.28-2.31 (m, 2H), 2.65-2.61 (m, 1H), 4.10 (d, 0.72H, *J* 8.2 Hz), 4.30 (d, 0.28H, *J* 4.1 Hz), 4.56 (brs, 1H), 6.58 (d, *J* 7.3 Hz, 2H, Ar-H), 6.98 (d, *J* 8.7 Hz, 2H, Ar-H), 7.22-7.17 (m, 1H, Ar-H), 7.41-7.48 (m, 2H, Ar-H), 7.56 (d, *J* 8.9 Hz, 2H, Ar-H). ^{13}C NMR (75 MHz, $CDCl_3$): δ 24.9, 25.1, 28.7, 40.1, 54.6, 57.3, 112.6 120.1, 124.9, 128.1, 138.6, 140.5, 210.4. *m/z* (GC/MS, HRMS): 344.281 (M^+). Anal. Calc. for $C_{19}H_{20}ClNO$: C, 72.72; H, 6.42; N, 4.46. Found: C, 72.68; H, 6.32; N, 4.41.