Li(Glycine)(CF_3SO_3) as an effective and recoverable catalyst for the preparation of 3,4-dihydropyrimidine-2-(1H)-one under solvent-free conditions

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General procedure for preparation of 3,4-dihydropyrimidine-2-(1H)-one derivative

A mixture of aldehyde (1 mmol), ethyl acetoacetate (1 mmol), urea (2 mmol)and Li(Glycine)(CF_3SO_3) (10 mol%) was sealed and stirred at 80 °C under solvent-free conditions. After completion of the reaction, as indicated by precipitation of solid products from the liquid reaction mixture and TLC experiments, the reaction mixture was diluted with ethanol (10 ml) and stirred for 5 min. The solid catalyst was successfully recovered after evaporation of water under reduced pressure which can be reused. The product was found to be pure and no further purification was necessary.

Physical Data and NMR Data of All Compounds

3,4-Dihydro-5-etoxycarbonyl-4-(4-phenyl)-6-methyl-pyrimidine-2(1H)-one (4a): Whitepowder; mp 203-205 °C (lit. 202-203 °C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.15 (t, *J*= 7.6 Hz, 3H, CH_3), 2.24 (s, 3H, CH_3),4.06 (q, *J*= 7.6 Hz, 2H, CH_2), 5.25(s, 1H, CH), 6.29 (s, 1H, NH), 7.28-7.59(m, 5H, H-Aro), 9.66 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.7, 18.3, 55.2, 61.6, 100.8, 127.5, 128.3, 129.9, 144.1, 145.2, 152.3, 166.5.

3,4-Dihydro-5-etoxycarbonyl-4-(2-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4b): Whitepowder; mp 216-219 °C (lit. 215-218°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.06 (t, *J*= 7.2 Hz, 3H, CH_3), 2.33 (s, 3H, CH_3),3.97 (q, *J*= 6.8 Hz, 2H, CH_2), 5.22(s, 1H, CH), 5.80 (s, 1H, NH), 6.91-7.14(m, 4H, H-Aro), 9.27 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.8, 17.3, 54.3, 60.7, 100.6, 112.8, 122.1, 127.5, 129.1, 131.8, 151.3, 155.9, 158.0, 166.4.

3,4-Dihydro-5-etoxycarbonyl-4-(3-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4c): Whitepowder; mp 193-195 °C (lit. 192-193°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.14 (t, *J*= 7.2 Hz, 3H, CH_3), 2.38 (s, 3H, CH_3),4.03 (q, *J*= 7.6 Hz, 2H, CH_2), 5.20(d, *J*= 2.8 Hz, 1H, CH), 6.83-7.02(m, 4H, H-Aro), 7.84 (s, 1H, NH),9.42 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.9, 18.2, 54.3, 61.4, 100.8, 113.3, 113.8, 121.8, 131.5, 147.2, 149.4, 154.0, 161.6, 167.5.

3,4-Dihydro-5-etoxycarbonyl-4-(4-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4d): Whitepowder; mp 211-213 °C (lit. 212-214°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.17 (t, *J*= 8.0 Hz, 3H, CH_3), 2.24(s, 3H, CH_3), 3.92 (q, *J*= 8.0 Hz, 2H, CH_2), 5.09 (d, *J*= 2.8 Hz, 1H, CH), 6.29 (s, 1H, NH), 6.88 (d, *J*= 8.0 Hz, 2H, H-Aro), 7.18 (d, *J*= 8.0 Hz, 2H, H-Aro), 9.76 (s, 1H, NH).^{13}C NMR (100 MHz, DMSO-d_6): δ 15.4, 18.5, 53.1, 60.1, 100.9, 122.9, 123.7, 125.8, 142.4, 150.3, 153.9, 167.4.

3,4-Dihydro-5-etoxycarbonyl-4-(3-bromophenyl)-6-methyl-pyrimidine- 2(1H)-one (4e): White powder; mp 185-187 °C (lit. 185-186 °C).IR (KBr, cm^{-1}): *υ* 3200, 3100, 2920, 1690, 1590, 1450. ^{1}H NMR (400 MHz, DMSO-d_6): *δ* 1.10 (t, *J*= 6.4 Hz, 3H, CH_3), 2.25 (s, 3H, CH_3), 3.98-4.05 (m, 2H, CH_2), 5.21 (d, *J*= 2.8 Hz, 1H, CH), 5.59 (s, 1H,

NH), 6.79-6.82 (m, 2H, H Aro), 7.07-7.10 (m, 2H, H-Aro), 9.27 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.4, 15.9, 54.5, 61.0, 99.3, 120.9, 125.0, 129.5, 131.5, 131.8, 145.5, 146.0, 162.5, 165.1.

3,4-Dihydro-5-etoxycarbonyl-4-(2,4-dichlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4f): Whitepowder; mp 249-251 °C (lit. 251–252 °C). IR (KBr, cm^{-1}): υ 3160, 3000, 2980, 1785, 1660, 1425. ^{1}H NMR (400 MHz, DMSO-d_6): δ 0.82 (t, *J*= 6.8 Hz, 3H,CH_3), 2.20 (s, 3H, CH_3), 4.10 (q, *J*= 6.8 Hz, 2H, CH_2), 5.36 (s, 1H, CH),5.59 (s, 1H, NH), 7.37–7.56 (m, 3H, H-Aro), 8.70 (s, 1H, NH) .^{13}C NMR (100 MHz, DMSO-d_6): δ 15.5, 18.7, 55.7, 60.0, 95.7, 128.5, 129.2, 130.1, 133.3, 134.0, 150.0, 156.1, 161.0, 165.8.

3,4-Dihydro-5-etoxycarbonyl-4-(3,4-dichlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4g): Whitepowder; mp 223-225 °C (lit. 222-223°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.07 (t, *J*= 8.0 Hz, 3H, CH_3), 2.30(s, 3H, CH_3), 3.91 (q, *J*= 8.0 Hz, 2H, CH_2), 5.08 (d, *J*= 2.4 Hz, 1H, CH), 6.82-6.98 (m, 3H, H-Aro), 7.94 (s, 1H, NH), 9.14 (s, 1H, NH).^{13}C NMR (100 MHz, DMSO-d_6): δ 14.9, 18.2, 54.3, 61.4, 100.8, 113.3, 113.8, 121.8, 131.5, 147.2, 149.4, 154.0, 161.6, 167.5.

3,4-Dihydro-5-etoxycarbonyl-4-(4-fluorophenyl)-6-methyl-pyrimidine-2(1H)-one (4h): Whitepowder; mp 178-180 °C (lit. 175-177°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.13 (t, *J*= 6.8 Hz, 3H, CH_3), 2.27(s, 3H, CH_3), 4.03 (q, *J*= 8.0 Hz, 2H, CH_2), 5.23 (d, *J*= 2.8 Hz, 1H, CH), 7.10 (d, *J*= 8.0 Hz, 2H, H-Aro), 7.20 (d, *J*= 8.0 Hz, 2H, H-Aro), 7.84 (s, 1H, NH), 9.25 (s, 1H, NH).^{13}C NMR (100 MHz, DMSO-d_6): δ 14.4, 19.8, 54.3, 60.0, 100.5, 115.5, 129.4, 148.9, 156.2, 161.0, 162.1, 166.8.

3,4-Dihydro-5-etoxycarbonyl-4-(2-nitrophenyl)-6-methyl-pyrimidine-2(1H)-one (4i): Whitepowder; mp 218-220 °C (lit. 220-222°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.03 (t, *J*= 7.2 Hz, 3H, CH_3), 2.32 (s, 3H, CH_3),3.92 (q, *J*= 8.0Hz, 2H, CH_2), 5.51(s, 1H, CH), 6.90-7.30(m, 4H, H-Aro), 7.82 (s, 1H, NH), 9.17 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.8, 17.3, 55.6, 60.8, 100.5, 112.9, 122.1, 130.7, 132.9, 134.9, 151.4, 155.8, 161.4, 166.4.

3,4-Dihydro-5-etoxycarbonyl-4-(3-nitrophenyl)-6-methyl-pyrimidine-2(1H)-one (4j): Whitepowder; mp 225-227 °C (lit. 226-228°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.15 (t, *J*= 8.0 Hz, 3H, CH_3), 2.25 (s, 3H, CH_3),4.04 (q, *J*= 8.0 Hz, 2H, CH_2), 5.17(d, *J*= 2.8 Hz, 1H, CH), 6.83-7.26(m, 4H, H-Aro), 7.85 (s, 1H, NH), 9.22(s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 15.4, 17.9, 52.8, 59.4, 100.6, 113.7, 121.8, 132.5, 142.4, 149.4, 149.9, 154.0, 161.6, 166.4.

3,4-Dihydro-5-etoxycarbonyl-4-(4-nitrophenyl)-6-methyl-pyrimidine-2(1H)-one (4k): Whitepowder; mp 211-213 °C (lit. 208-211°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.13 (t, *J*= 8.0 Hz, 3H, CH_3), 2.30(s, 3H, CH_3), 4.05 (q, *J*= 8.0 Hz, 2H, CH_2), 5.35 (d, *J*= 2.8 Hz, 1H, CH), 7.36 (d, *J*= 7.2 Hz, 2H, H-Aro), 7.93 (s, 1H, NH), 8.23 (d, *J*= 7.6 Hz, 2H, H-Aro), 9.37 (s, 1H, NH).^{13}C NMR (100 MHz, DMSO-d_6): δ 14.9, 19.3, 55.2, 61.4, 100.5, 123.8, 124.7, 126.9, 142.6, 150.8, 154.9, 166.8.

3,4-Dihydro-5-etoxycarbonyl-4-(2-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4l): Whitepowder; mp 258-260 °C (lit. 259-260°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.06 (t, *J*= 7.6 Hz, 3H, CH_3), 2.25 (s, 3H, CH_3),3.84(s, 3H,OCH_3), 3.87(q, *J*= 6.8 Hz, 2H, CH_2), 5.49(s, 1H, CH), 6.30 (s, 1H, NH),6.90-7.31(m, 4H, H-Aro),9.15 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.9, 18.7, 43.6, 56.9, 59.4, 95.8, 112.3, 122.7, 129.7, 129.9, 131.8, 149.9, 151.8, 157.7, 166.8.

3,4-Dihydro-5-etoxycarbonyl-4-(3-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4m): Whitepowder; mp 208-210 °C (lit. 207-208°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.13 (t, *J*= 8.0 Hz, 3H, CH_3), 2.51 (s, 3H, CH_3),3.91(s, 3H,OCH_3), 4.06 (q, *J*= 7.6 Hz, 2H, CH_2), 5.21(d, *J*= 2.8 Hz, 1H, CH), 6.82-7.17 (m, 4H, H-Aro), 7.30 (s, 1H, NH), 9.52 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.4, 19.5, 50.3, 50.7, 60.8, 100.9, 113.7, 113.9, 121.0, 139.9, 143.0, 147.0, 153.9, 161.6, 167.5.

3,4-Dihydro-5-etoxycarbonyl-4-(4-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4n): Whitepowder; mp 203-205 °C (lit. 203-204°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.14 (t, *J*= 7.2 Hz, 3H, CH_3), 2.25 (s, 3H, CH_3),2.90(s, 3H,OCH_3), 3.46 (q, *J*= 7.6 Hz, 2H, CH_2), 5.12(s, 1H, CH), 6.91 (d, *J*= 6.8 Hz, 2H, H-Aro),7.19 (d, *J*= 6.8 Hz, 2H, H-Aro), 7.76 (s, 1H, NH), 9.12 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.8, 18.8, 56.5, 57.8, 66.8, 100.6, 114.7, 127.6, 138.6, 148.2, 154.8, 158.8, 166.9.

3,4-Dihydro-5-etoxycarbonyl-4-(3,4-dimethoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4o): Whitepowder; mp 176-178 °C (lit. 174-176°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.15 (t, *J*= 6.8 Hz, 3H, CH_3), 2.30-2.31 (m, 6H, CH_3, OCH_3),2.43 (s, 3H,OCH_3),4.05 (q, *J*= 7.6 Hz, 2H, CH_2), 5.26(d, *J*= 2.8 Hz, 1H, CH), 6.97-7.15 (m, 3H, H-Aro), 7.89 (s, 1H, NH), 9.55 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 15.8, 21.0, 50.8, 56.3, 56.8,60.6, 100.6, 122.7, 128.9, 130.9, 136.8, 139.7, 144.9, 150.9, 154.4, 166.8.

3,4-Dihydro-5-etoxycarbonyl-4-(3-methoxy-4-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4p): Whitepowder; mp 177-179 °C (lit. 173-175°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 2.27 (s, 3H, CH_3),3.55 (s, 3H, CH_3),3.76 (s, 3H, CH_3),3.99 (q, *J*= 8.0 Hz, 2H, CH_2), 5.06(d, *J*= 2.8 Hz, 1H, CH), 6.73-6.86 (m, 3H, H-Aro), 7.82 (s, 1H, NH), 8.22 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 15.2, 18.9, 51.8, 56.8, 60.8, 100.3, 121.7, 128.9, 132.9, 136.7, 139.9, 144.9, 150.9, 152.1, 166.7.

3,4-Dihydro-5-etoxycarbonyl-4-(4-trifluoromethylphenyl)-6-methyl-pyrimidine-2(1H)-one (4q): Whitepowder; mp 177-179 °C (lit. 173-175 °C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 0.96 (t, *J*= 7.6 Hz, 3H, CH_3), 2.51 (s, 3H, CH_3),3.89 (q, *J*= 7.6 Hz, 2H, CH_2), 5.52(d, *J*= 2.8 Hz, 1H, CH), 7.27 (d, *J*= 7.6 Hz, 2H, H-Aro),7.47 (d, *J*= 7.6 Hz, 2H, H-Aro), 7.58 (s, 1H, NH), 9.39 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 15.2, 18.9, 54.1, 60.1, 99.7, 118.0, 122.3, 129.2, 132.1, 144.1, 147.1, 152.9, 165.8.

3,4-Dihydro-5-etoxycarbonyl-4-(2-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4r): Whitepowder; mp 198-200 °C (lit. 199-201°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.07 (t, *J*= 7.6 Hz, 3H, CH_3), 2.35 (s, 3H, CH_3),4.07 (q, *J*= 7.6 Hz, 2H, CH_2), 5.55(s, 1H, CH), 6.91-7.15 (m, 4H, H-Aro), 7.58(s, 1H, NH), 9.35 (s, 1H, NH), 9.75 (s, 1H, OH).^{13}C NMR (100 MHz, DMSO-d_6): δ 14.5, 17.4, 55.8, 60.6, 100.6, 112.9, 121.8, 129.5, 131.7, 133.3, 151.9, 156.9, 159.0, 167.4.

3,4-Dihydro-5-etoxycarbonyl-4-(4-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4s): Whitepowder; mp 229-231 °C (lit. 231-233°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.15 (t, *J*= 7.6 Hz, 3H, CH_3), 2.35 (s, 3H, CH_3),4.02 (q, *J*= 7.6 Hz, 2H, CH_2), 5.09(s, 1H, CH), 6.83 (d, *J*= 7.6 Hz, 2H, H-Aro), 7.11 (d, *J*= 7.6 Hz, 2H, H-Aro), 7.85 (s, 1H, NH),9.52 (s, 1H, NH), 9.74 (s, 1H, OH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.7, 18.3, 54.4, 60.3, 100.8, 115.5, 129.1, 138.3, 148.3, 153.9, 156.0, 166.7.

