# Supporting Information

## A Concise Synthesis Route to Access Bioactive Natural Products – Dihydrocurcumins/1,7-Diarylheptanoids

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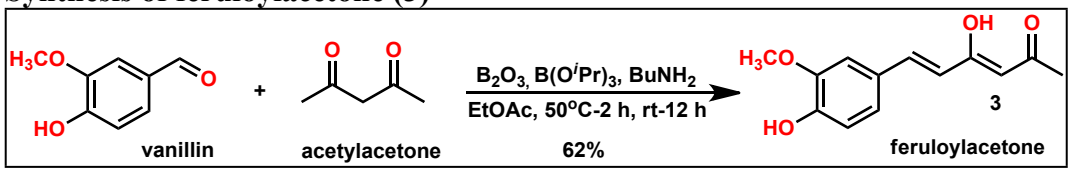
## 1. Materials and methods

All commercially obtained reagents/solvents were used as received; chemicals were purchased from Spectrochem®, SRL®, Avra, Sigma-Aldrich® and Fisher Scientific®, and used as received without further purification. Unless stated otherwise, reactions were conducted in oven-dried glassware and under normal atmospheric conditions. $^{1}$H NMR and $^{13}$C NMR spectra were recorded on Bruker 400 MHz spectrometer operating with the $^{13}$C resonance frequency of 100 MHz and proton resonance frequency of 400 MHz. Data from the $^{1}$H NMR spectroscopy are reported as chemical shift (δ ppm) with the corresponding integration values. Coupling constants (*J*) are reported in hertz (Hz). Standard abbreviations indicating multiplicity were used as follows: s (singlet), br (broad), d (doublet), t (triplet), q (quartet) and m (multiplet). Data from $^{13}$C NMR spectra are reported in terms of chemical shift (δ ppm). FT-IR spectra were recorded in Thermo Scientific Nicolet Nexus 470 FT-IR spectrometer and band positions are reported in reciprocal centimeters. Samples were made as pellet with KBr and recorded. Melting points were recorded with Polmon MP 98. The instrument is calibrated with benzoic acid before the measurement. Mass spectra were recorded with 1100 Series LC/MSD Trap XCT Plus (Agilent) mass spectrometer in positive ion mode. Elemental analysis was recorded in the Thermo fisher flashEA 1112 Analyzer.

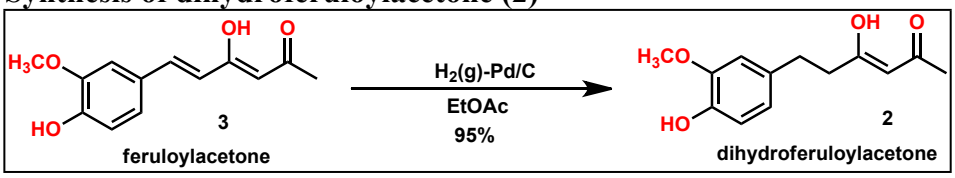
## 2. Synthesis of precursors and DHCURs

**Synthesis of feruloylacetone (3)**



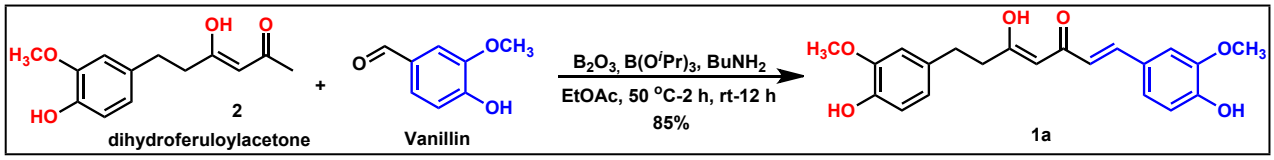

**Pale yellowish solid:** (Yield = 62%). **M.pt:** 145-147 °C (lit.146–147 °C). **IR (KBr):** 3263 (-*O-H*), 1634 (-*C=O*), 1571 (-C=C-***C=O***), 1515 (-*C=C*-), 1030 (-*C-O*) cm$^{-1}$. **$^{1}$H NMR:** (400 MHz, $CDCl_3$) δ: 7.54 (d, *J* = 16 Hz, 1H, Ar-C*H*=CH-), 7.11-7.09 (m, 1H, Ar-*H*), 7.03 (d, *J* = 4 Hz, 1H, Ar-*H*), 6.93 (d, *J* = 8 Hz, 1H, Ar-*H*), 6.33 (d, *J* = 16 Hz,1H, Ar-CH=C*H*-C(O)-), 5.86 (bs,1H, Ar-*OH*), 5.64 (s,1H, methine-*H*), 3.95 (s, 3H, -OC$H_3$), 2.17 (s, 3H, (O)CC$H_3$). **$^{13}$C NMR**: (100 MHz, $CDCl_3$) δ: 197.1 (-*C*=O), 177.9 (=*C*-OH), 147.7 (Ar-*C*=C-), 146.8 (Ar*C*), 140.1(Ar*C*), 127.7 (Ar*C*), 122.6 (Ar*C*), 120.3 (Ar*C*), 114.8 (Ar*C*), 109.5 (Ar*C*), 100.7 (methine-*C*), 55.9 (-O*C*$H_3$), 26.8 ($H_3$*C*-C(O)). **MS: (LC-MS):** *m/z* [M+1] 235.6.

**Synthesis of dihydroferuloylacetone (2)**



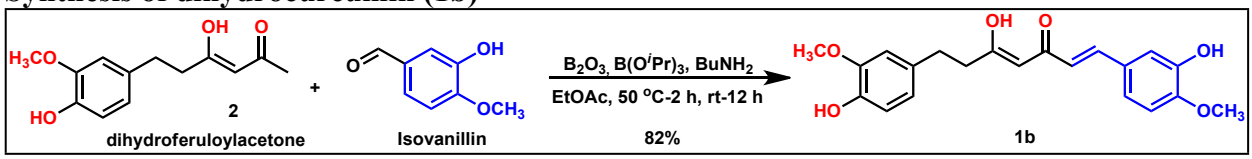

**Off white solid:** (Yield = 95%). **M.pt**: 39-41°C (lit.40–41 °C). **IR (KBr):** 3447 (-*O-H*), 1723(-*C=O*), 1571 (-C=C-*C=O*), 1517 (-*C=C*-), 1084 (-*C-O*) $cm^{-1}$. **$^1$H NMR :**(400 MHz, $CDCl_3$) δ : 15.49 (s, 1H, enolic-O*H*), 6.84-6.81 (m, 1H, Ar-*H*), 6.71-6.65 (m, 2H, Ar-*H*), 5.49 (s, 1H, Ar-O*H*), 5.47 (s,1H, methine-*H*), 3.87 (s, 3H, -OC*H*$_3$), 2.88-2.83 (m, 2H, Ar-C*H*$_2$-), 2.58-2.54 (m, 2H, Ar-$CH_2$-*CH*$_2$-), 2.04 (s, 3H, C*H*$_3$-C(O)-). **$^{13}$C NMR:** (100 MHz, $CDCl_3$) δ: 193.4 (-*C*=O), 191.2 (=*C*-OH), 146.5 (Ar*C*), 144.1 (Ar*C*), 132.7 (Ar*C*), 120.9 (Ar*C*), 114.4 (Ar*C*), 111.1 (Ar*C*), 100.2 (methine-*C*), 56.0 (-O*C*$H_3$), 40.5 (Ar-*C*$H_2$-), 31.4 (Ar-$CH_2$-*C*$H_2$-), 24.9 ($H_3$*C*-C(O)). **MS: (LC-MS):** *m/z* [M+1] 237.2.

**Synthesis of dihydrocurcumin (1a)**



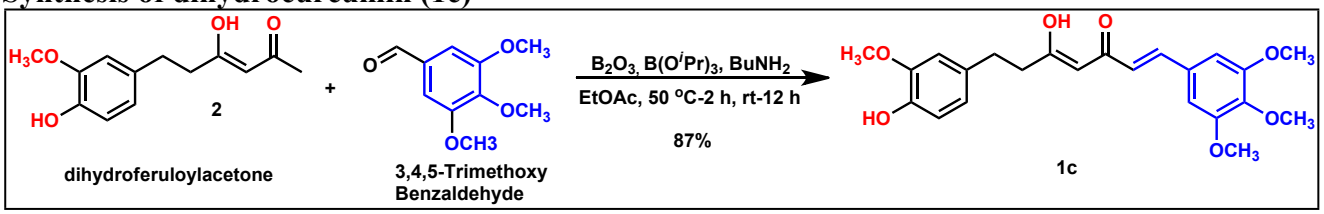

**Pale yellowish solid:** (Yield = 85%). **M.pt**: 178–182°C (lit.179-180 °C). **IR (KBr):** 3447 (-*O-H*), 1630 (-*C=O*), 1593 (-C=C-*C=O*), 1509 (-*C=C*-), 1131 (-*C-O*) $cm^{-1}$. **$^1$H NMR:** (400 MHz, DMSO-d6) δ: 15.43 (s, 1H, enolic-O*H*), 9.63 (-=$CH_2$-Ar-O*H*), 8.71 (Ar-O*H*), 7.48 (d, *J* = 16 Hz, 1H, Ar-C*H*=), 7.29 (s, 1H, Ar-*H*), 7.11-7.09 (m, 1H, Ar-*H*), 6.81-6.79 (m, 2H, Ar-*H*), 6.67-6.59 (m, 3H, Ar-*H*), 5.86 (s, 1H, methine-*H*), 3.82 (s, 3H, -OC*H*$_3$), 3.73 (s, 3H, -OC*H*$_3$), 2.81 -2.77 (m, 2H, Ar-C*H*$_2$-), 2.68-2.65 (m, 2H, Ar-$CH_2$-C*H*$_2$-). **$^{13}$C NMR**: (100 MHz, DMSO-d6) δ: 198.9 (-*C*=O), 177.9 (-C=*C*-OH), 149.1 (Ar-*C*H=CH-), 147.9 (Ar-*C*), 147.3 (Ar-*C*), 144.6(Ar-*C*), 140.1 (Ar-*C*), 131.5 (Ar-CH=*C*H-), 126.3 (Ar-*C*), 122.8 (Ar-*C*), 120.2 (Ar-*C*), 119.6 (Ar-*C*), 115.6 (Ar-*C*), 115.2 (Ar-*C*), 112.5 (Ar-*C*), 111.1 (Ar-*C*), 100.0 (methine-*C*H-), 55.6 (-O*C*$H_3$), 55.5 (-O*C*$H_3$), 41.1 (Ar-*C*$H_2$-), 30.3 (Ar-$CH_2$-*C*$H_2$-). **MS**: **(LC-MS):** *m/z* [M+1] 371.9. **Anal. Calculated for $C_{21}H_{22}O_6$**: C, 68.10: H, 5.99: O, 25.92. Found C, 67.96: H, 5.97.