3,4-Dihydro-5-etoxycarbonyl-4-(4-p-tolyl)-6-methyl-pyrimidine-2(1H)-one (4t): Whitepowder; mp 215-216 °C (lit. 216–217 °C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.16 (t, *J*= 7.6 Hz, 3H, CH_3), 2.32 (s, 3H, CH_3),2.30 (s, 3H,

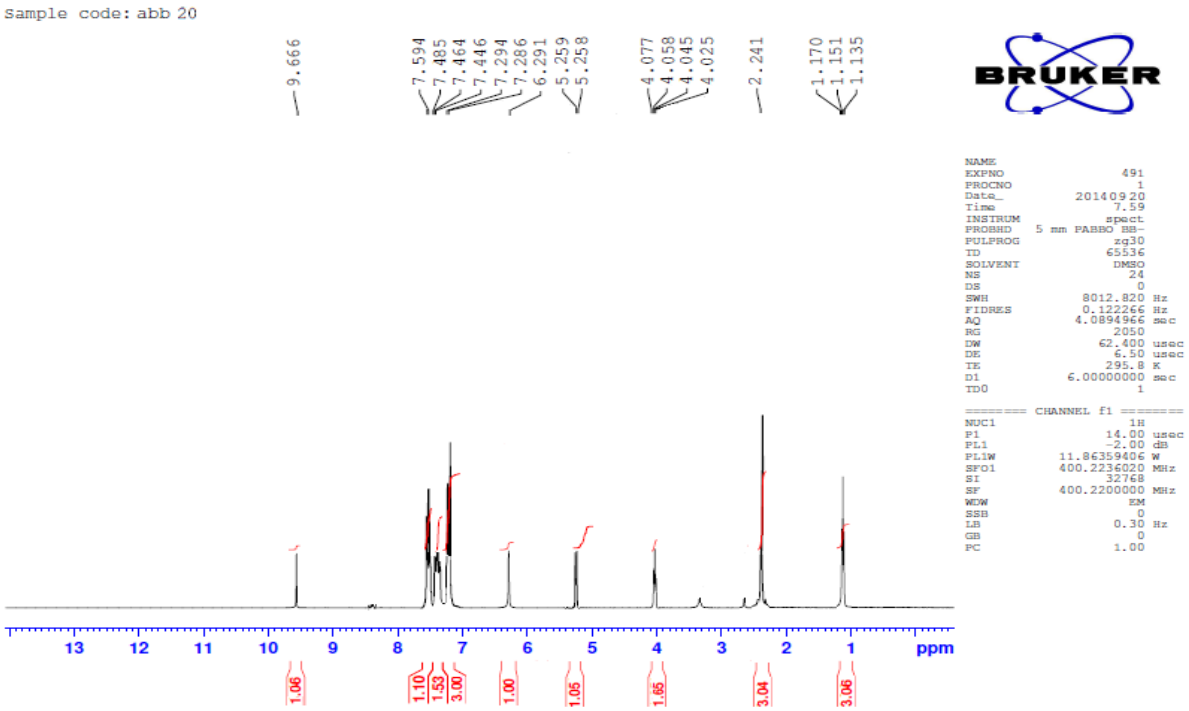
CH_3), 4.07 (m, 2H, CH_2), 5.33(s, 1H, CH), 6.29 (s, 1H, NH), 6.87(d, *J*= 8.0 Hz, 2H, H-Aro), 7.17 (d, *J*= 7.6 Hz, 2H, H-Aro), 8.74 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.8, 18.8, 22.8, 56.6, 66.7, 100.2, 115.0, 127.1, 138.7, 149.3, 155.4, 158.5, 166.3.

3,4-Dihydro-5-etoxycarbonyl-4-(4-styryl)-6-methyl-pyrimidine-2(1H)-one (4u): Whitepowder; mp 227-229 °C (lit. 234-236°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.15 (t, *J*= 7.6 Hz, 3H, CH_3), 2.33 (s, 3H, CH_3),3.96 (q, *J*= 7.6 Hz, 2H, CH_2), 5.05(d, *J*= 2.8 Hz, 1H, CH), 7.20-7.39 (m, 7H, H-Aro), 7.38 (s, 1H, NH),9.28 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 15.0, 20.6, 54.3, 61.1, 100.1, 112.8,112.9, 113.9, 126.91, 126.95, 134.3, 148.7, 154.7, 160.1, 163.8, 166.8.

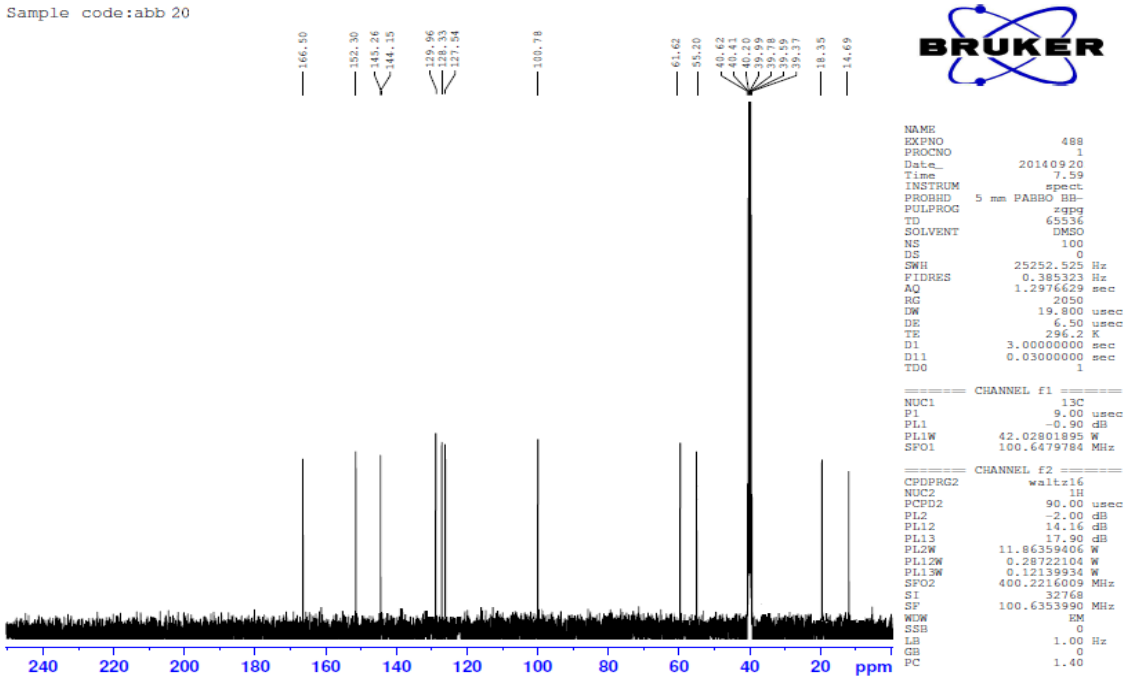
3,4-Dihydro-5-etoxycarbonyl-4-(2-furyl)-6-methyl-pyrimidine-2(1H)-one (4v): Whitepowder; mp 204-206 °C (lit. 205-207°C). ^{1}H NMR (400 MHz, DMSO-d_6): δ 1.16 (t, *J*= 8.0 Hz, 3H, CH_3), 2.50 (s, 3H, CH_3),4.07 (q, *J*= 8.0 Hz, 2H, CH_2), 5.20(d, *J*= 2.8 Hz, 1H, CH), 6.18 (d, *J*= 2.8 Hz, 1H, CH), 6.25 (s, 1H, CH), 7.11 (s, 1H, CH), 7.41 (s, 1H, NH),9.10 (s, 1H, NH). ^{13}C NMR (100 MHz, DMSO-d_6): δ 14.4, 19.5, 44.4, 60.6, 98.4, 106.5, 113.7, 138.4, 150.9, 153.9, 156.8, 167.5.

^{1}H and ^{13}C NMR spectra of all compounds

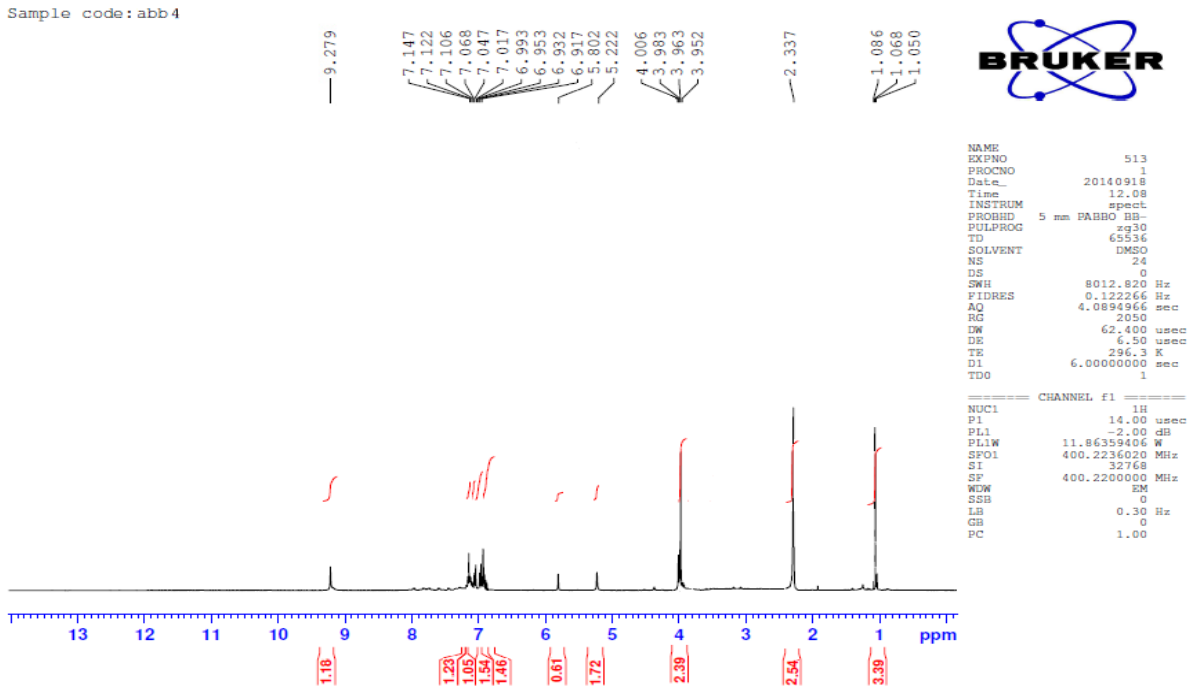
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-phenyl)-6-methyl-pyrimidine-2(1H)-one (4a):



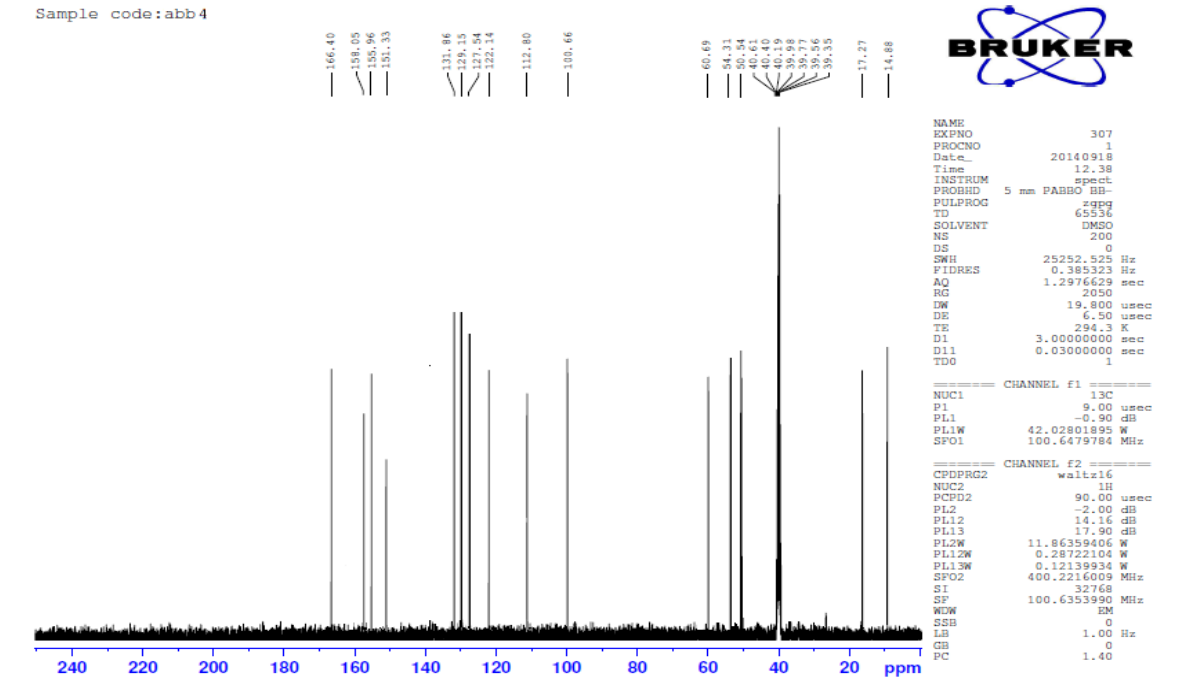
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-phenyl)-6-methyl-pyrimidine-2(1H)-one (4a):



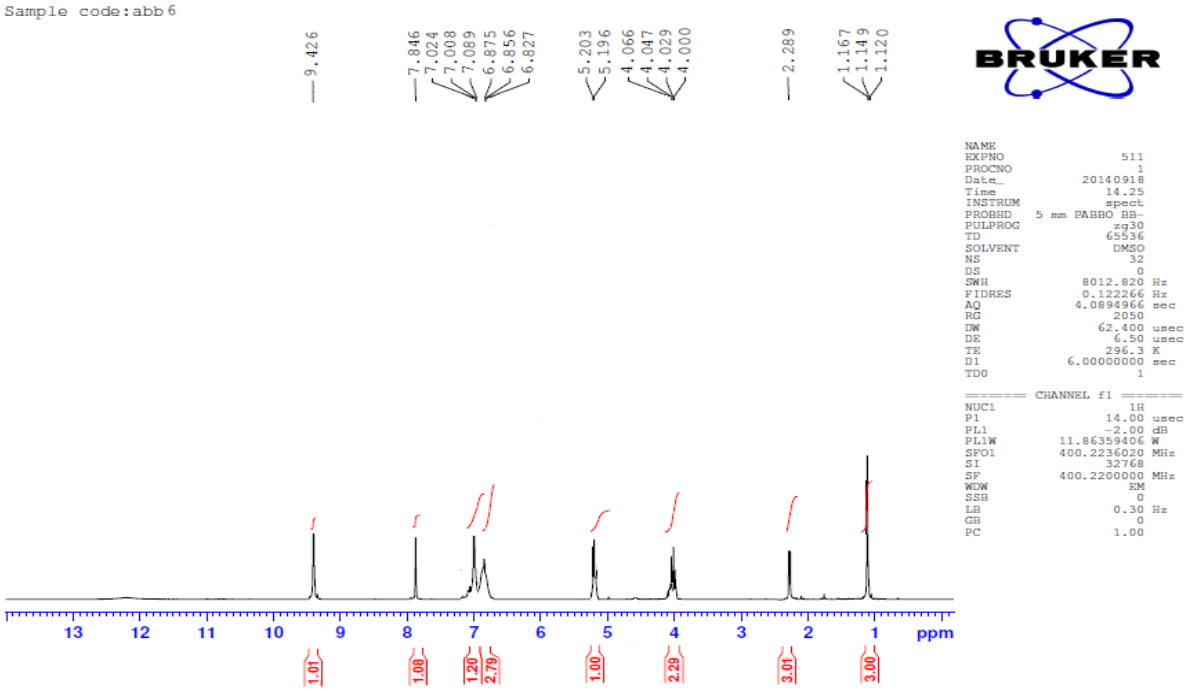
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(2-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4b):



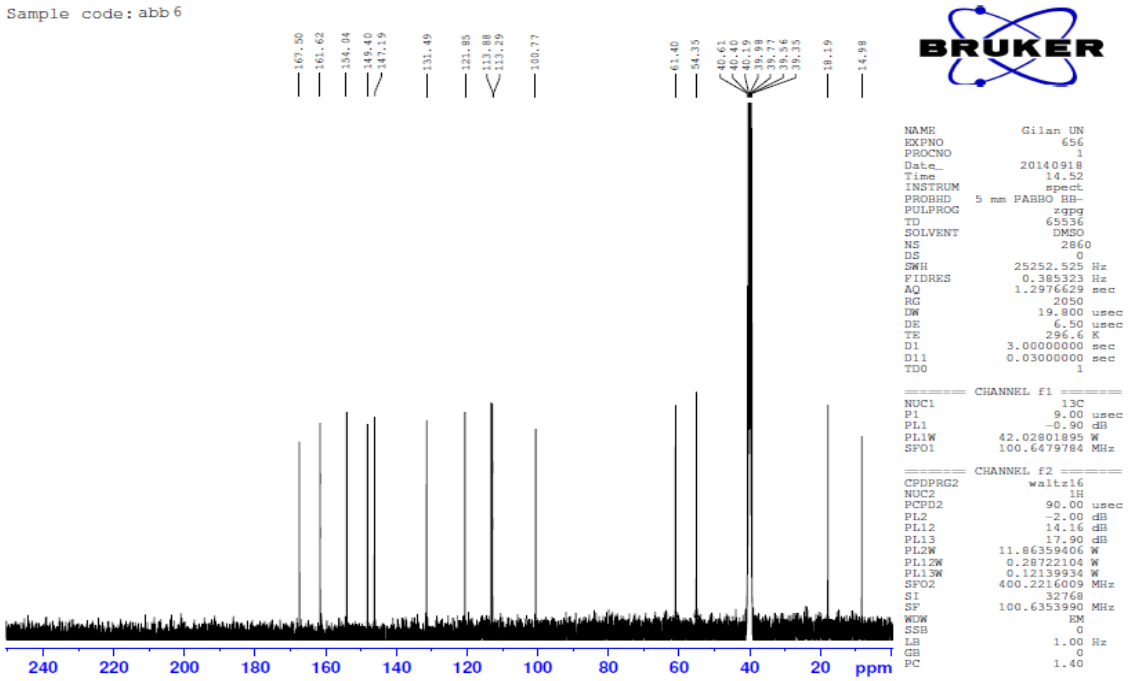
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(2-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4b):



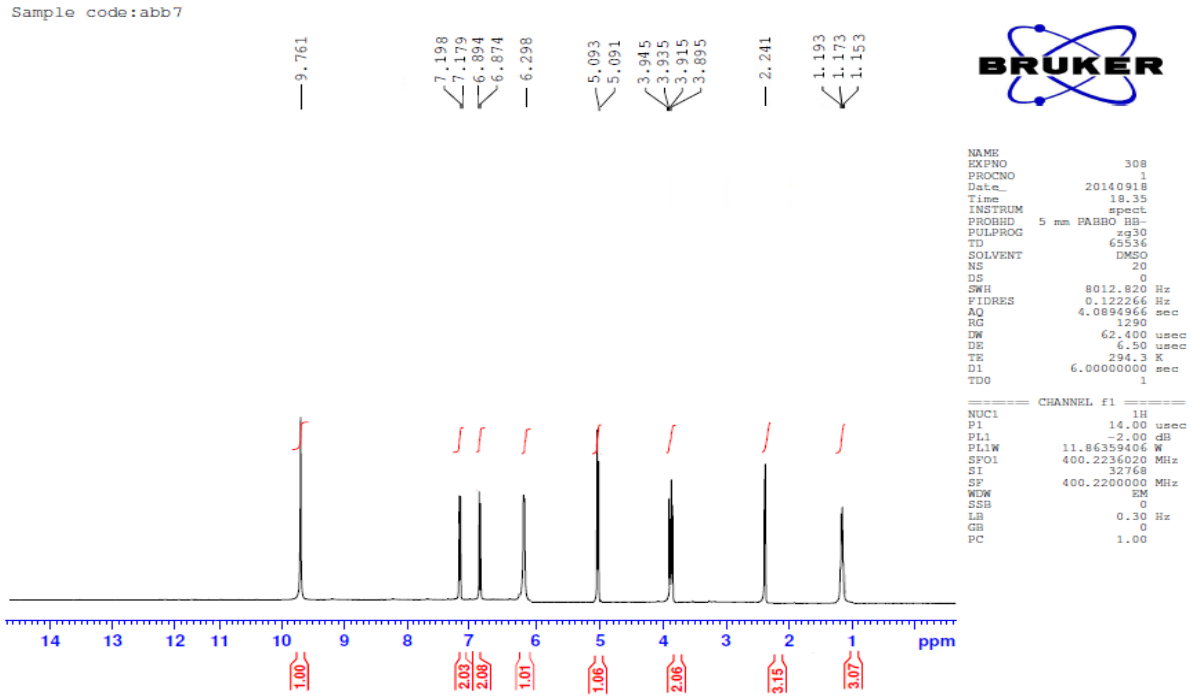
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(3-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4c):



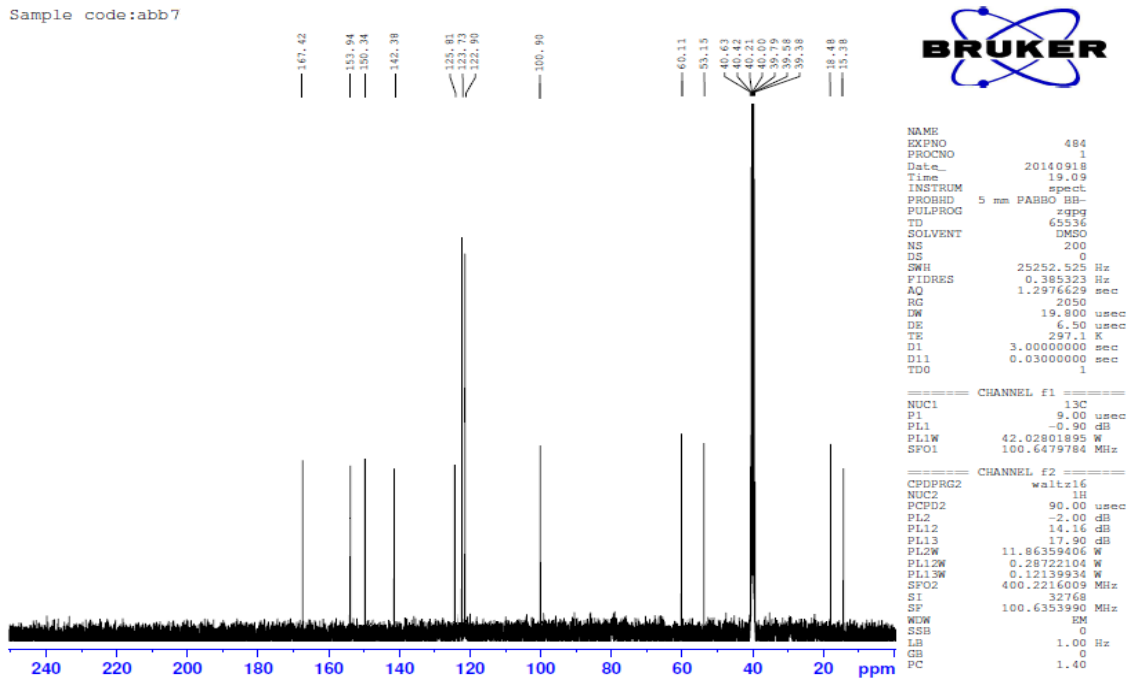
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(3-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4c):



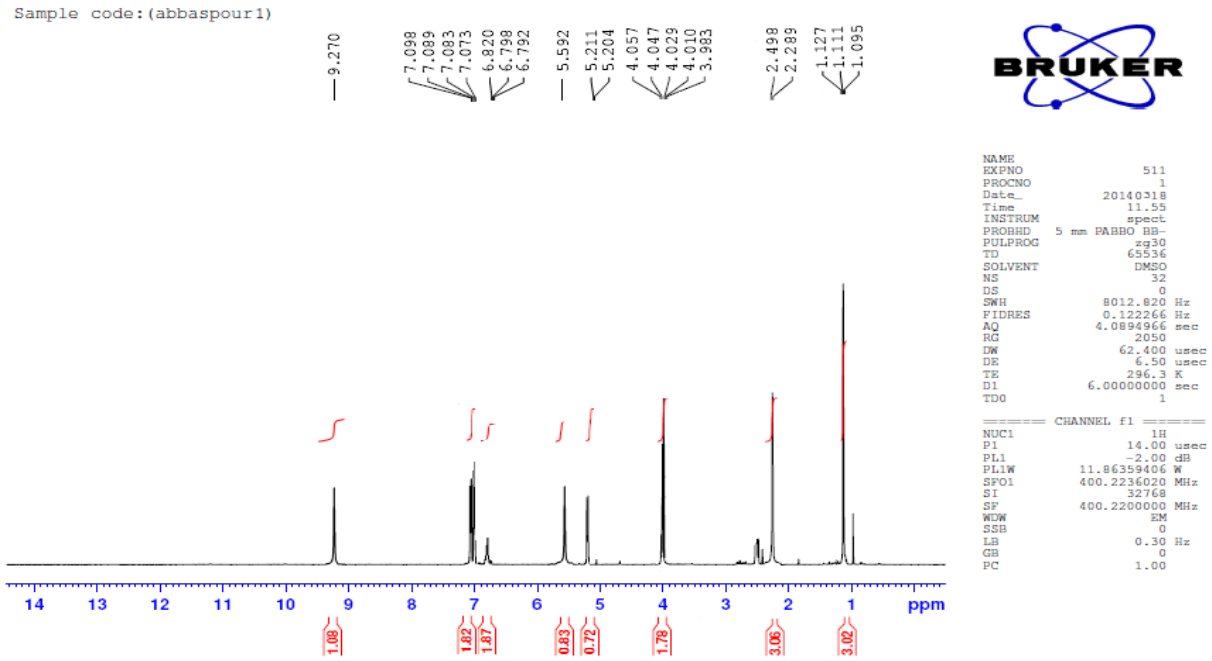
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4d):



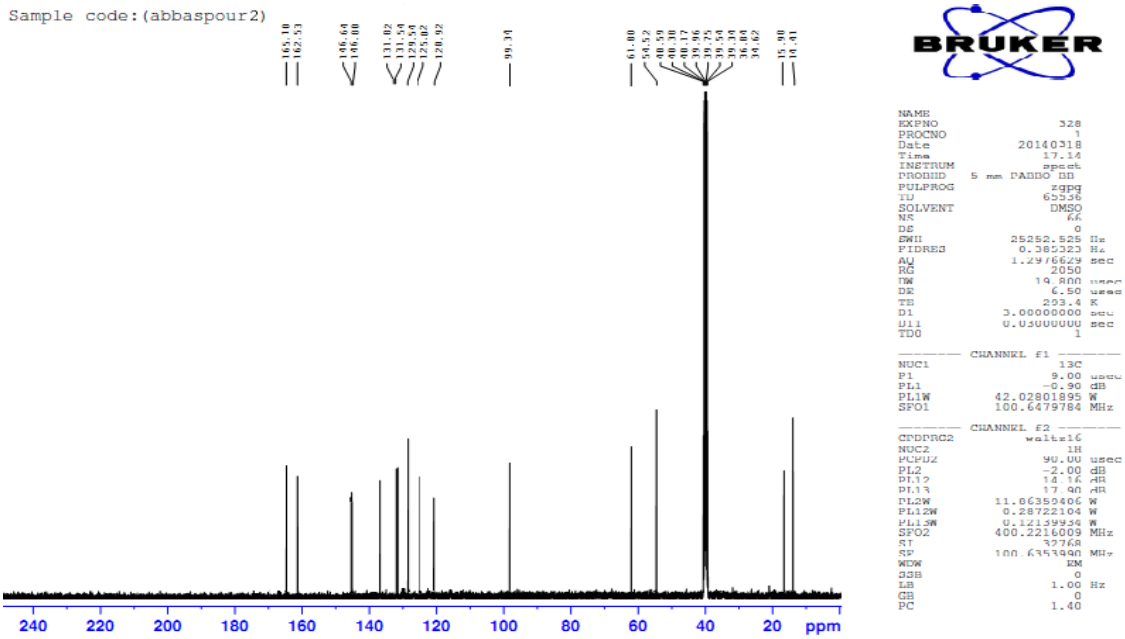
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-chlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4d):



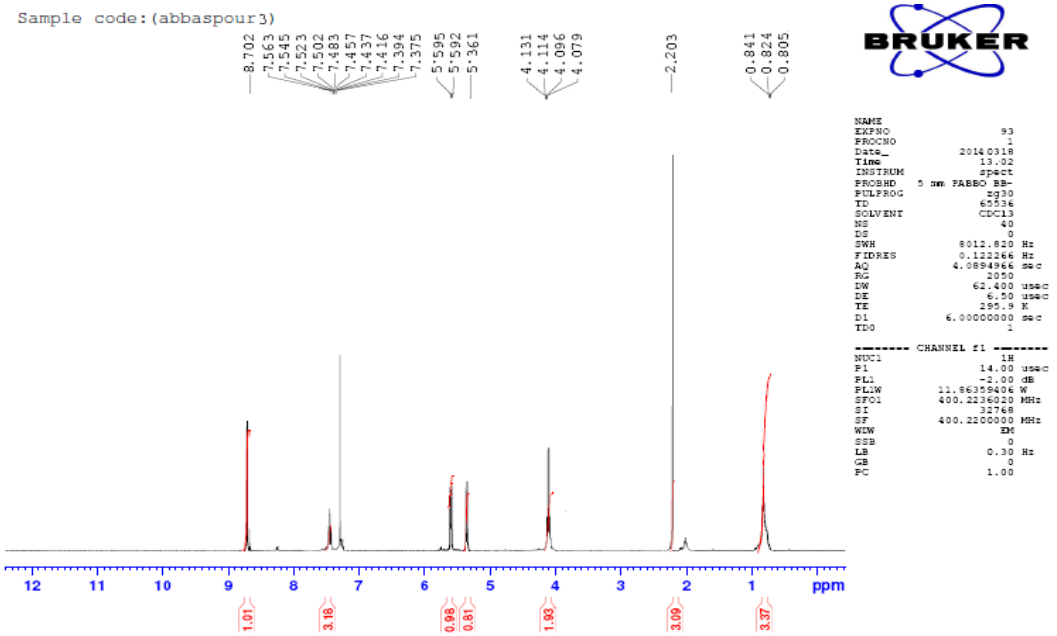
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(3-bromophenyl)-6-methyl-pyrimidine- 2(1H)-one (4e):



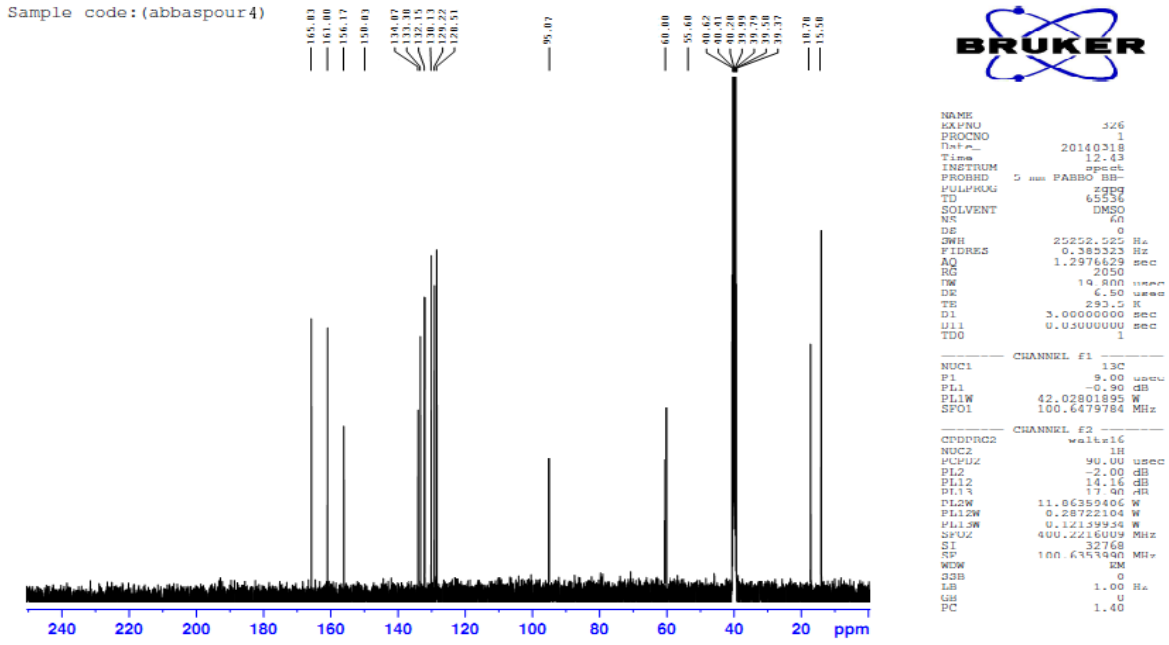
The ^{13}C NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(3-bromophenyl)-6-methyl-pyrimidine- 2(1H)-one (4e):