**Synthesis of dihydrocurcumin (1b)**



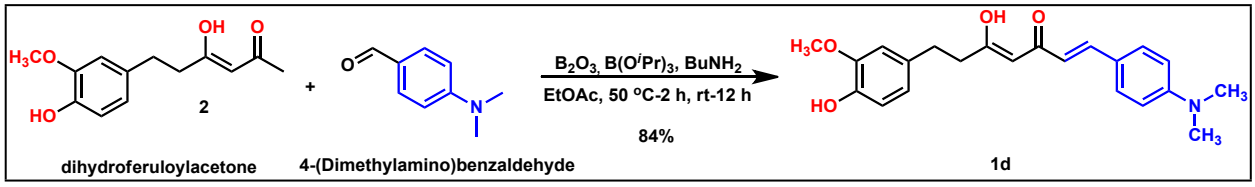
**Pale yellowish solid:** (Yield = 82%). **M.pt**: 113-116°C. **IR (KBr):** 3447 (-O-H), 1630 (-C=O), 1593 (-C=C-C=O), 1509 (-C=C-), 1131 (-C-O) $cm^{-1}$. **$^1$H NMR:** (400 MHz, $CDCl_3$) δ: 15.43 ( s, 1H, enolic-O*H*), 7.50 (d, *J* = 16 Hz, 1H, Ar-C*H*=), 7.14-7.13 (m, 1H, Ar-*H*), 7.03-7.01 (m, 1H, Ar-*H*), 6.85-6.82 (m, 1H, Ar-*H*), 6.72 -6. 70 (m, 2H, Ar-*H*), 6.32-6.28 (d, *J*=16 Hz, 1H, Ar-CH=C*H*-), 5.63 (s, 1H. methine-*H*), 5.59 (s, 1H, =$CH_2$-Ar-O*H*) 5.48 (s,1H, Ar-O*H*), 3.92 (s, 3H, -OC$H_3$), 3.86 (s, 3H, -OC$H_3$), 2.93 -2.89 (m, 2H, Ar-C$H_2$-), 2.69-2.65 (m, 2H, Ar-$CH_2$-C$H_2$-) . **$^{13}$C NMR**: (400 MHz, $CDCl_3$) δ: 199.4 (-*C*=O), 171.6 (-C=*C*-OH), 148.3 (Ar-*C*H=CH-), 146.4 (Ar-*C*), 145.9 (Ar-*C*), 143.9 (Ar-*C*), 139.8 (Ar-*C*), 132.8 (Ar-CH=*C*H-), 128.7 (Ar-*C*), 121.9 (Ar-*C*), 120.9 (Ar-*C*), 120.8 (Ar-*C*), 114.3 (Ar-*C*), 112.6 (Ar-*C*), 110.9 (Ar-*C*), 110.6 (Ar-*C*), 100.6 (methine-*C*H-), 56.0 (-O*C*$H_3$), 55.9 (-O*C*$H_3$), 42.3 (Ar-*C*$H_2$-), 31.2 (Ar-$CH_2$-*C*$H_2$-). MS: **(LC-MS):** *m/z* [M+1] 371.9. **Anal. Calculated for $C_{21}H_{22}O_6$** : C, 68.10: H, 5.99: O, 25.92. Found C, 67.96: H, 5.97.

**Synthesis of dihydrocurcumin (1c)**



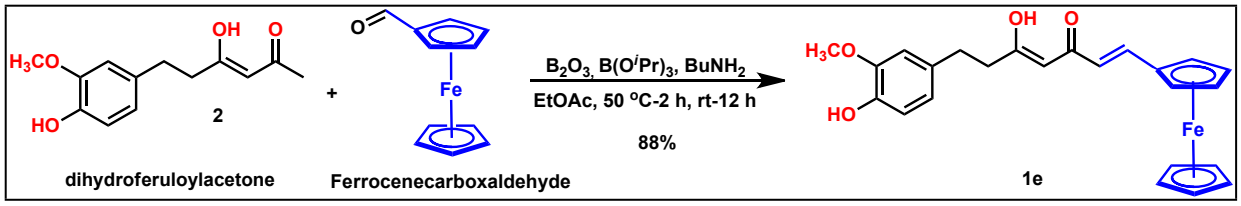

**Pale yellowish solid:** (Yield = 87%). **M.pt:** 118-121°C. **IR (KBr):** 3416 (-O-H), 1641 (-C=O), 1597 (-C=C-C=O), 1507 (-C=C-), 1131 (-C-O) $cm^{-1}$. **$^1$H NMR:** (400 MHz, $CDCl_3$): 15.35 (s, 1H, enolic-O*H*), 7.52-7.48 (d, *J* = 16 Hz, 1H, Ar-C*H*=), 6.85-6.83 (m, 1H, Ar-*H*) ,6.74-6.69 (m, 4H, Ar-*H*), 6.35 (d, *J* = 16 Hz,1H, Ar-CH=C*H*-), 5.62 (s, 1H, methine-*H*) , 5.48 (s, 1H, Ar-O*H*), 3.90 (s, 6H, -OC$H_3$), 3.88 (s, 3H, -OC$H_3$), 3.87 (s, 3H, -OC$H_3$), 2.93-2.89 (m, 2H, Ar-C$H_2$-), 2.71-2.67 (m, 2H, Ar-$CH_2$-C$H_2$-). **13C NMR:** (100 MHz, $CDCl_3$) δ: 199.3 (-*C*=O), 176.6 (-C=*C*-OH), 148.3 (Ar-*C*H=CH-), 146.4 (Ar-*C*), 145.9 (Ar-*C*), 143.9 (Ar-*C*), 139.8 (Ar-*C*), 132.8 (Ar-CH=*C*H-), 128.8 (Ar-*C*), 121.9 (Ar-*C*), 120.9 (Ar-*C*), 120.8 (Ar-*C*), 114.3 (Ar-*C*), 112.6 (Ar-*C*), 110.9 (Ar-*C*), 110.6 (Ar-*C*), 100.6 (methine-*C*H-), 56.1 (-O*C*$H_3$), 55.9 (-O*C*$H_3$), 42.3 (Ar-*C*$H_2$-), 31.2 (Ar-$CH_2$-*C*$H_2$-). **MS: (LC-MS):** *m/z* [M+1] 416.6. **Anal. Cal culated for $C_{23}H_{26}O_7$**: C, 66.65: H, 6.32: O,27.02. Found C, 66.40: H, 6.31.

**Synthesis of dihydrocurcumin (1d)**



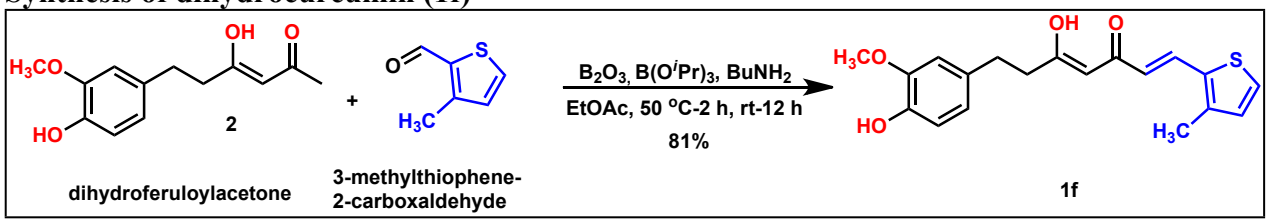
**Pale yellowish solid:** (Yield = 83.5%). **M.pt:** 118- 120°C. **IR (KBr):** 3431 (-O-H), 1627 (-C=O), 1586 (-C=C-C=O), 1517 (-C=C-), 1131 (-C-O) $cm^{-1}$.**$^1$H NMR:** (400 MHz, $CDCl_3$): 15.69 (s,1H, enolic-O*H*), 7.55 (d, *J* = 16 Hz, 1H, Ar-C*H*= ), 7.42 (d, *J* = 8 Hz, 2H, Ar-*H*), 6.85-6.82 (m, 1H, Ar-*H*), 6.72-6.66 (m, 4H, Ar-*H*), 6.26 (d, *J* = 16 Hz, 1H, Ar-CH=C*H*-), 5.56 (s, 1H, methine-*H*) , 5.47 (s, 1H, Ar-O*H*), 3.87 (s, 3H, -OC$H_3$), 3.03 (s, 6H, -N($CH_3$)$_2$) 2.93-2.89 (m, 2H, Ar-C$H_2$-), 2.66-2.62 (m, 2H, Ar-$CH_2$-C$H_2$-) . **$^{13}$C NMR:** (100 MHz, $CDCl_3$) δ: 197.5 (-*C*=O), 179.5 (-C=*C*-OH), 151.6 (Ar-*C*H=CH-), 146.3 (Ar-*C*), 143.9 (Ar-*C*), 132.9 (Ar-CH=*C*H-), 129.8 (Ar-*C*), 122.8 (Ar-*C*), 120.8 (Ar-*C*), 117.5 (Ar-*C*), 114.3 (Ar-*C*), 111.9 (Ar-*C*), 111.0 (Ar-*C*), 99.9 (methine-*C*H-), 55.9 (-O*C*$H_3$), 41.9 (Ar-*C*$H_2$-), 40.2 (-N(*C*$H_3$)$_2$, 31.4 (Ar-$CH_2$-*C*$H_2$-). **MS: (LC-MS):** *m/z* [M+1] 369. **Anal. Calculated for $C_{22}H_{25}NO_4$** : C, 71.91: H, 6.86: N, 3.81: O, 27.02. Found C, 71.43: H, 6.79: N, 3.80.