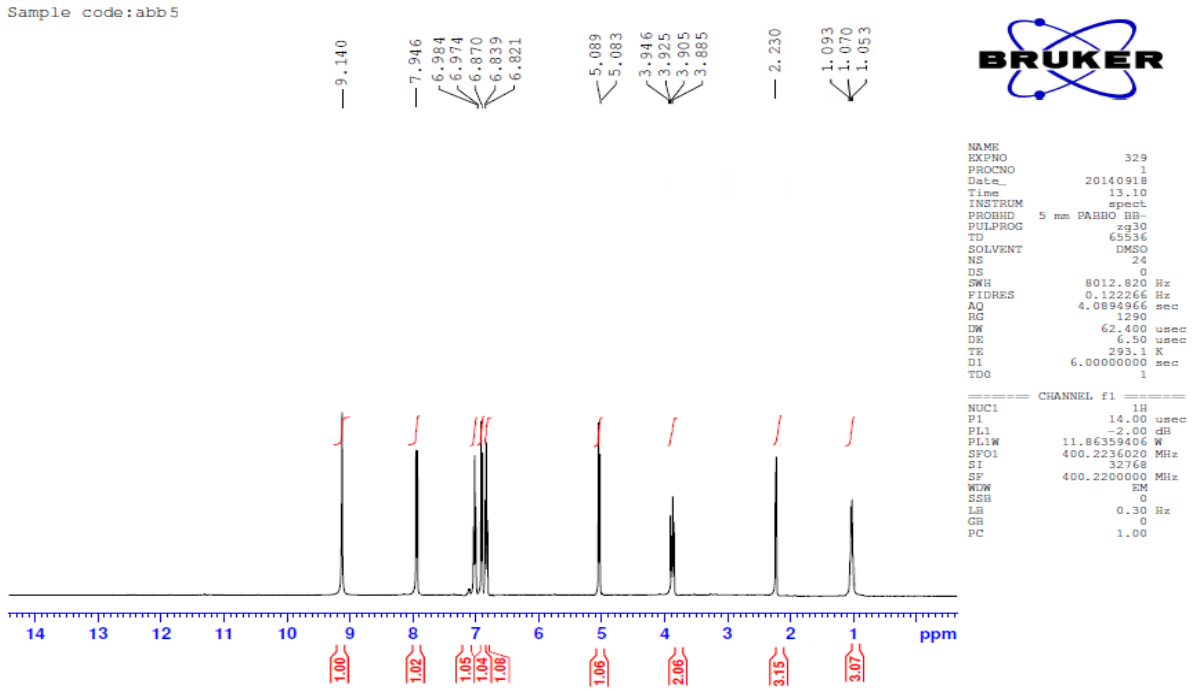
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(2,4-dichlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4f):



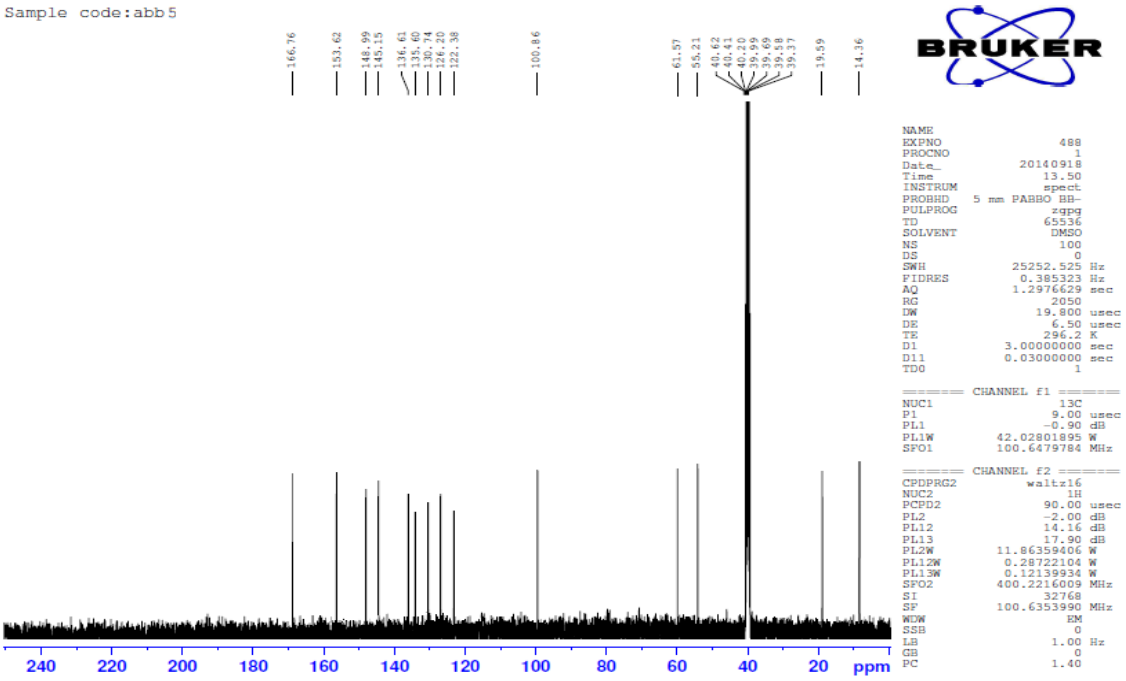
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(2,4-dichlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4f):



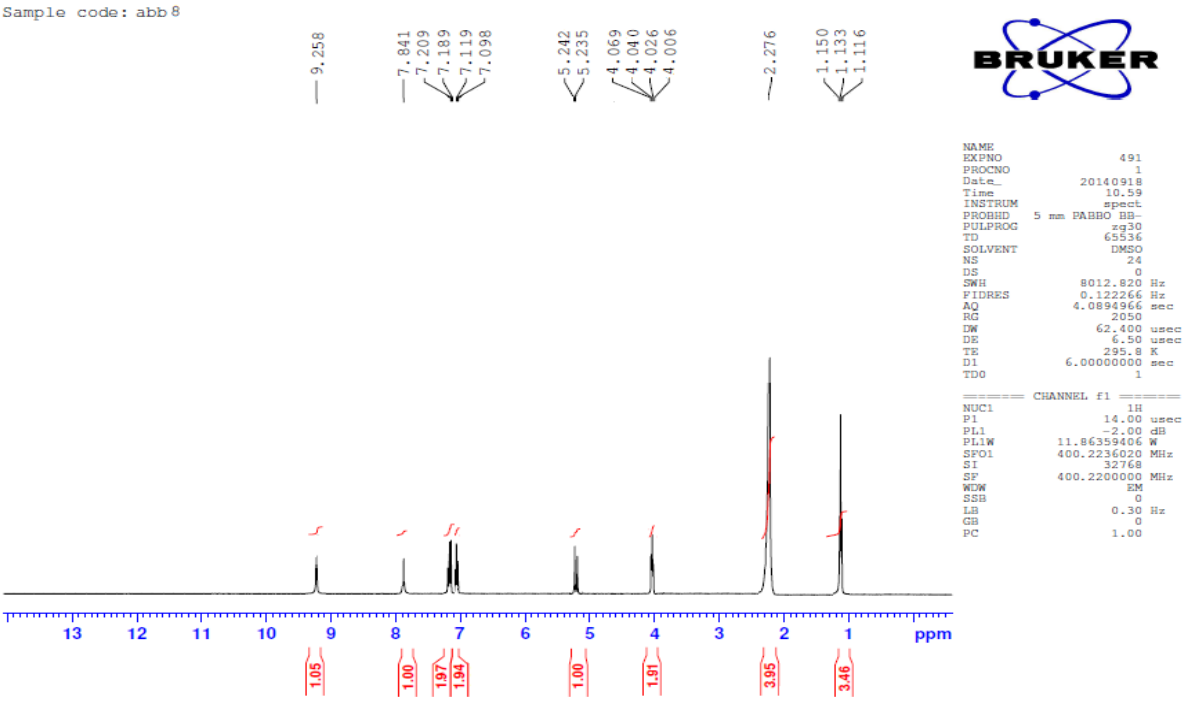
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(3,4-dichlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4g):



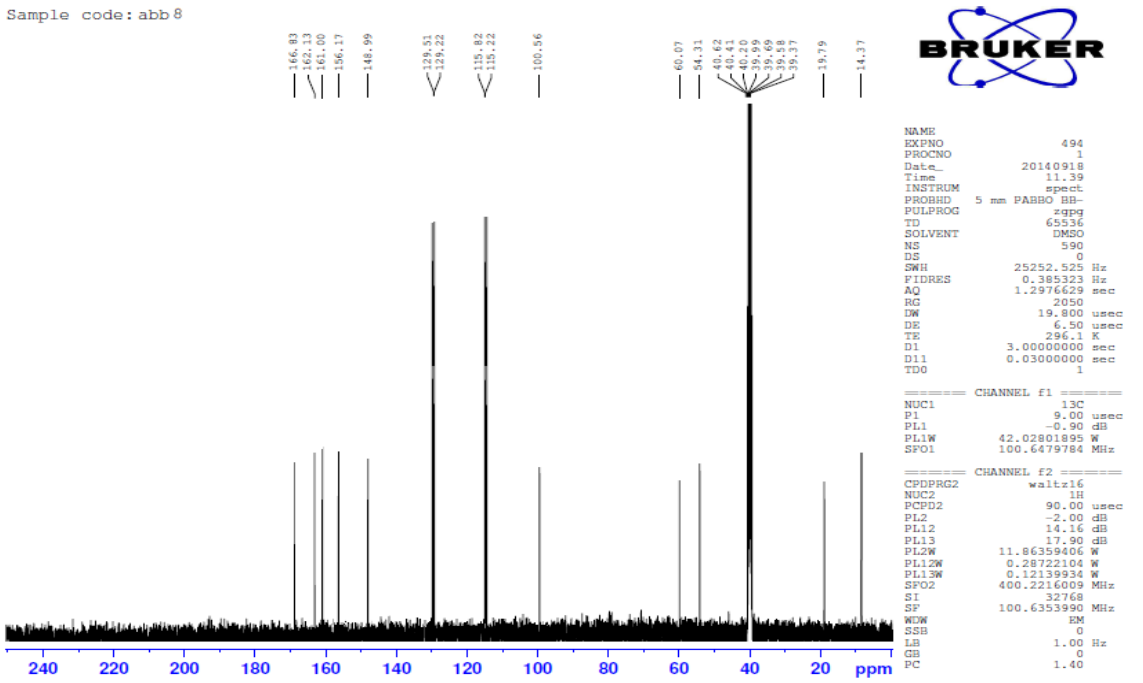
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(3,4-dichlorophenyl)-6-methyl-pyrimidine-2(1H)-one (4g):



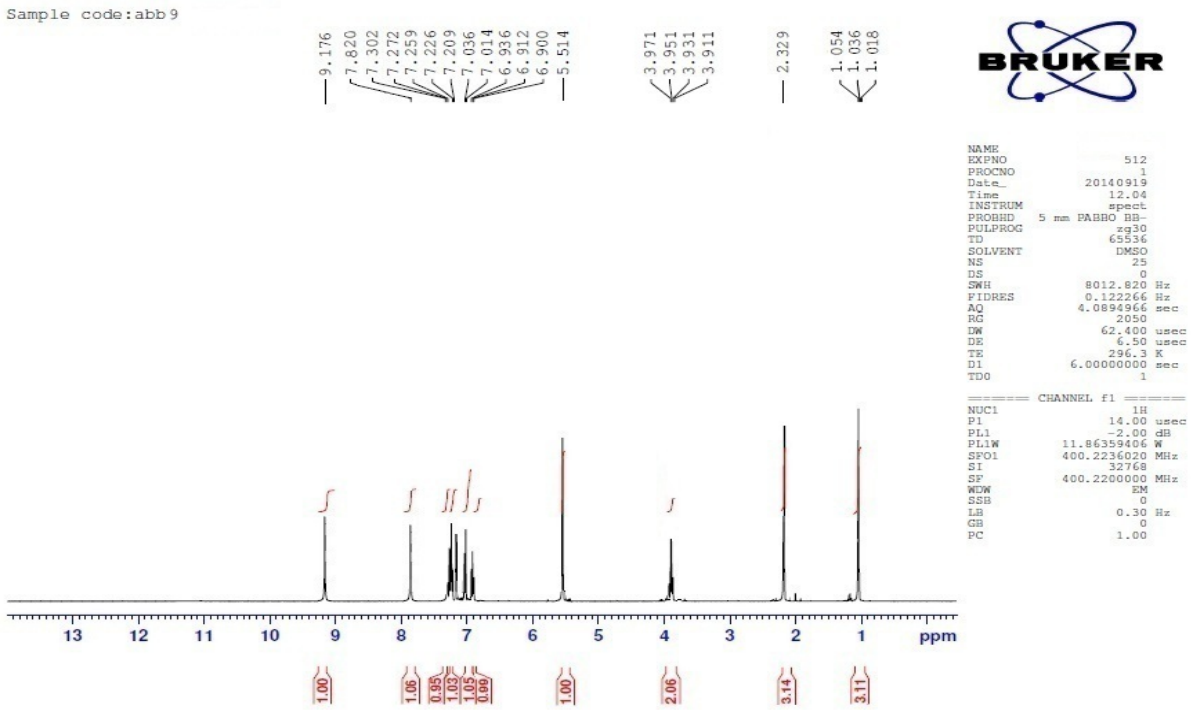
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-fluorophenyl)-6-methyl-pyrimidine-2(1H)-one (4h):



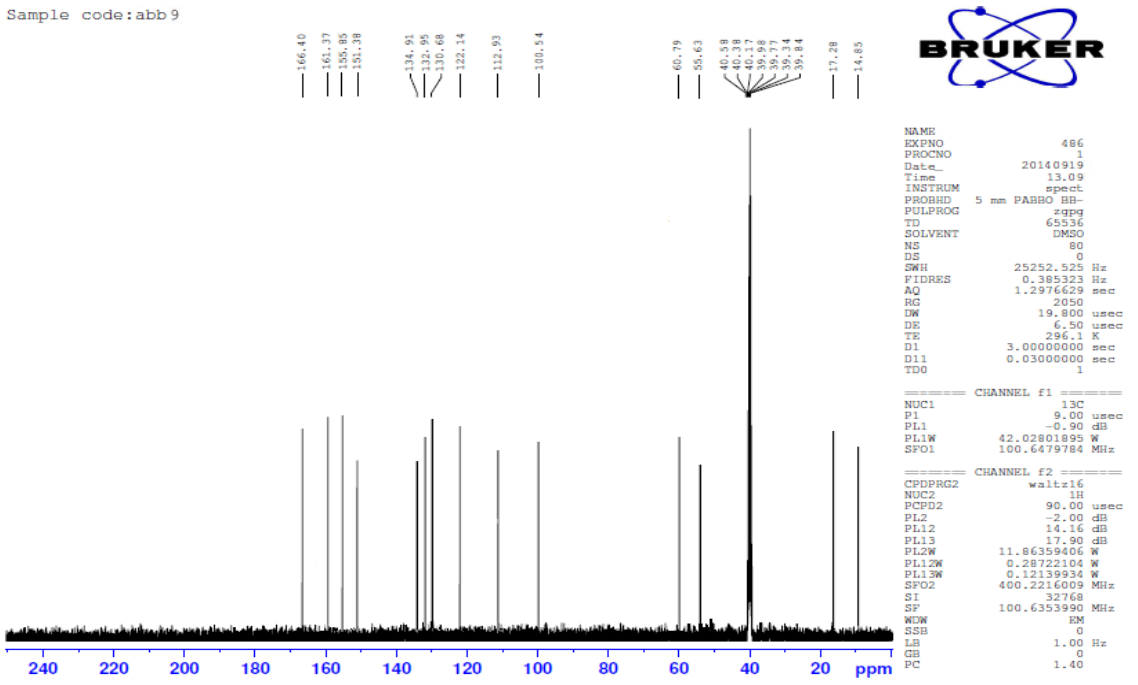
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-fluorophenyl)-6-methyl-pyrimidine-2(1H)-one (4h):



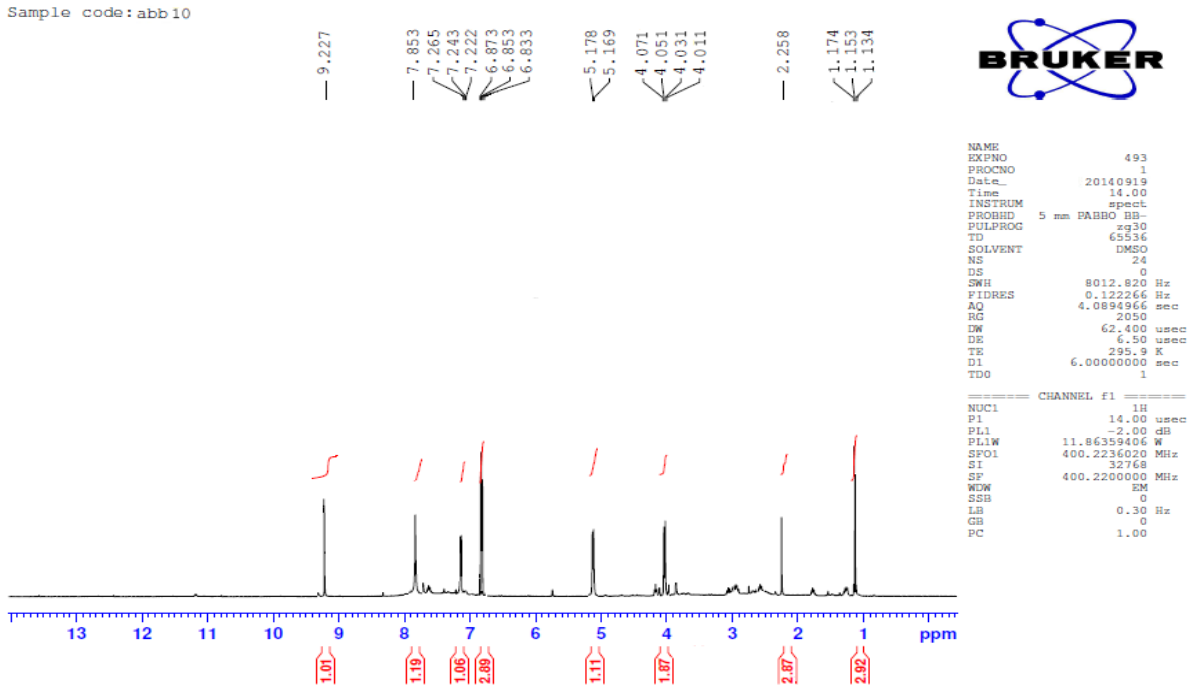
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(2-nitrophenyl)-6-methyl-pyrimidine-2(1H)-one (4i):



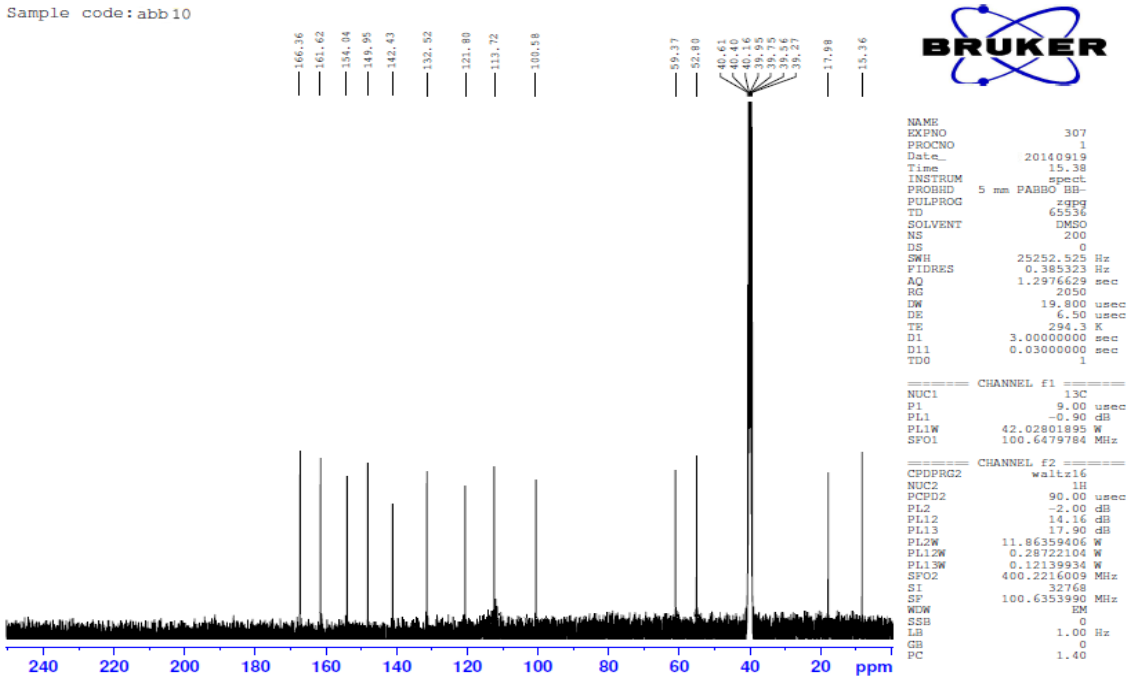
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(2-nitrophenyl) -6-methyl-pyrimidine-2(1H)-one (4i):



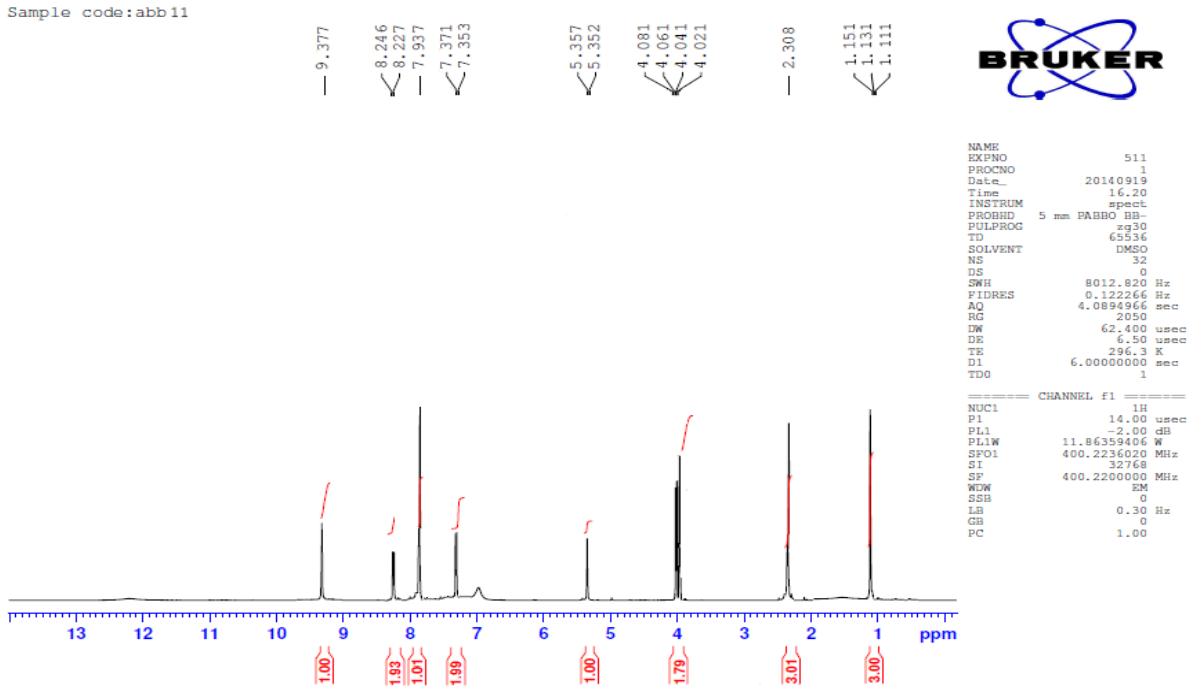
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(3-nitrophenyl)-6-methyl-pyrimidine-2(1H)-one (4j):



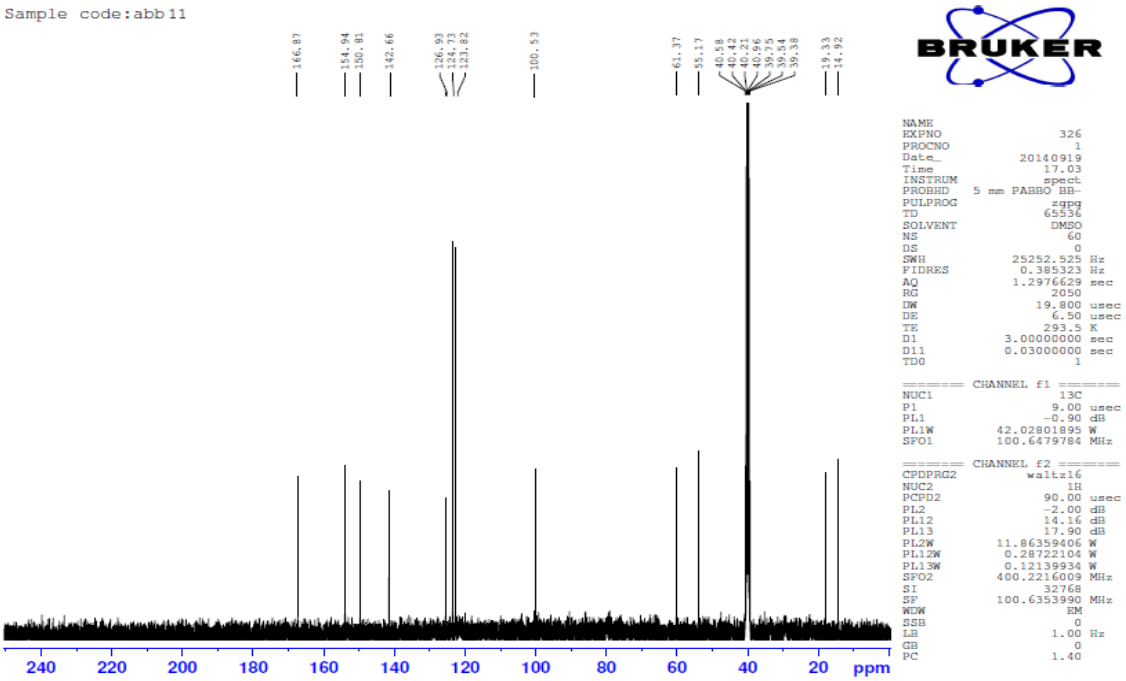
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(3-nitrophenyl)-6-methyl-pyrimidine-2(1H)-one (4j):



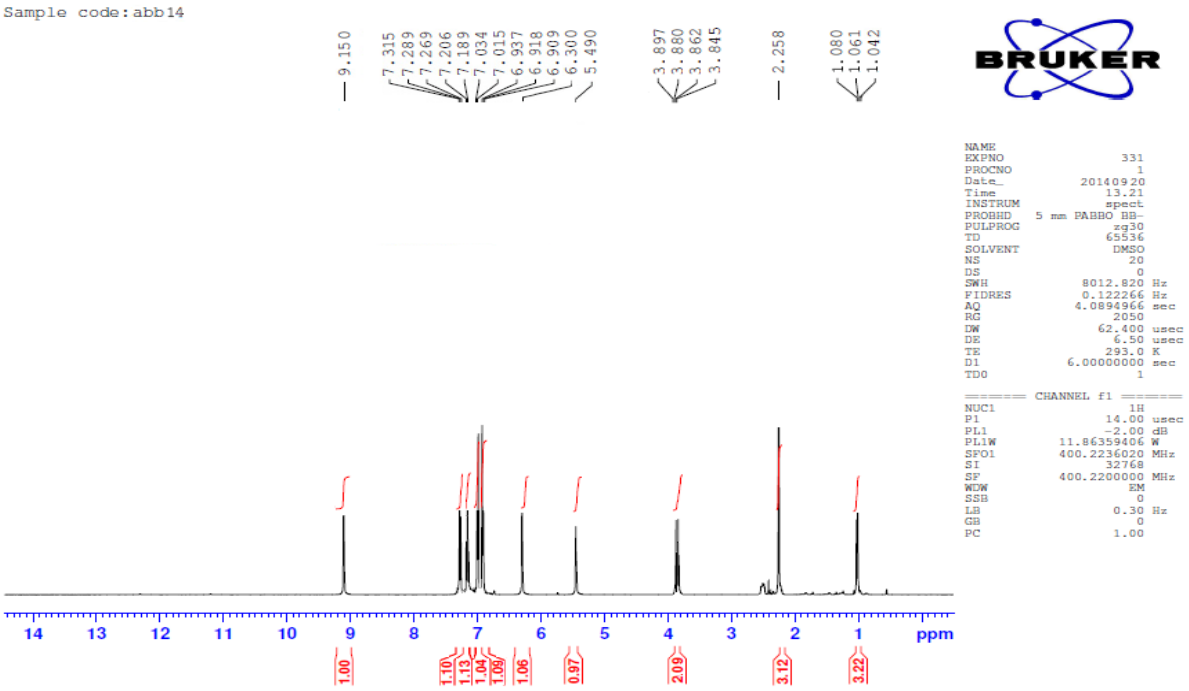
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-nitrophenyl)-6-methyl-pyrimidine-2(1H)-one (4k):



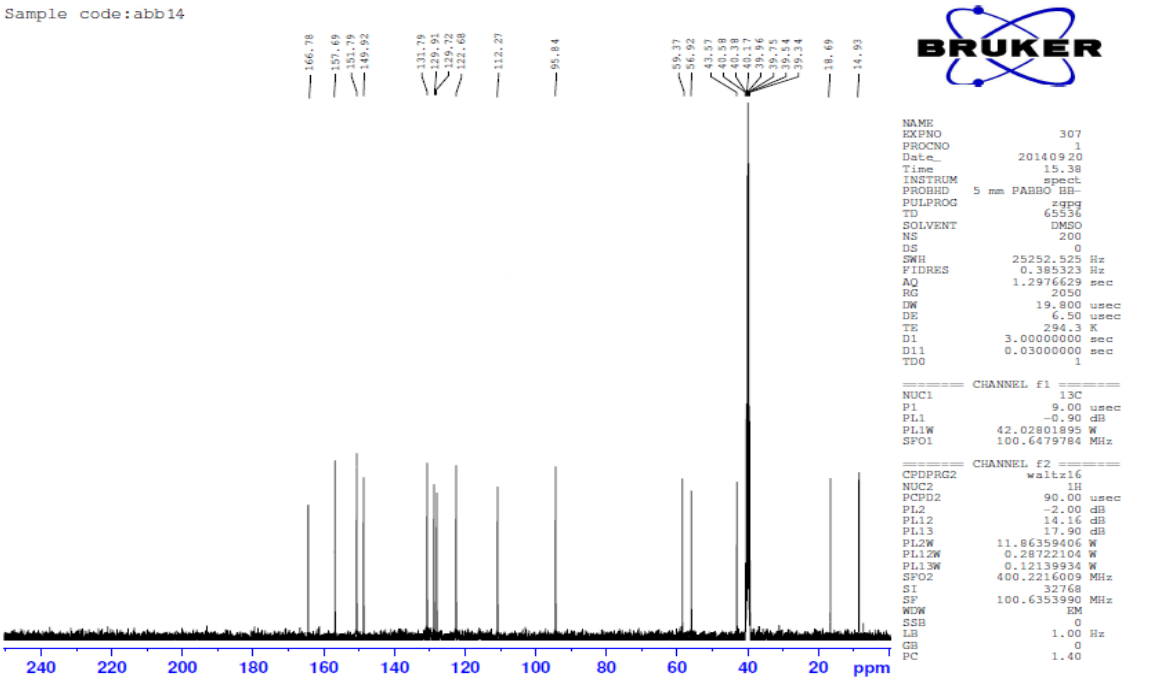
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-nitrophenyl)-6-methyl-pyrimidine-2(1H)-one (4k):