**Synthesis of dihydrocurcumin (1e)**



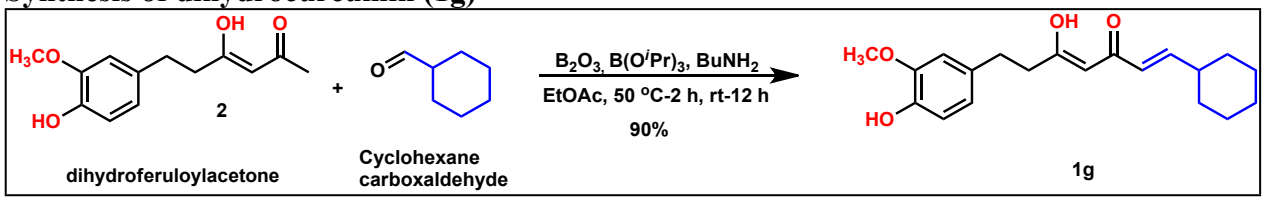

**Brick red solid:** (Yield = 88.2%): **M.pt:** 100-104°C. **IR (KBr):** 3382 (-O-H), 1634 (-C=O), 1574 (-C=C-C=O), 1517 (-C=C-), 1192 (-C-O) cm-1**. $^1$H NMR :** (400 MHz, $CDCl_3$): 15.58 (s, 1H, enolic-O*H*), 7.50-7.46 (d, *J*=16 Hz, 1H, Ar-C*H*=), 6.84 (d, *J* = 8 Hz, 1H, Ar-*H*), 6.72-6.70 (m, 2H, Ar-*H*), 6.08-6.04 (d, *J*=16 Hz, 1H, Ar-CH=*C*H-), 5.51 (s, 1H, methine-*H*) , 5.47 (s, 1H, Ar-O*H*), 4.50-4.49 (m, 2H, cyclopentyl anion-*H*), 4.44-4.43 (m, 2H, cyclopentyl anion-*H*), 4.16 (s, 5H, cyclopentyl anion-*H*), 3.87 (s, 3H, -OC$H_3$), 2.92-2.88 (m, 2H, Ar-C$H_2$-), 2.66-2.62 (m, 2H, Ar-$CH_2$-C$H_2$-). **$^{13}$C NMR**: (100 MHz, $CDCl_3$) δ: 198.2 (-*C*=O), 178.3 (-C=*C*-OH), 146.4 (Ar-*C*H=CH-), 143.9 (Ar-*C*), 141.6 (Ar-*C*), 132.9 (Ar-CH=*C*H-), 120.8 (Ar-*C*), 119.8 (Ar-*C*), 114.3 (Ar-*C*), 111.0 (Ar-*C*), 99.6 (methine-*C*H-), 79.6 (cyclopentyl anion-*C*), 71.8 (cyclopentyl anion-*C*), 71.0 (cyclopentyl anion-*C*), 69.7 (cyclopentyl anion-*C*), 68.5 (cyclopentyl anion-*C*), 55.9 (-O*C*$H_3$), 42.0 (Ar-*C*$H_2$-), 31.3 (Ar-$CH_2$-*C*$H_2$-). **MS: (LC-MS):** *m/z* [M+1] 433.2. **Anal. Calculated for $C_{24}H_{24}FeO_4$** : C, 66.68: H, 5.60: Fe: O, 27.02. Found C, 66.62: H, 5.56.

**Synthesis of dihydrocurcumin (1f)**



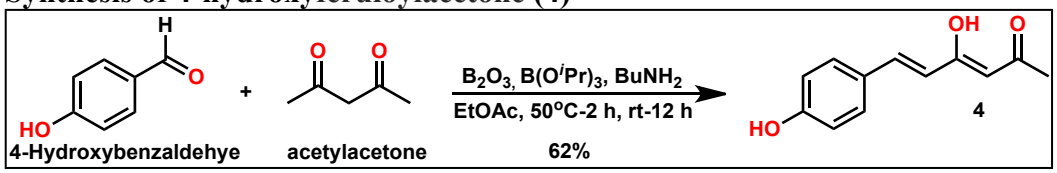

**Pale yellowish solid:** (Yield = 81.6%). **M.pt:** 98-101°C. **IR (KBr):** 3462 (-O-H), 1664 (-C=O), 1582 (-C=C-C=O), 1515 (-C=C-), 1149 (-C-O) $cm^{-1}$. **$^1$H NMR:** (400 MHz, $CDCl_3$): 15.46 (s,1H, enolic-O*H*), 7.76 (d, *J* = 16 Hz, 1H, Ar-C*H*=), 7.25 (bs, 1H, Ar-*C*), 6.87- 6.82 (m, 2H, Ar-*C*), 6.71-6.68 (m, 2H, Ar-*C*), 6.8 (d, *J* = 16 Hz,1H, Ar-CH=C*H*-), 5.57 (s, 1H, methine-*H*), 5.48 (s,1H, Ar-O*H*), 3.86 (s, 3H, -OC*H*$_3$), 2.93-2.89 (m, 2H, Ar-C*H*$_2$-), 2.69-2.65 (m, 2H, Ar-CH$_2$-C*H*$_2$-), 2.35 (s, 3H, thiopneyl-C*H*$_3$). **$^{13}$C NMR:** (100 MHz, $CDCl_3$) δ: 198.6 (-*C*=O), 176.9 (-C=*C*-OH), 145.9 (Ar-*C*H=CH-), 143.5 (Ar-*C*), 140.4 (Ar-*C*), 134.2 (Ar-*C*), 132.3 (Ar-CH=*C*H-), 130.8 8 (Ar-*C*), 130.5 8 (Ar-*C*), 126.3 8 (Ar-*C*), 120.3 8 (Ar-*C*), 113.8 8 (Ar-*C*), 110.5 8 (Ar-*C*), 100.2 (methine-*C*H-), 55.4 (-O*C*H$_3$), 41.7 (Ar-*C*H$_2$-), 30.7 (Ar-CH$_2$-*C*H$_2$-), 13.7 (thiopnenyl-*C*H$_3$). **MS: (LC-MS):** *m/z* [M+1] 345.2. **Anal. Calculated for $C_{19}H_{21}O_4S$**: C, 66.06: H, 6.13: O, 27.0: S, 9.28. Found C, 65.94: H, 6.09: S, 9.22.

**Synthesis of dihydrocurcumin (1g)**



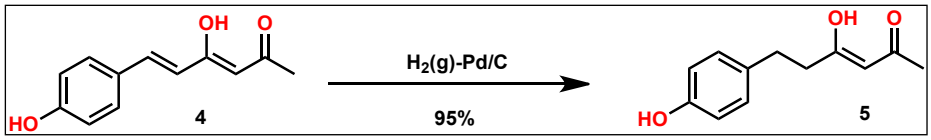

**Off white solid:** (Yield = 82.4%). **M.pt:** 92–94 °C. **IR (KBr):** 3317 (-O-H), 1647 (-C=O), 1582 (-C=C-C=O), 1515 (-C=C-), 1155 (-C-O) $cm^{-1}$. **$^1$H NMR:** (400 MHz, $CDCl_3$): 15.38 (s,1H, enolic-O*H*), 6.84-6.76 (m, 2H, Ar-*H*), 6.70-6.67 ( m, 2H, Ar-*H*), 5.78 (d, *J* = 16 Hz, 1H, Ar-CH=C*H*-), 5.47 (s, 2H, methine-*H* and Ar-O*H*), 3.86 (s, 3H, -OC*H*$_3$), 2.90-2.86 (m, 2H, Ar-C*H*$_2$-), 2.65-2.61 (m, 2H, Ar-CH$_2$-C*H*$_2$-), 2.15-2.13 (m, 1H, cyclohexyl-*H*), 1.77-1.74 (m, 4H, cyclohexyl-*H*), 1.34-1.10 (m, 6H cyclohexyl-*H*) . **$^{13}$C NMR**: (100 MHz, $CDCl_3$) δ: 198.3 (-*C*=O), 178.3 (-C=*C*-OH), 149.4 (Ar-*C*H=CH-), 145.9 (Ar-*C*), 143.5 (Ar-*C*), 132.3 (Ar-CH=*C*H-), 122.9 (Ar-*C*), 120.3 (Ar-*C*), 113.8 (Ar-*C*), 110.5 (Ar-*C*), 99.1 (methine-*C*H-), 55.4 (-O*C*H$_3$), 41.5 (Ar-*C*H$_2$-), 40.4 (cyclohexyl-*C*H), 31.4 (Ar-CH$_2$-*C*H$_2$-), 30.6 (cyclohexyl-*C*H$_2$), 25.5 (cyclohexyl-*C*H$_2$), 25.3 (cyclohexyl-*C*H$_2$). **MS: (LC-MS):** *m/z* [M+1] 331.5. **Anal. Calculated for $C_{20}H_{26}O_4$** : C, 72.7: H, 7.93: O, 19.37. Found C, 72.4.: H, 7.90.