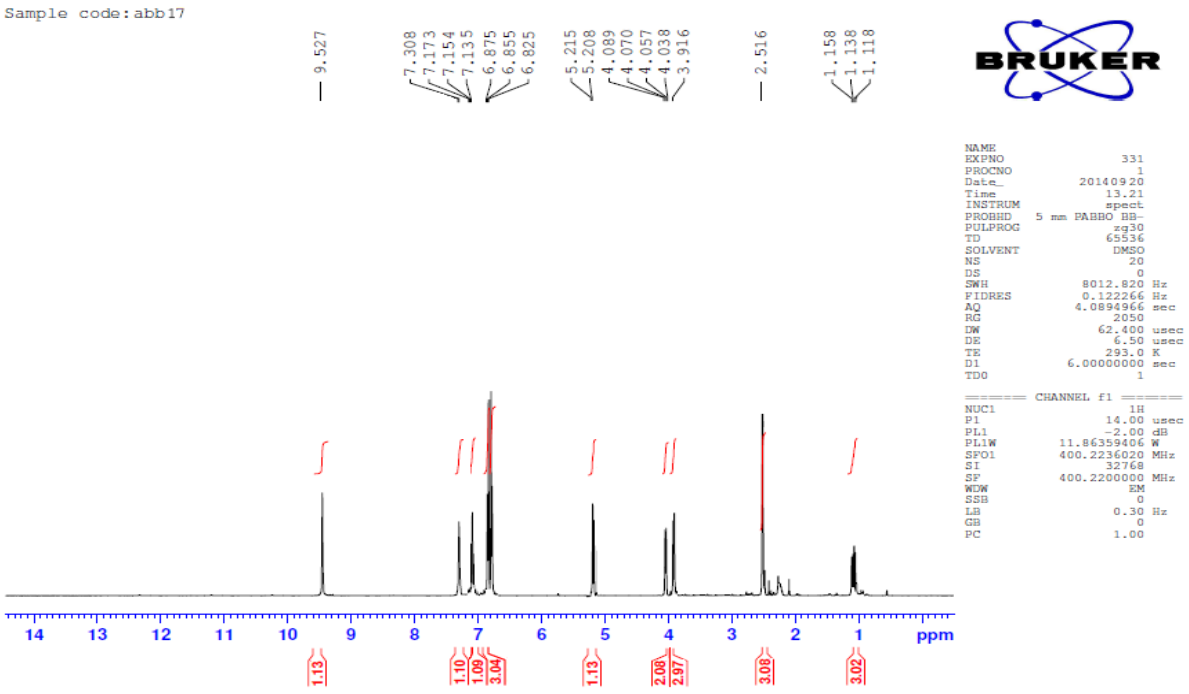
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(2-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4l):



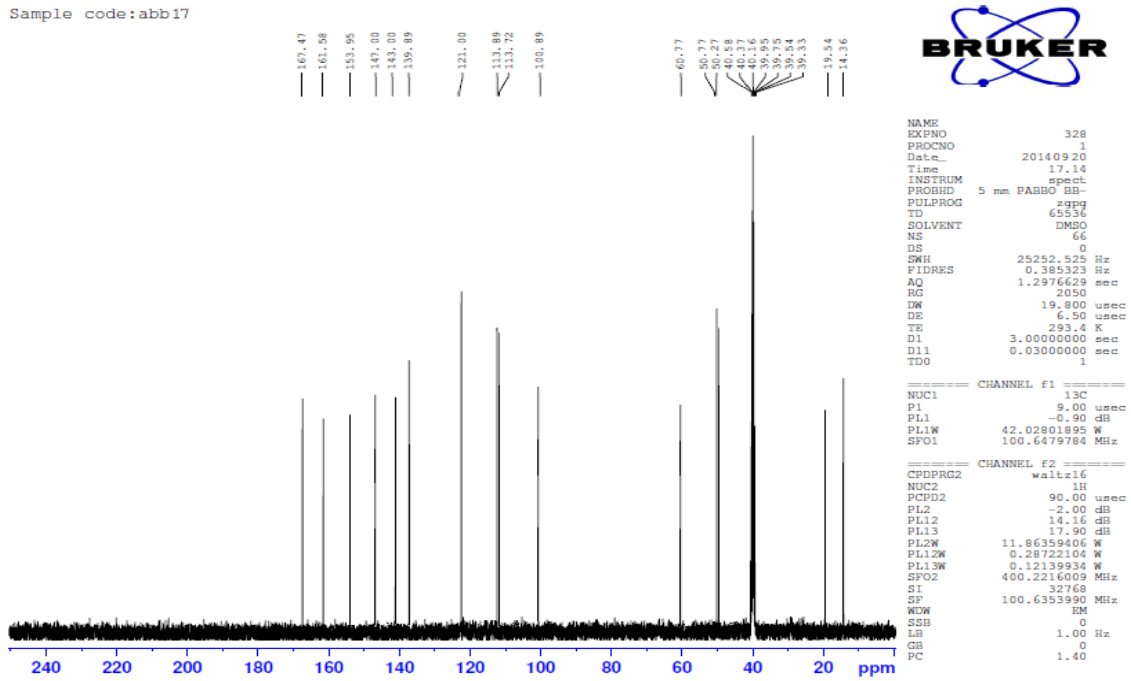
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(2-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4l):



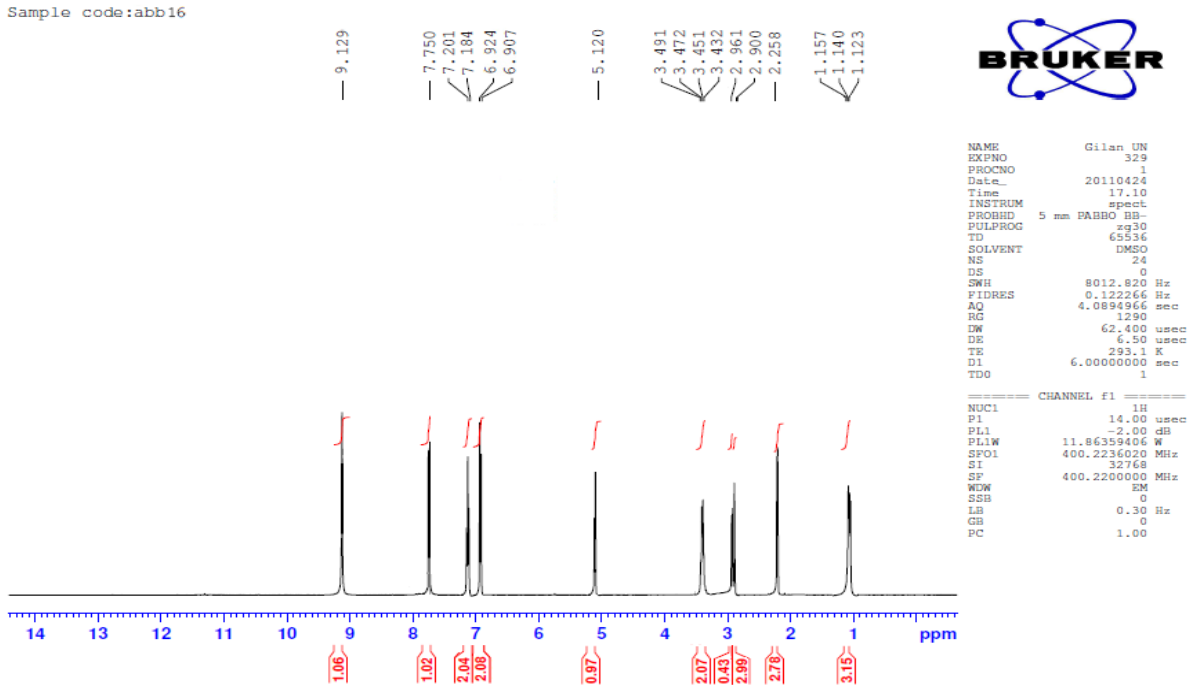
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(3-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4m):



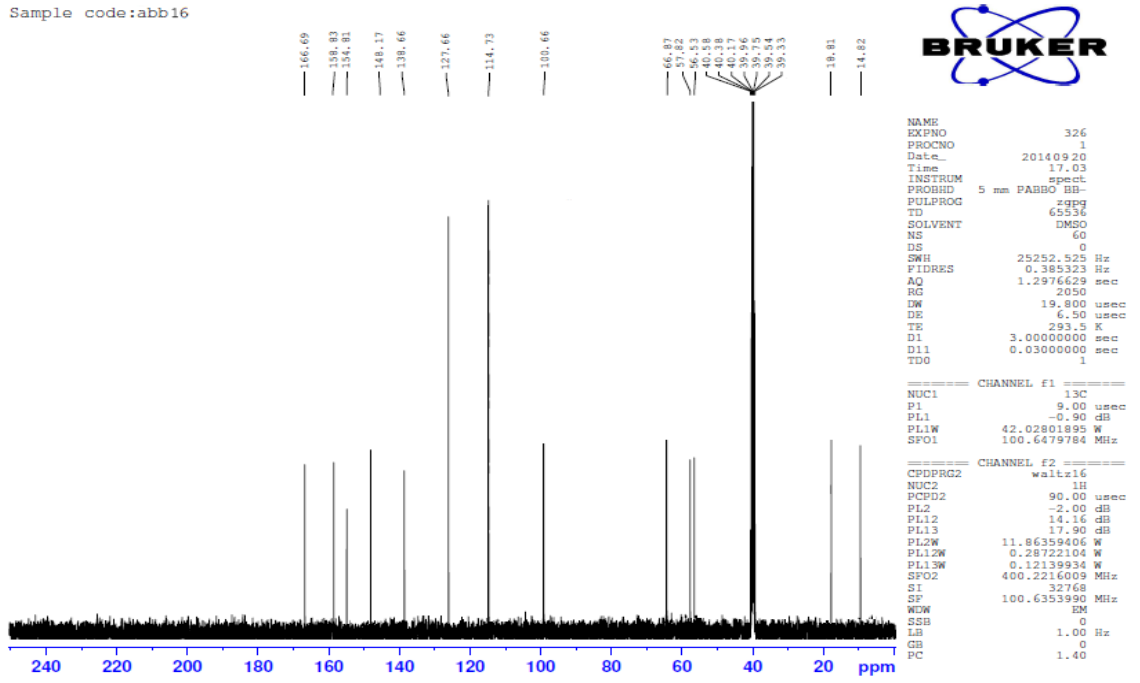
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(3-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4m):



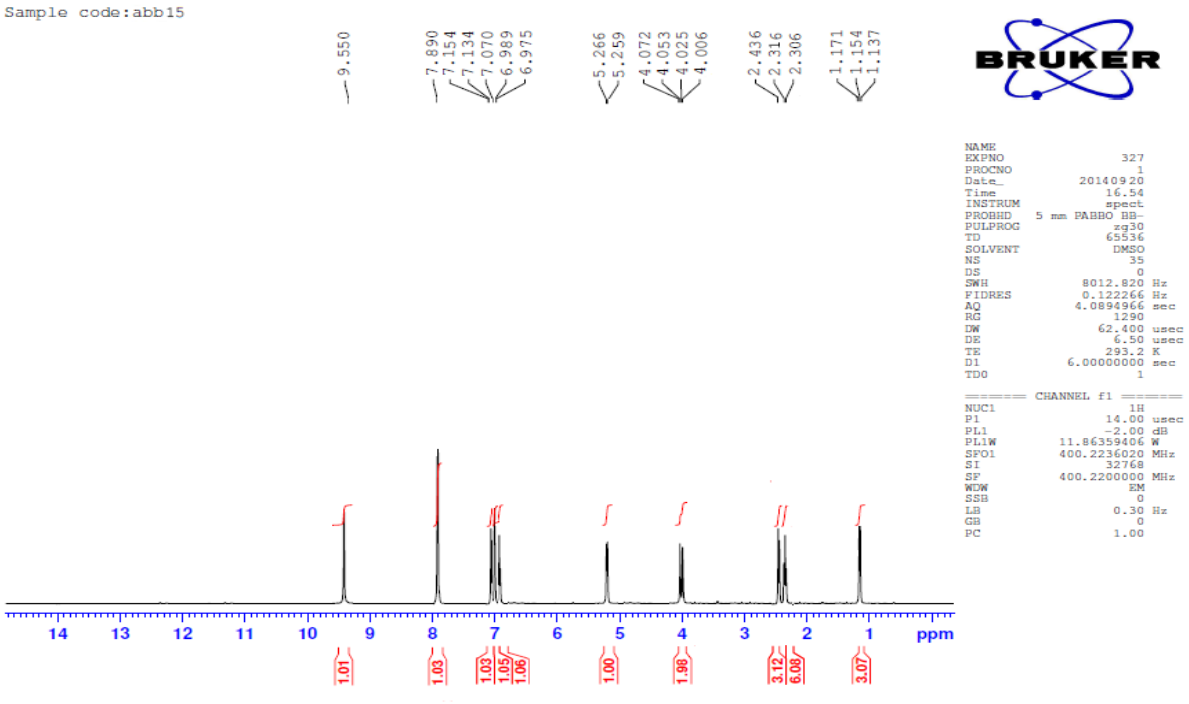
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4n):



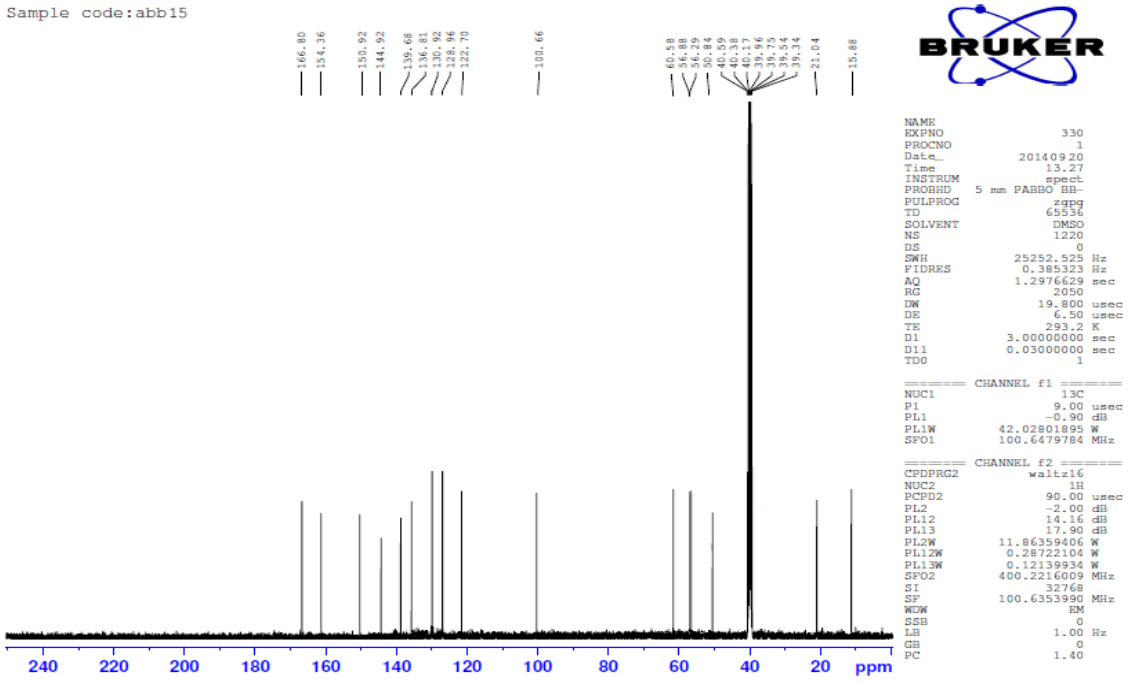
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-methoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4n):



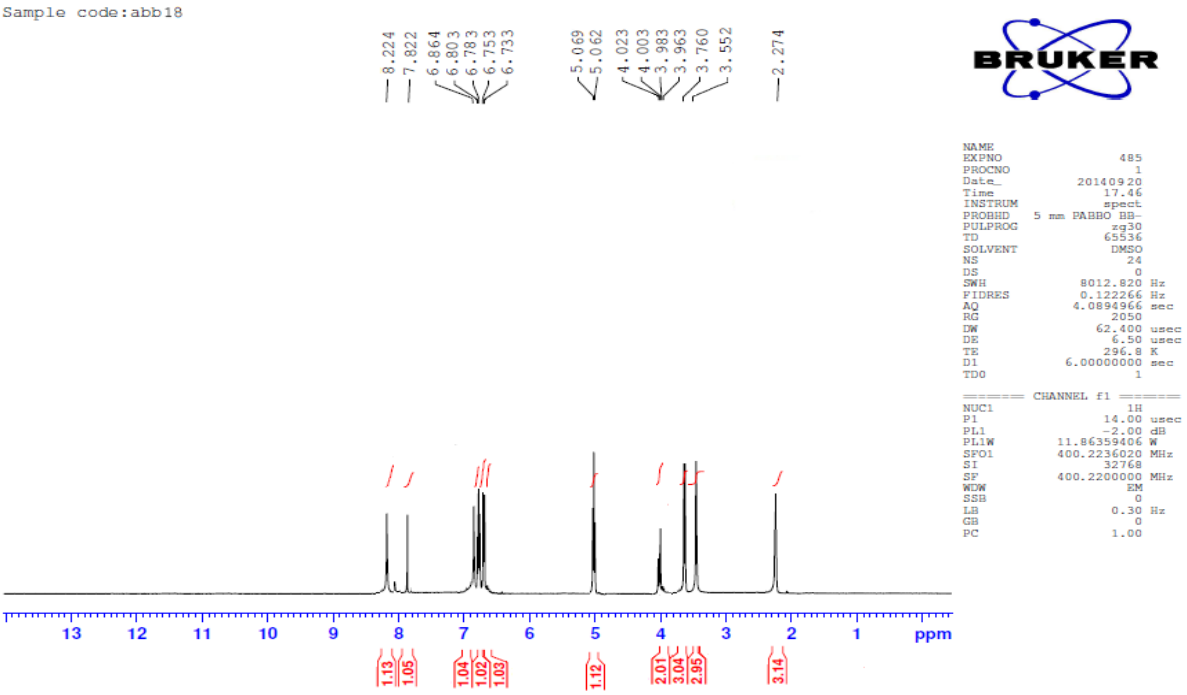
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(3,4-dimethoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4o):



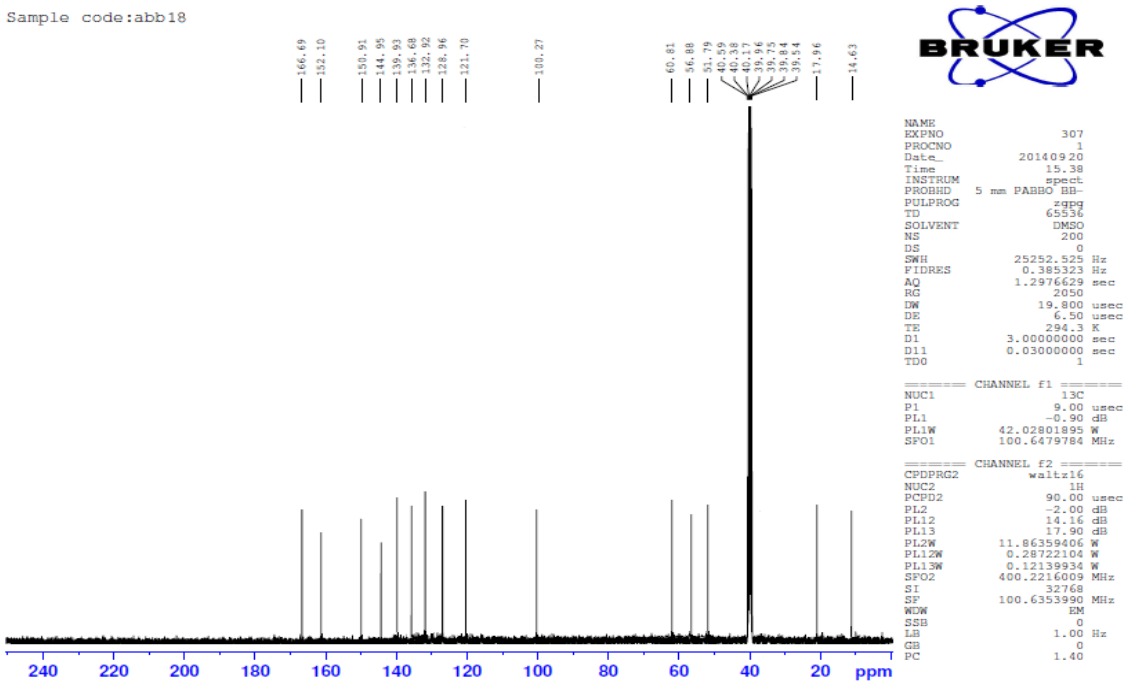
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(3,4-dimethoxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4o):



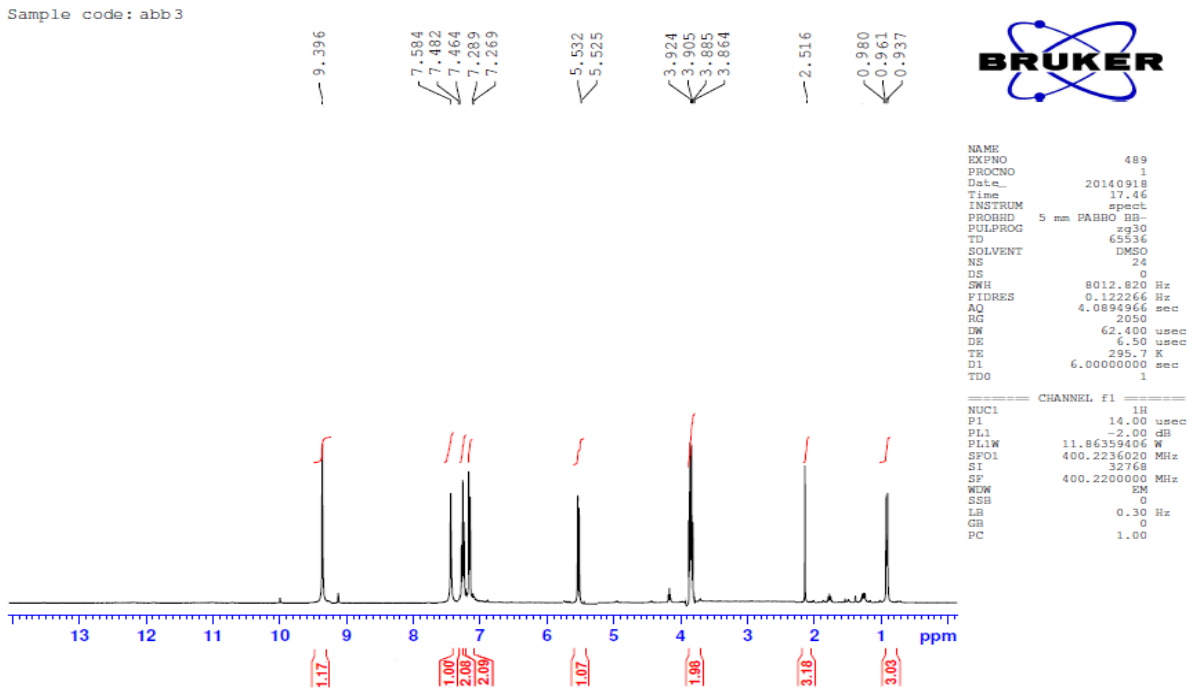
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(3-methoxy-4-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4p):



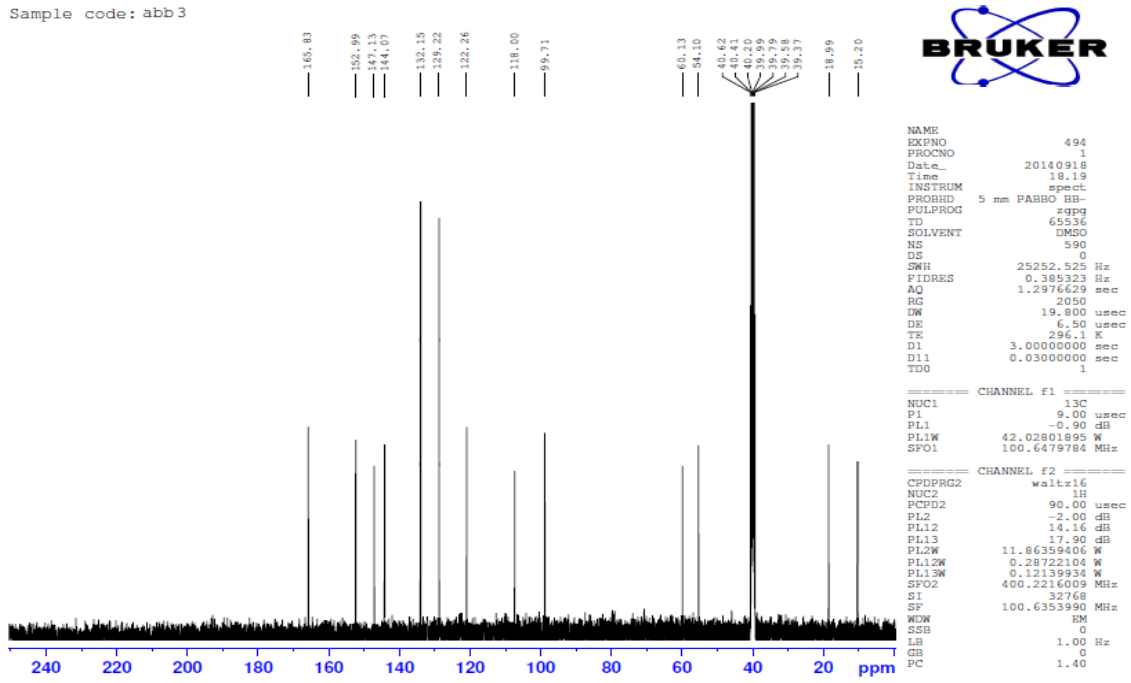
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(3-methoxy-4-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4p):



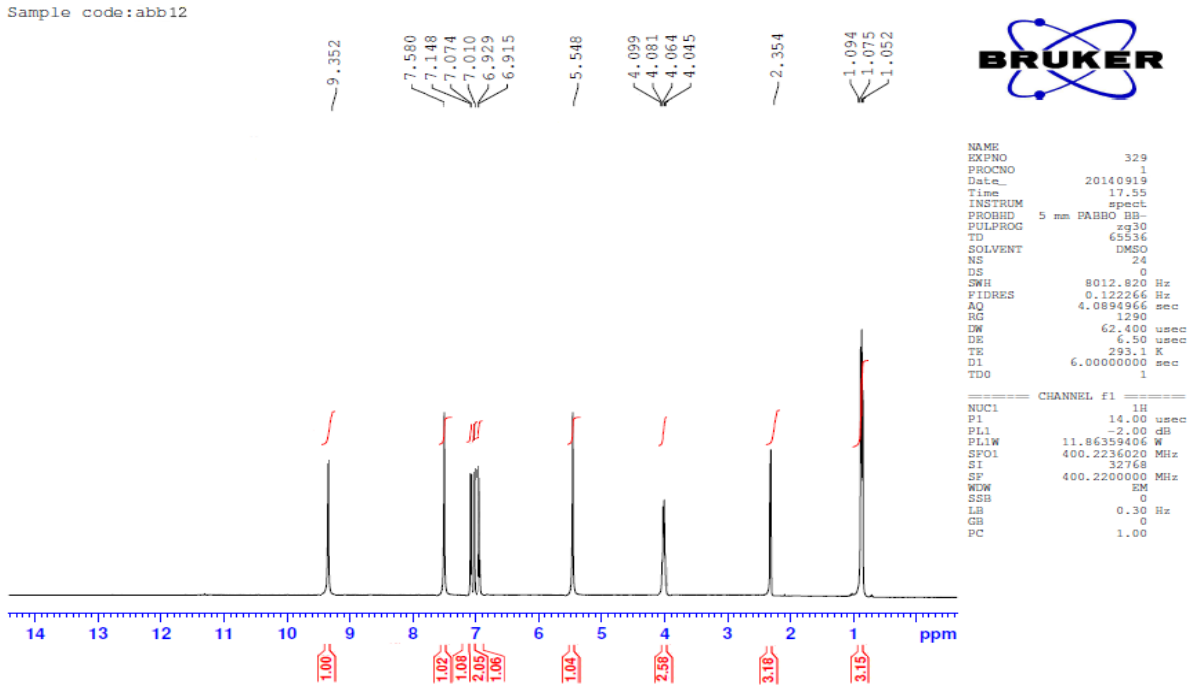
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-trifluoromethylphenyl)-6-methyl-pyrimidine-2(1H)-one (4q):



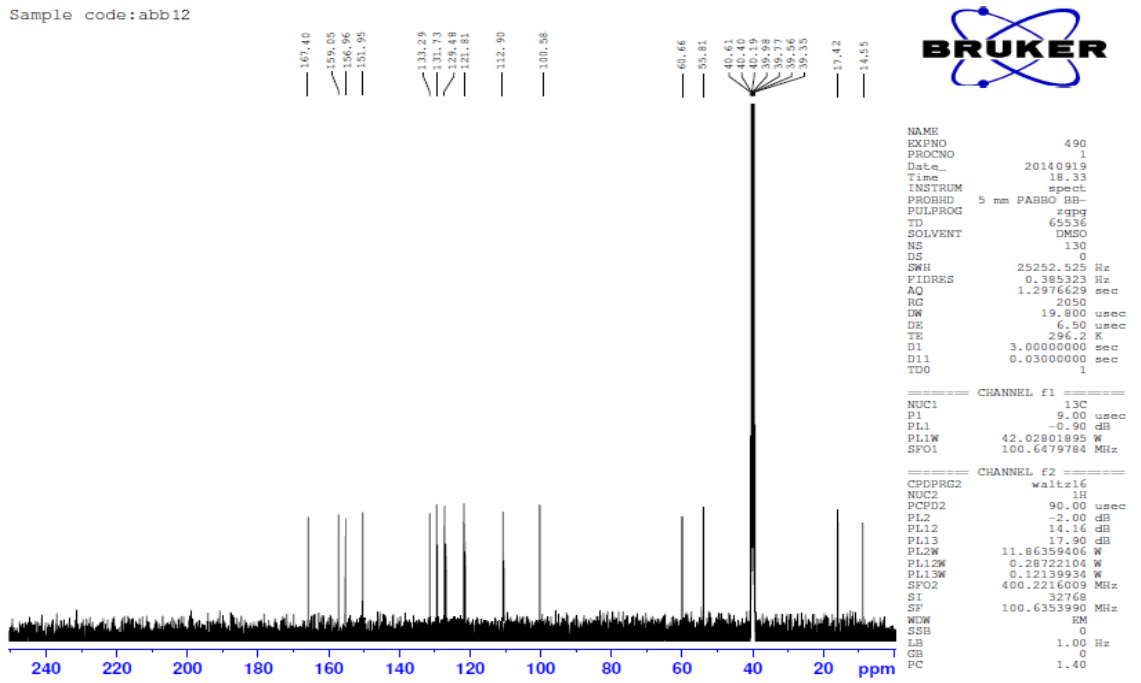
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-trifluoromethylphenyl)-6-methyl-pyrimidine-2(1H)-one (4q):



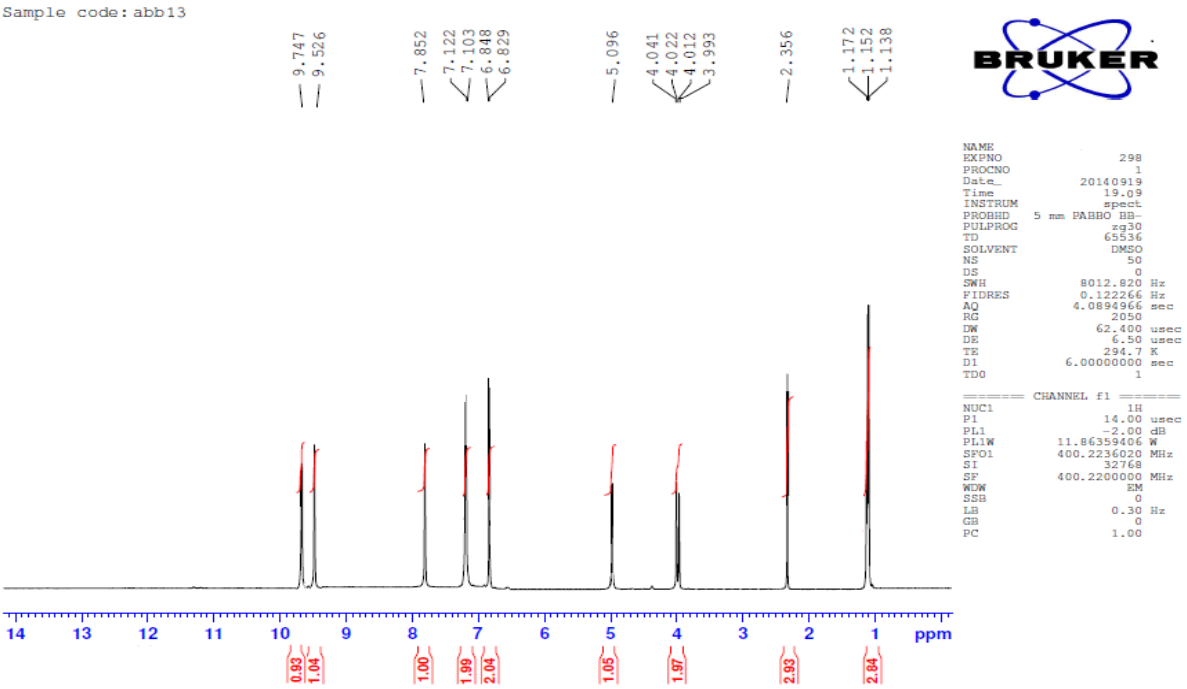
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(2-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4r):