**Synthesis of 4-hydroxyferuloylacetone (4)**



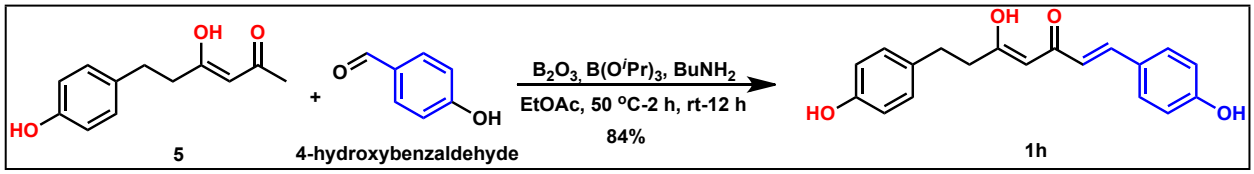

**Pale yellowish solid:** (Yield = 63%). **$^1$H NMR:** (300 MHz, $CDCl_3$) δ: 15.45 (s, 1H, enolic-O*H*), 7.55 (d, *J* = 15 Hz, 1H, Ar-C*H*=), 7.45-7.42 (m, 1H, Ar-*H*), 6.86 -6.83 (m, 1H, Ar-*H*), 6.34 (d, *J* = 15 Hz, 1H, Ar-CH=C*H*-), 5.62 (s,1H, methine-*H*), 5.08 (s, 1H, Ar-O*H*), 2.16 (s, 3H, -C$H_3$C(O)). **MS**: **(LC-MS):** *m/z* [M+1] 205.2.

**Synthesis of 4-hydroxydihydroferuloylacetone (5)**




**Off white solid:** (Yield = 95%). **$^1$H NMR** : (400 MHz, $CDCl_3$) δ: 15.46 (s, 1H, enolic-O*H*), 7.06-7.04 (m, 2H, Ar-*H*), 6.76 -6.74 (m, 2H, Ar-*H*), 5.46 (s, 1H, methine-*H*), 4.92 (s, 1H, Ar-O*H*), 2.88-2.84 (m, 2H, Ar-C$H_2$-), 2.57-2.52 (m, 2H, Ar-$CH_2$-C$H_2$-), 2.04 (s, 3H, -C$H_3$C(O)). **MS: (LC-MS):** m/z [M+1] 207.2.

**Synthesis of dihydrocurcumin (1h)**




**Off white solid**: (Yield = 84%). **M.pt:** 144-146 °C. **IR (KBr):** 3329 (-O-H), 1641 (-C=O), 1582 (-C=C-C=O), 1515 (-C=C-), 1155 (-C-O) $cm^{-1}$. **$^1$H NMR**: (400 MHz, DMSO-$d_6$): 15.66, (s, 1H, enolic-O*H*), 10.02 (s, 1H, Ar-O*H*), 9.16 (s, 1H, Ar-O*H*),7.52 (d, *J* = 8 Hz, 2H, Ar-*H*), 7.47 (d, *J* = 16 Hz, 1H, Ar-C*H*=), 7.02 (d, *J* = 12 Hz, 2H, Ar-*H*), 6.79 (d, *J* = 8 Hz, 2H, Ar-*H*), 6.65 (d, *J* = 8 Hz, 2H, Ar-*H*), 6.56 (d, *J* = 16 Hz, 1H, Ar-CH=C*H*-), 5.85 (s, 1H, methine-*H*), 2.78-2.75 (m, 2H, Ar-C$H_2$-), 2.66-2.62 (m, 2H, Ar-$CH_2$-C$H_2$-). **$^{13}$C NMR**: (100 MHz, DMSO-$d_6$) δ: 199.4 (-C=O), 177.9 (-C=C-OH), 159.6 (Ar-CH=CH-), 155.3 (Ar-C), 139.9 (Ar-C), 131.7 (Ar-CH=CH-), 130.4 (Ar-C), 129.6 (Ar-C), 128.9 (Ar-C), 126.6 (Ar-C), 119.1 (Ar-C), 115.5 (Ar-C), 114.8 (methine-CH-), 40.8 (Ar-$CH_2$-), 30.4 (Ar-$CH_2$-$CH_2$-). **MS**:**(LC-MS):** *m/z* [M+1] 311.3.

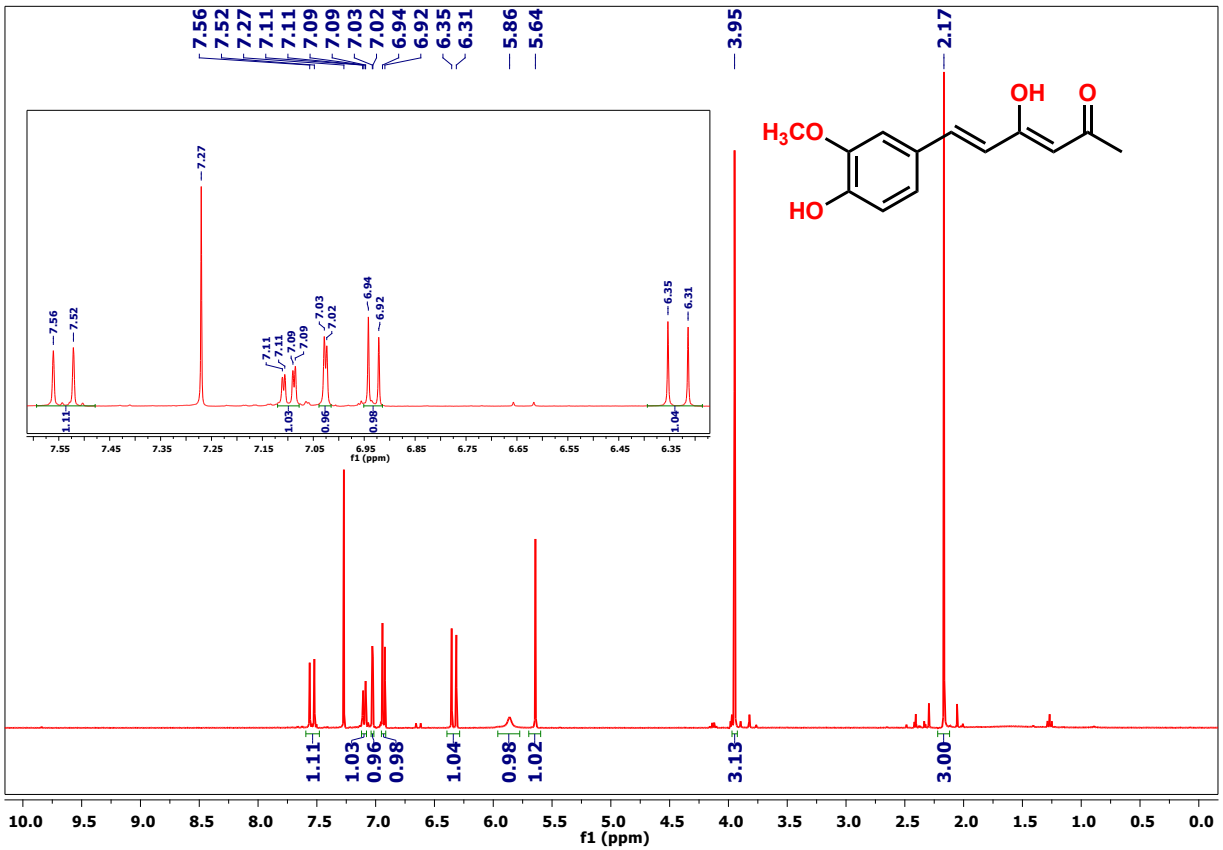



**Figure 1:** 400 MHz $^{1}$H NMR spectrum of feruloylacetone (**3**) in $CDCl_3$

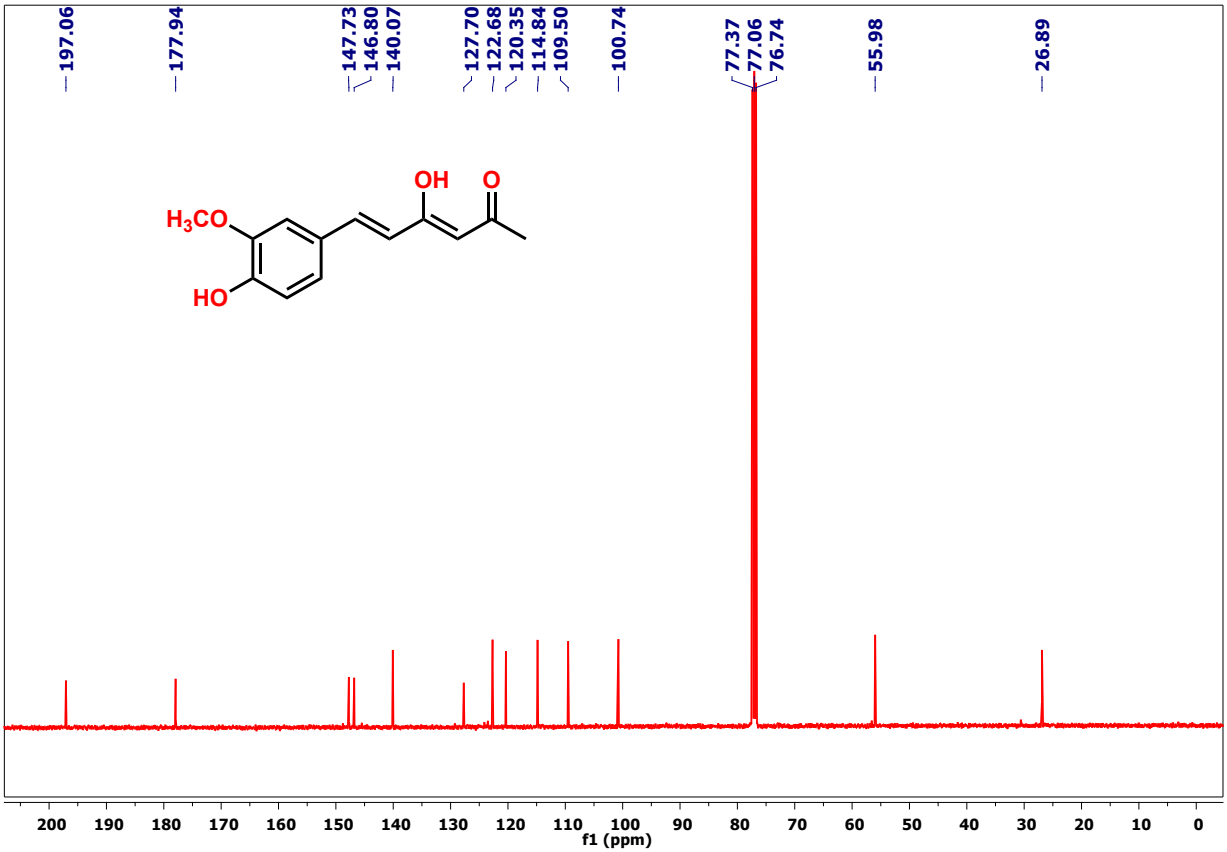



**Figure 2:** 100 MHz $^{13}$C NMR spectrum of feruloylacetone (**3**) in $CDCl_3$

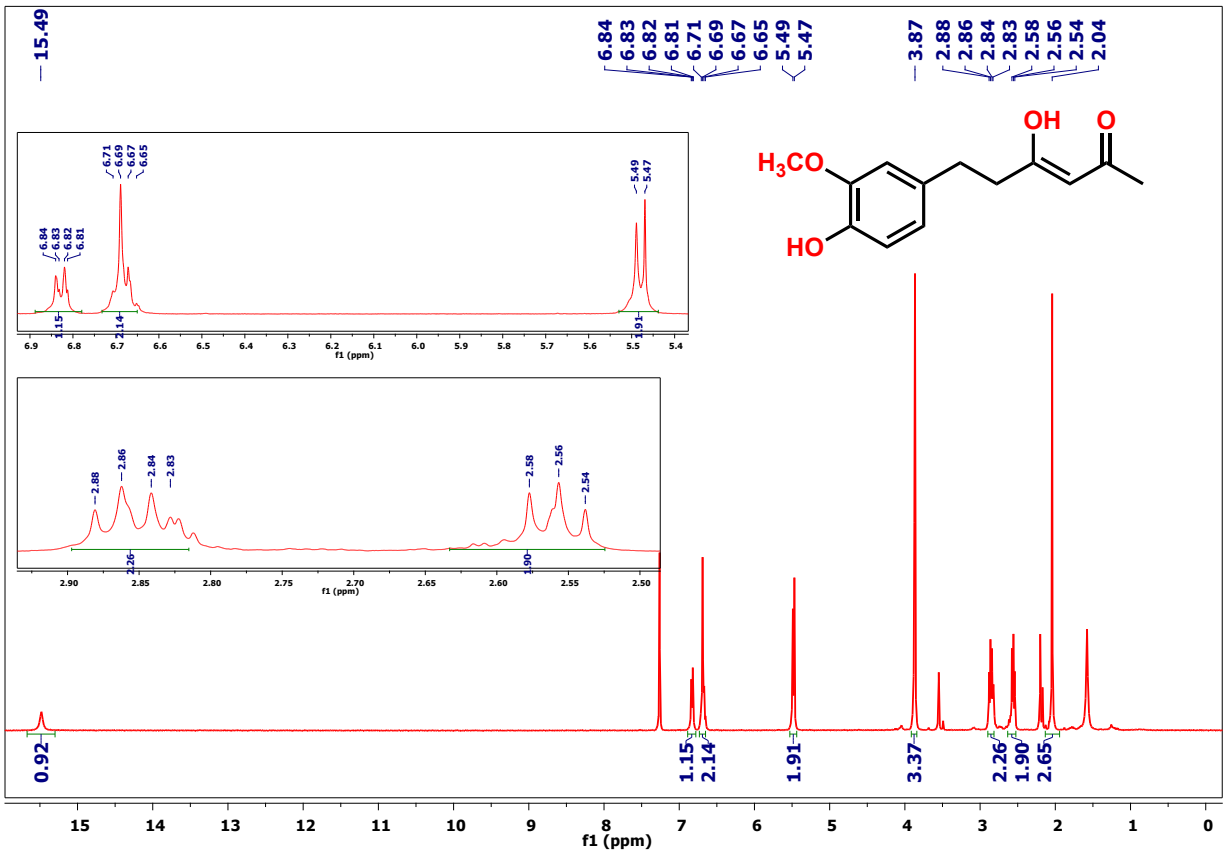



**Figure 3:** 400 MHz $^{1}H$ NMR spectrum of dihydroferuloylacetone (**2**) in $CDCl_3$

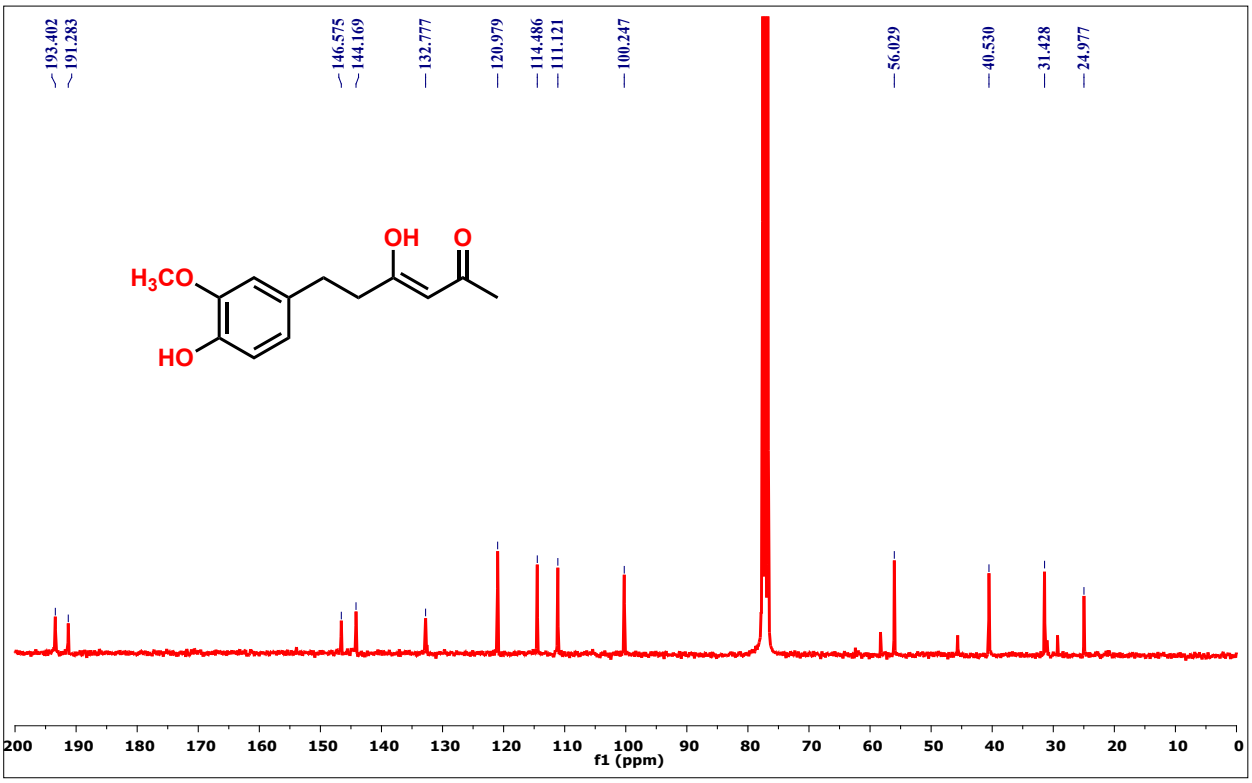