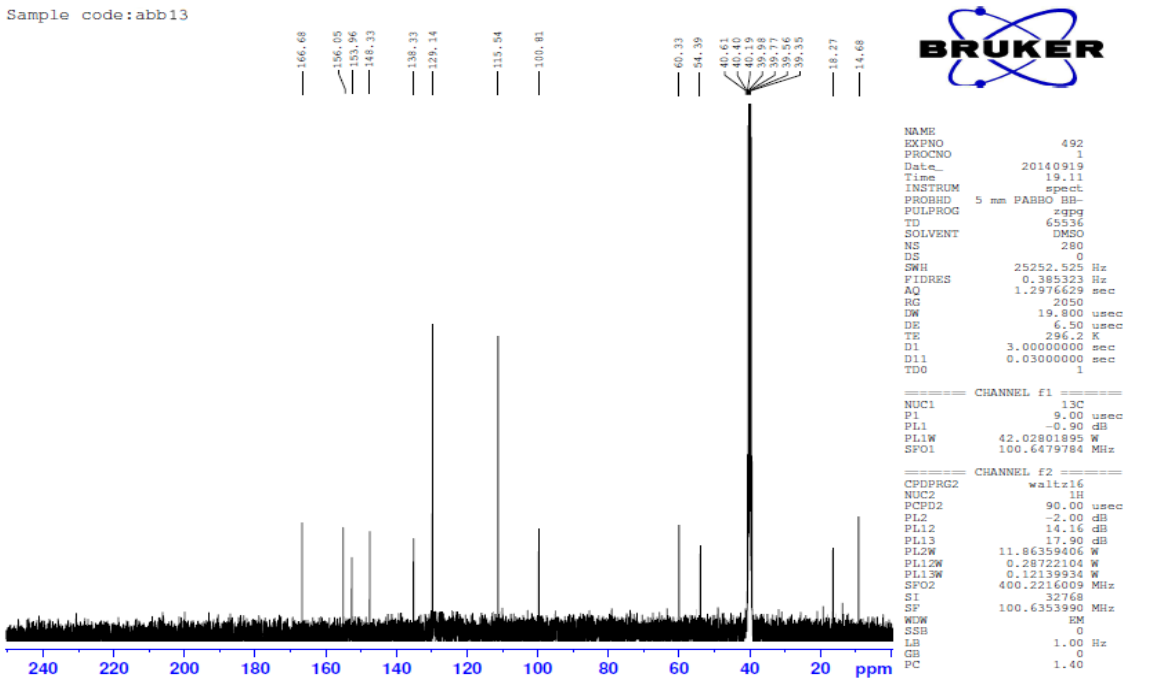
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(2-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4r):



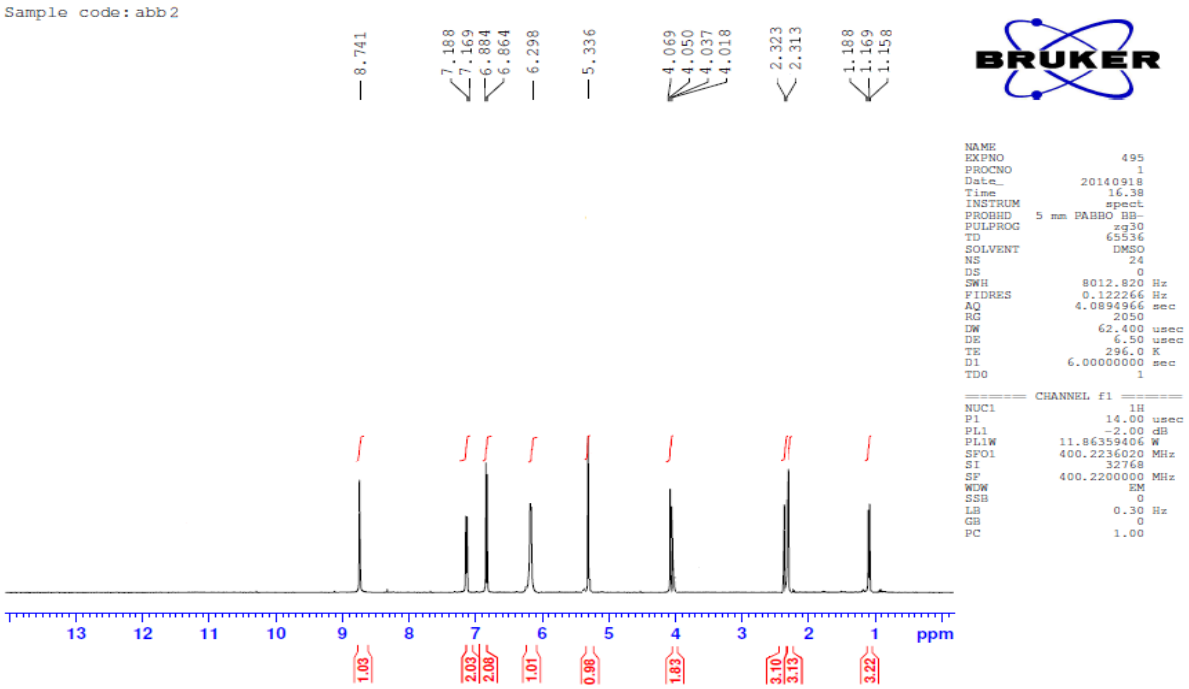
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4s):



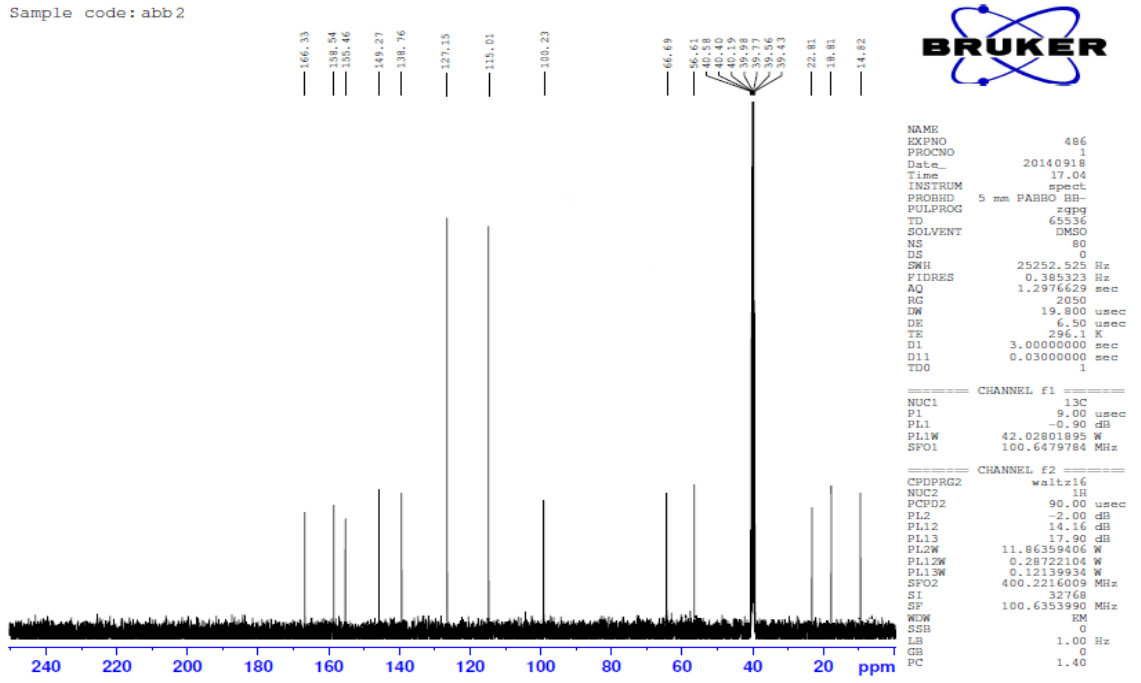
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-hydroxyphenyl)-6-methyl-pyrimidine-2(1H)-one (4s):



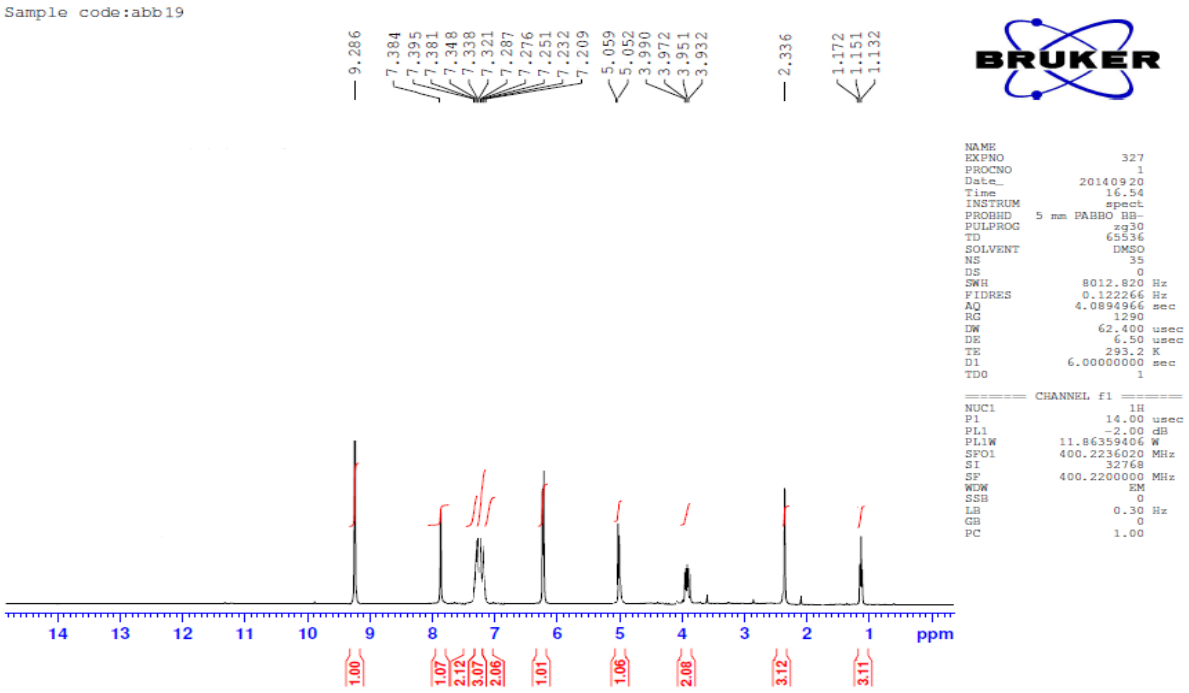
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-p-tolyl)-6-methyl-pyrimidine-2(1H)-one (4t):



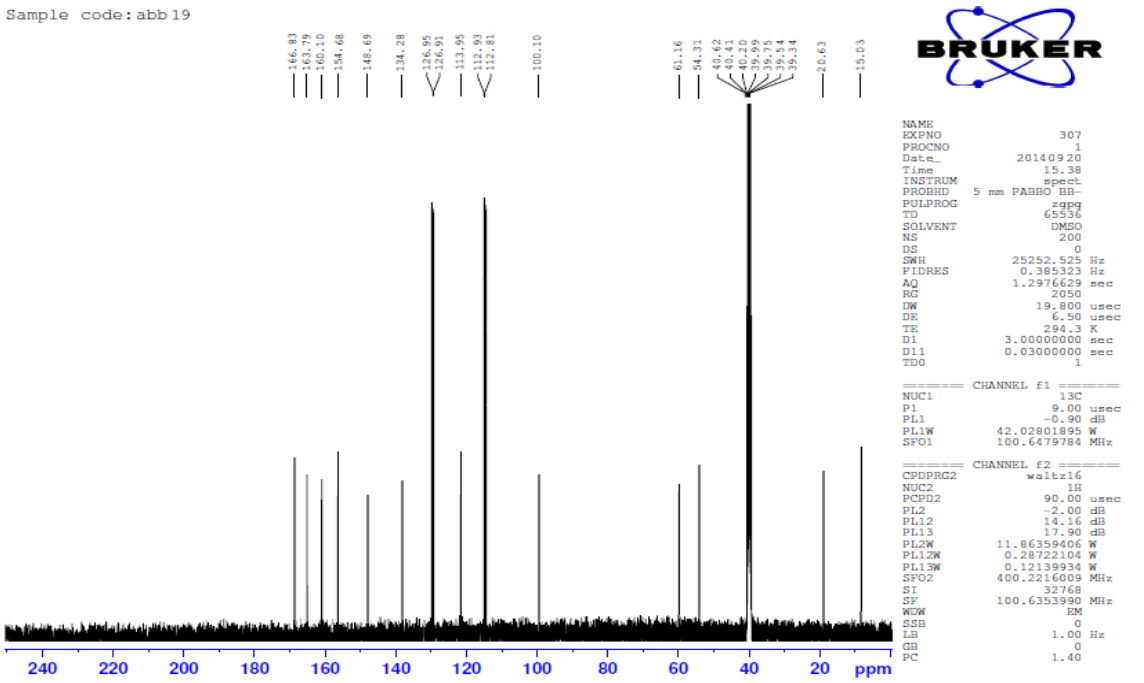
The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-p-tolyl)-6-methyl-pyrimidine-2(1H)-one (4t):



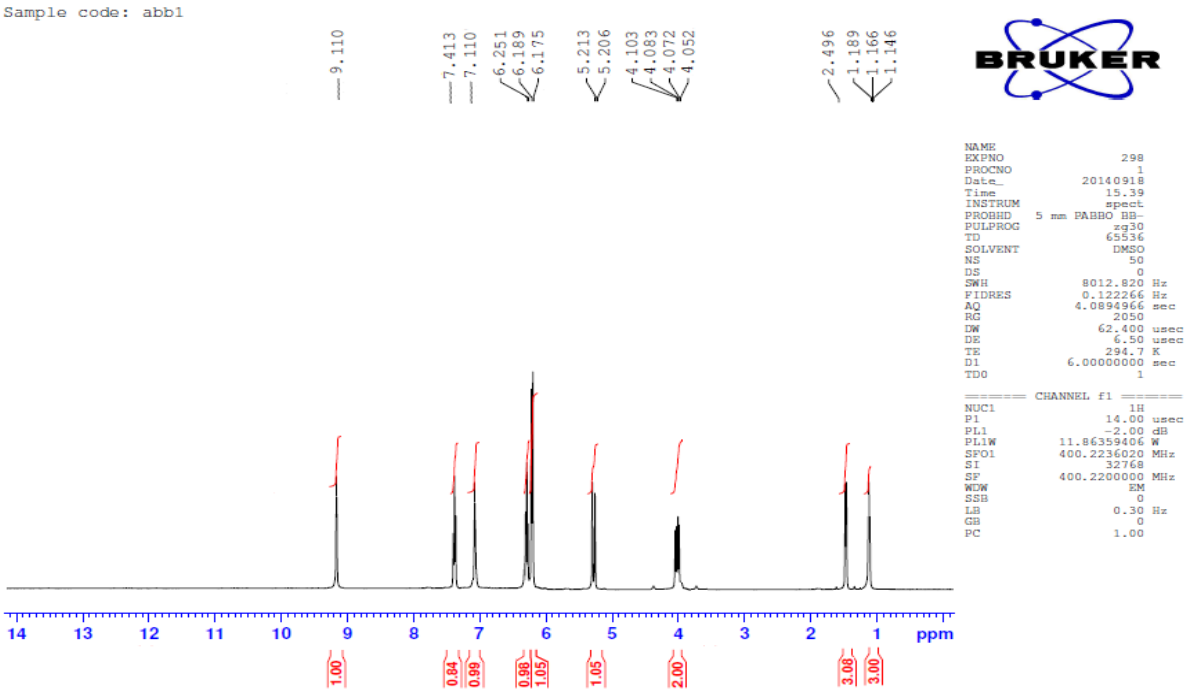
The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(4-styryl)-6-methyl-pyrimidine-2(1H)-one (4u):



The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(4-styryl)-6-methyl-pyrimidine-2(1H)-one (4u):



The ^{1}H NMR spectrum of3,4-Dihydro-5-etoxycarbonyl-4-(2-furyl)-6-methyl-pyrimidine-2(1H)-one (4v):



The ^{13}C NMR spectrum of 3,4-Dihydro-5-etoxycarbonyl-4-(2-furyl)-6-methyl-pyrimidine-2(1H)-one (4v):