**Figure 4:** 100 MHz $^{13}C$ NMR spectrum of dihydroferuloylacetone (**2**) in $CDCl_3$

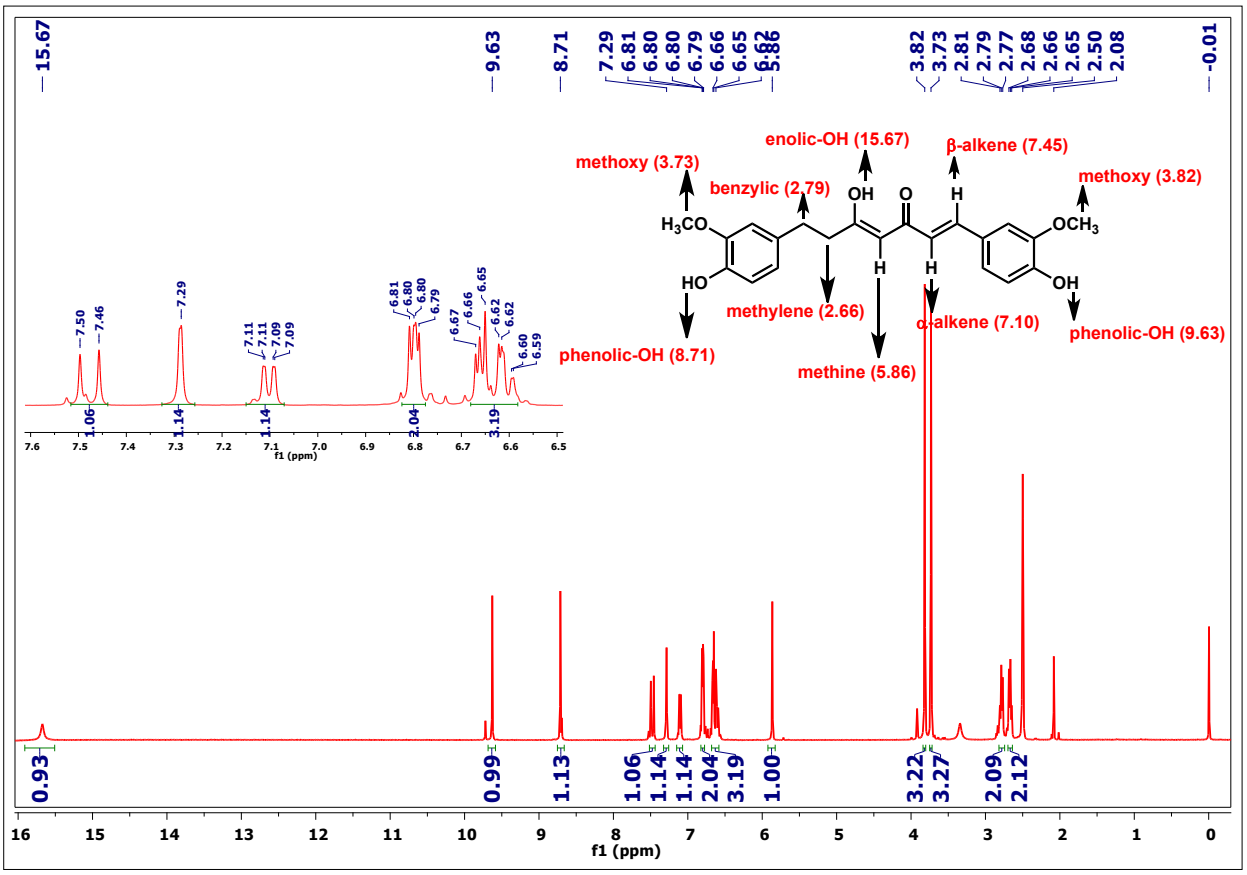



**Figure 5:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1a**) in DMSO-$d_6$

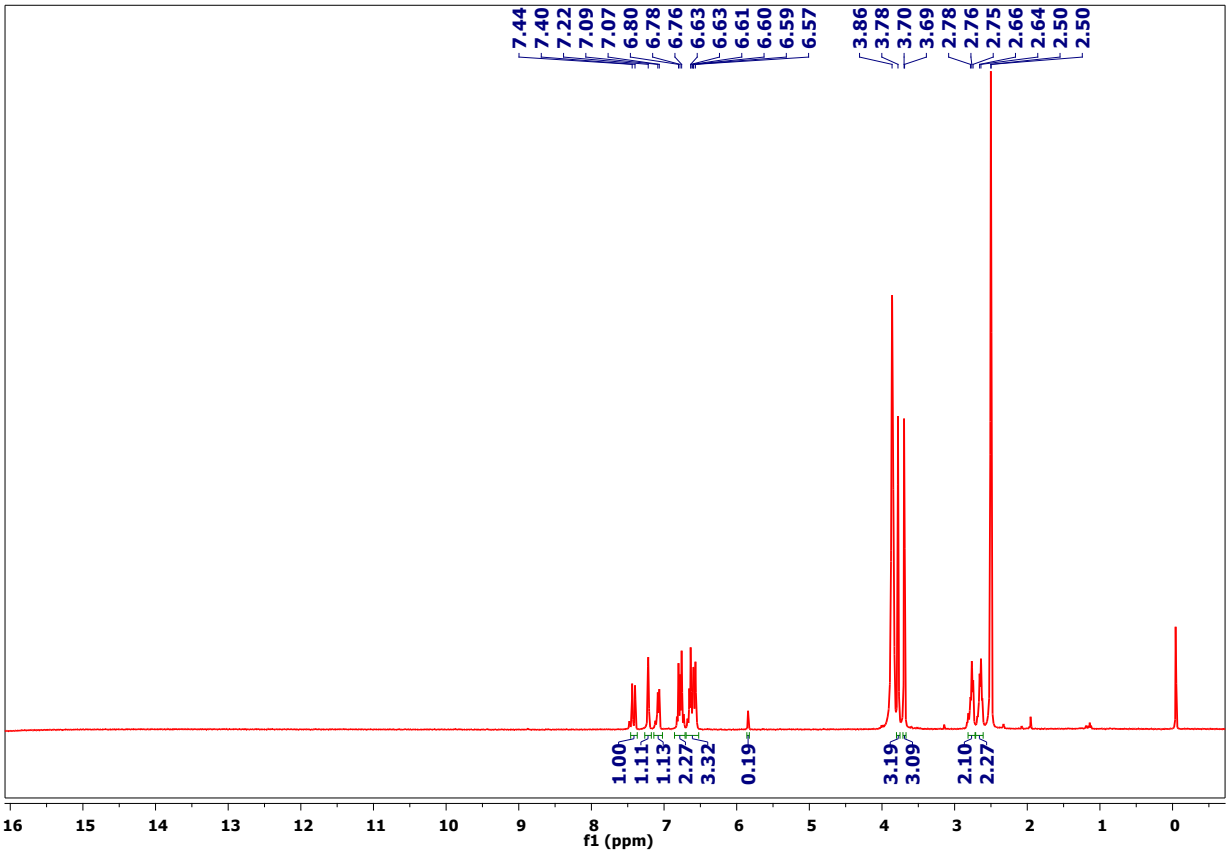



**Figure 5a:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1a**) in DMSO-$d_6$-$D_2O$ (2 drops)

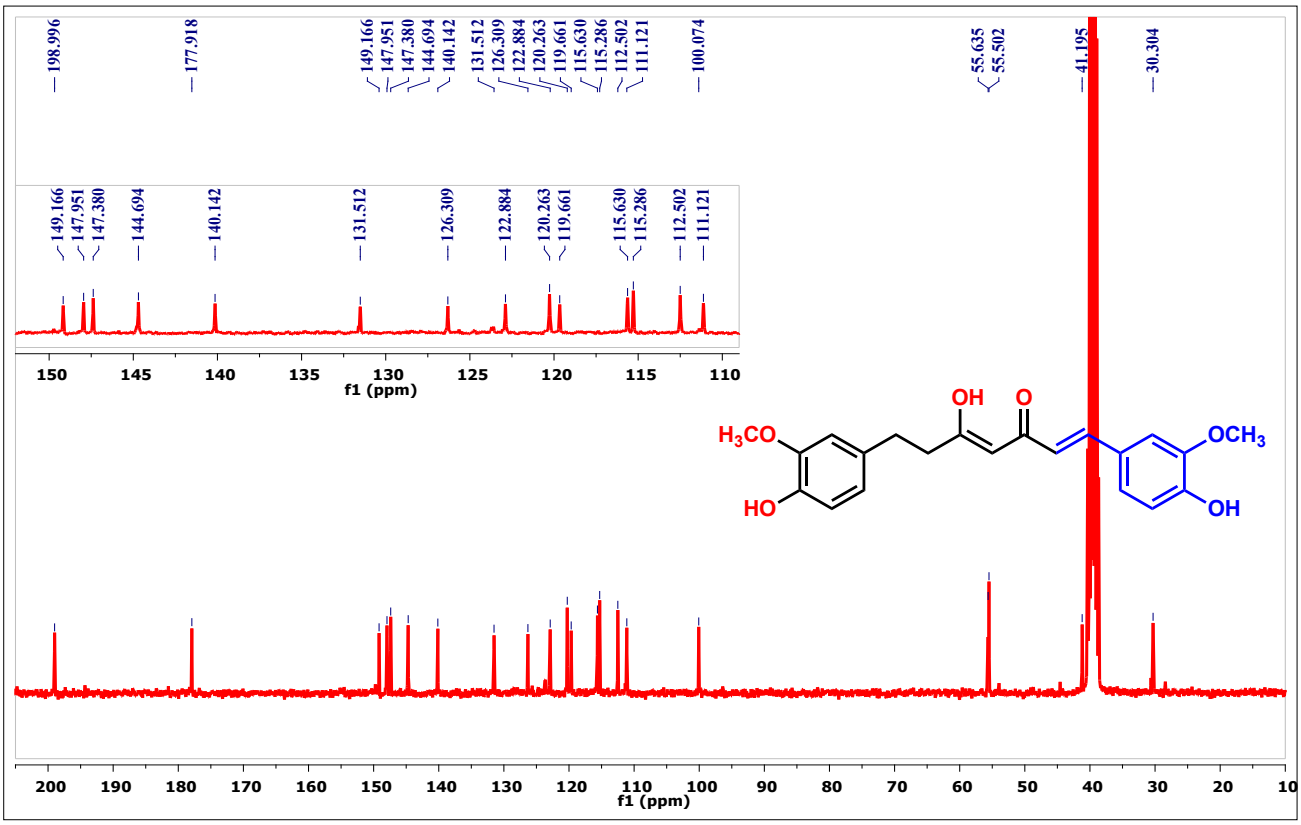



**Figure 6:** 100 MHz $^{13}C$ NMR spectrum of dihydrocurcumin (**1a**) in DMSO-$d_6$

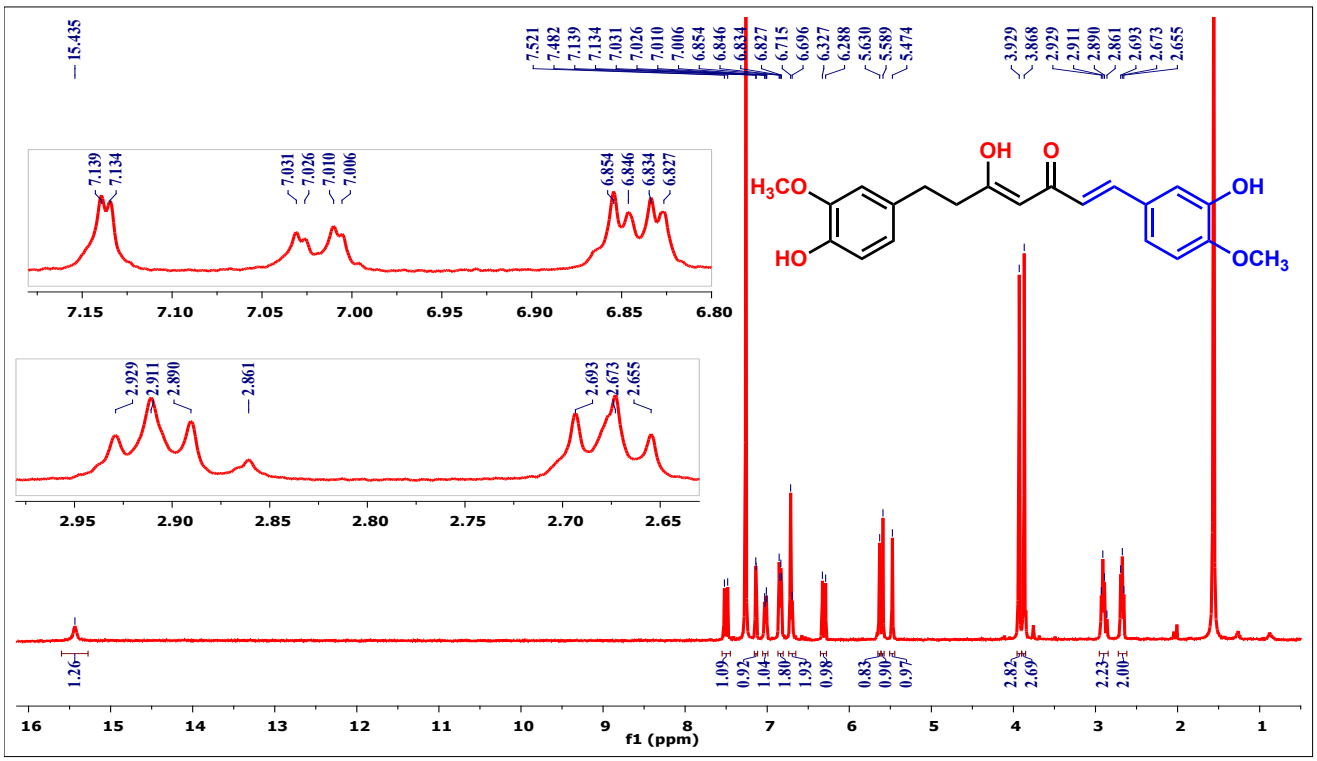



**Figure 7:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1b**) in $CDCl_3$

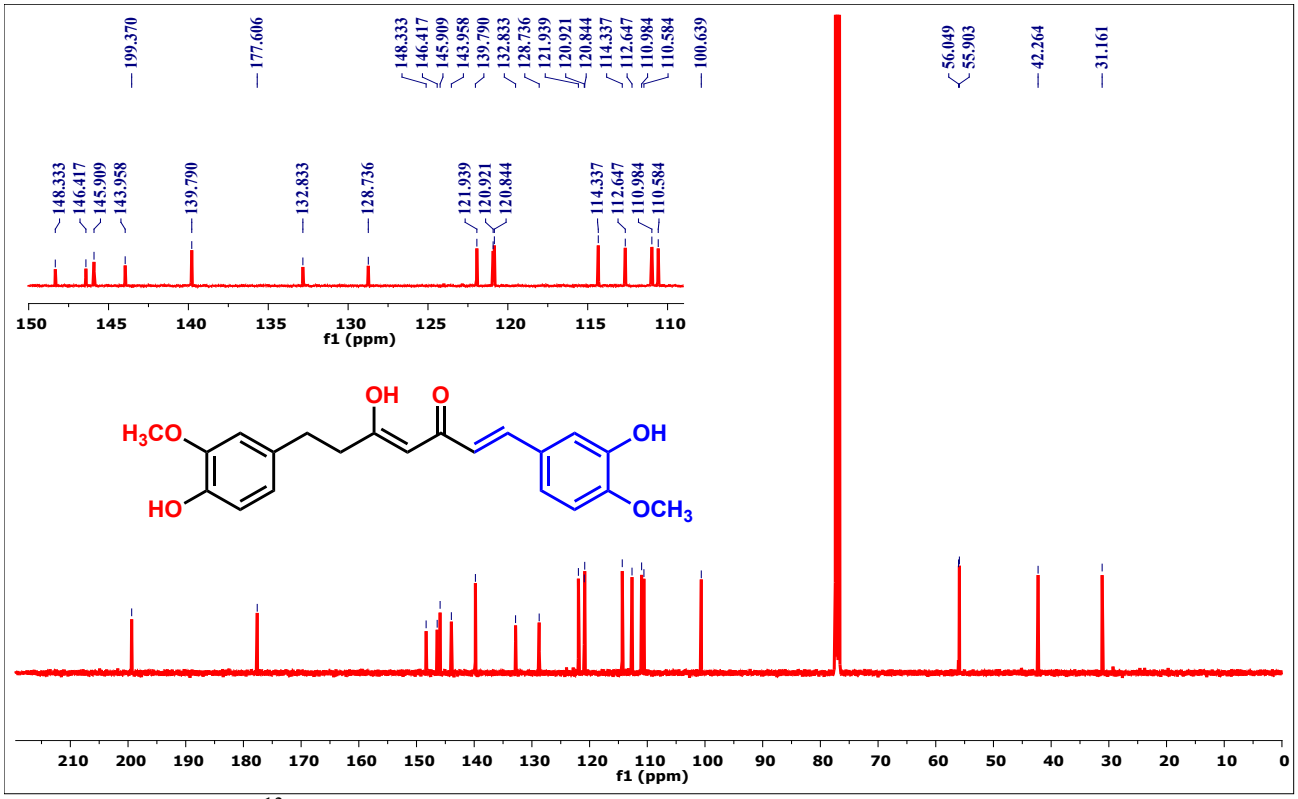



**Figure 8:** 100 MHz $^{13}$C NMR spectrum of dihydrocurcumin (**1b**) in $CDCl_3$

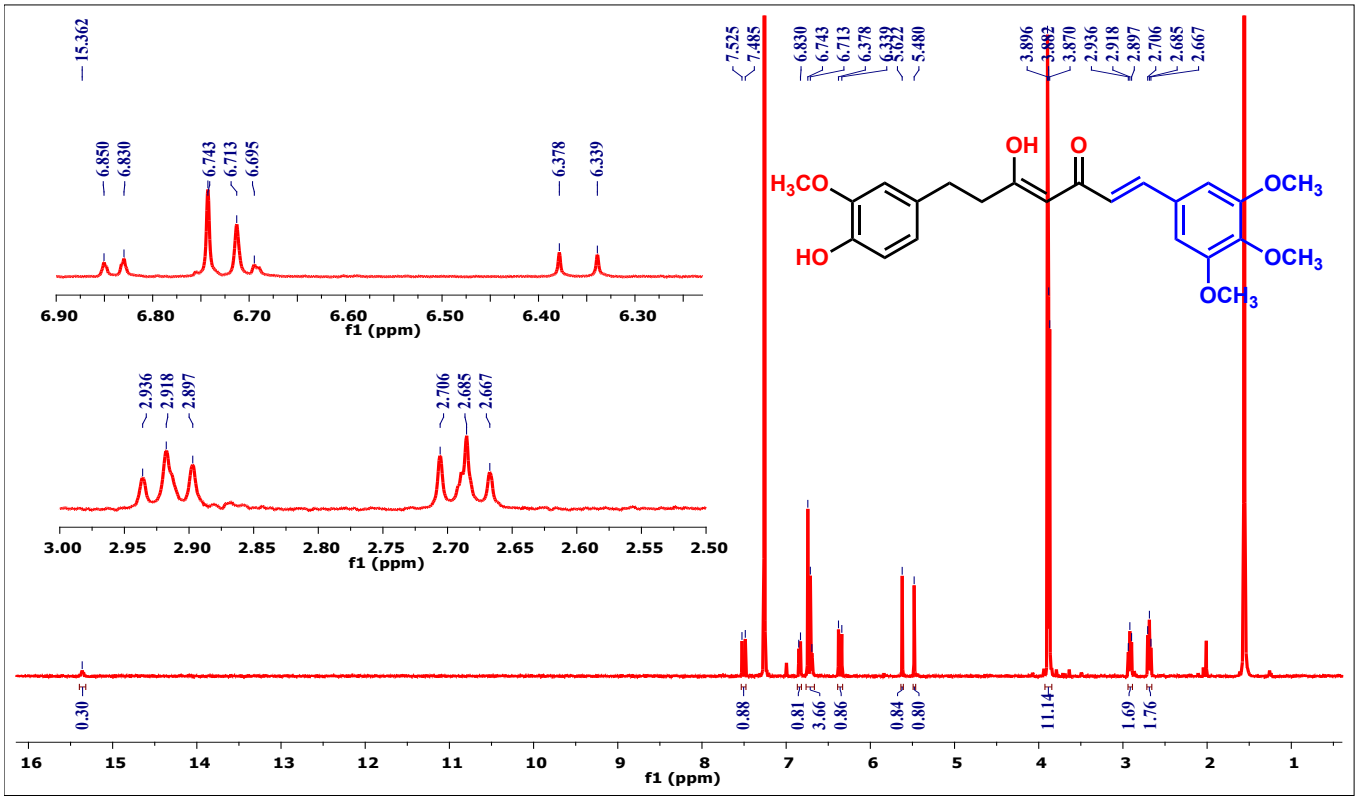



**Figure 9:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1c**) in $CDCl_3$

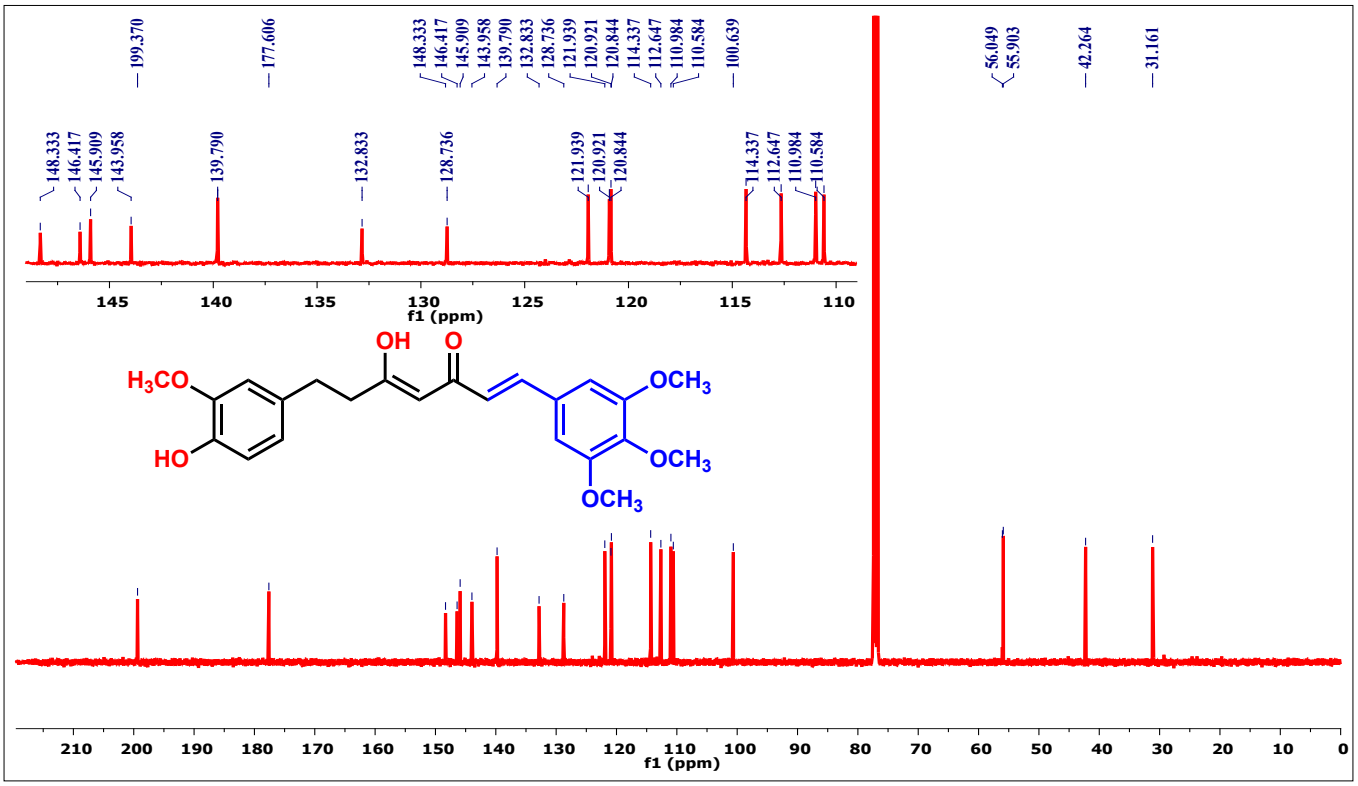



**Figure 10:** 100 MHz $^{13}$C NMR spectrum of dihydrocurcumin (**1c**) in $CDCl_3$

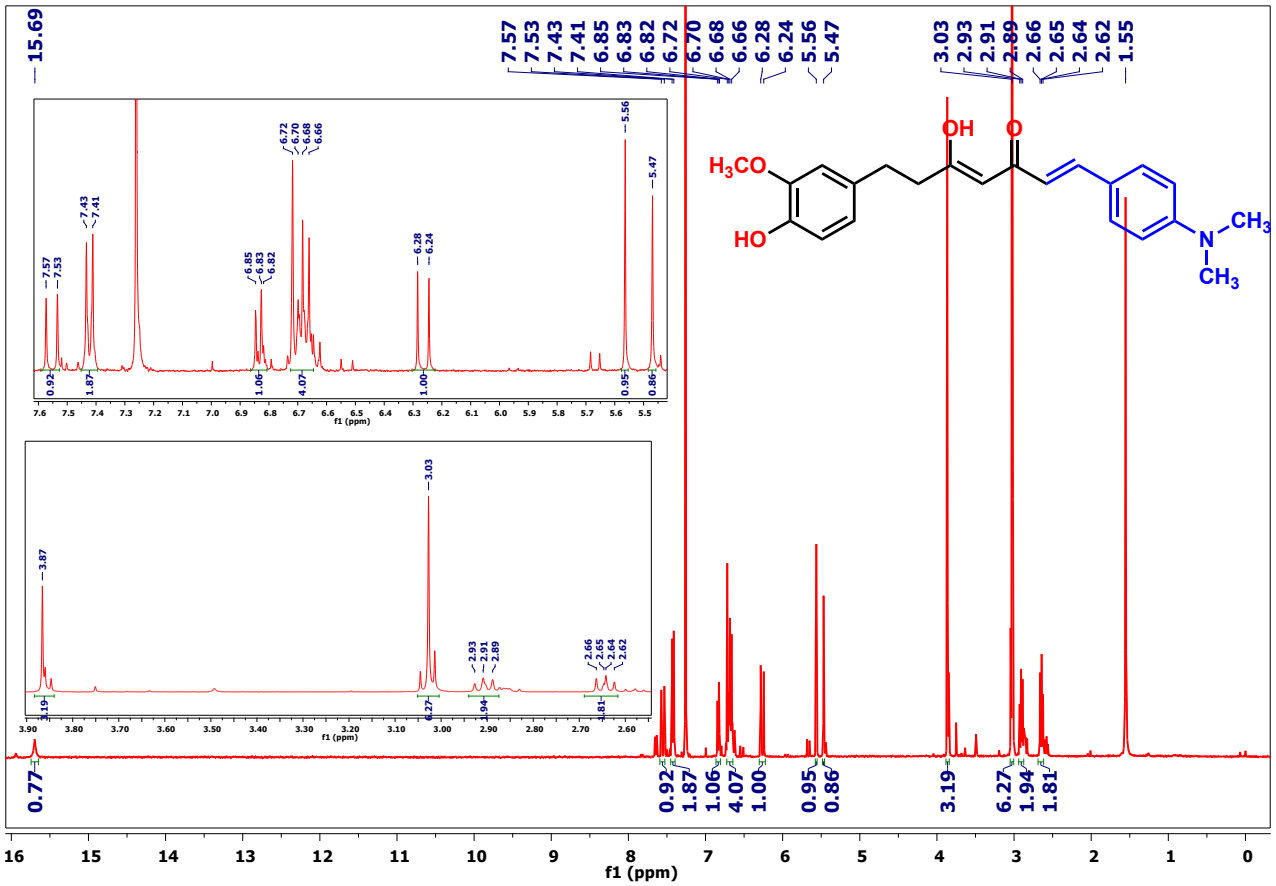



**Figure 11:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1d**) in $CDCl_3$

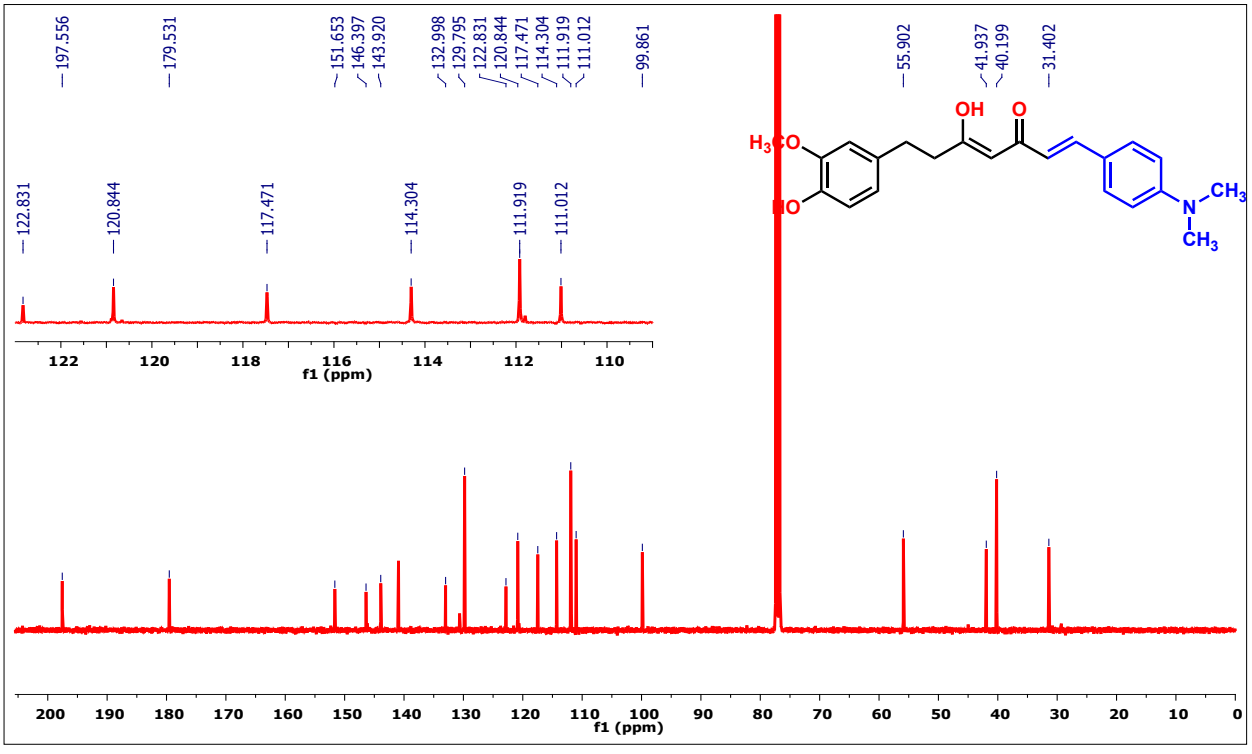



**Figure 12:** 100 MHz $^{13}$C NMR spectrum of dihydrocurcumin (**1d**) in $CDCl_3$

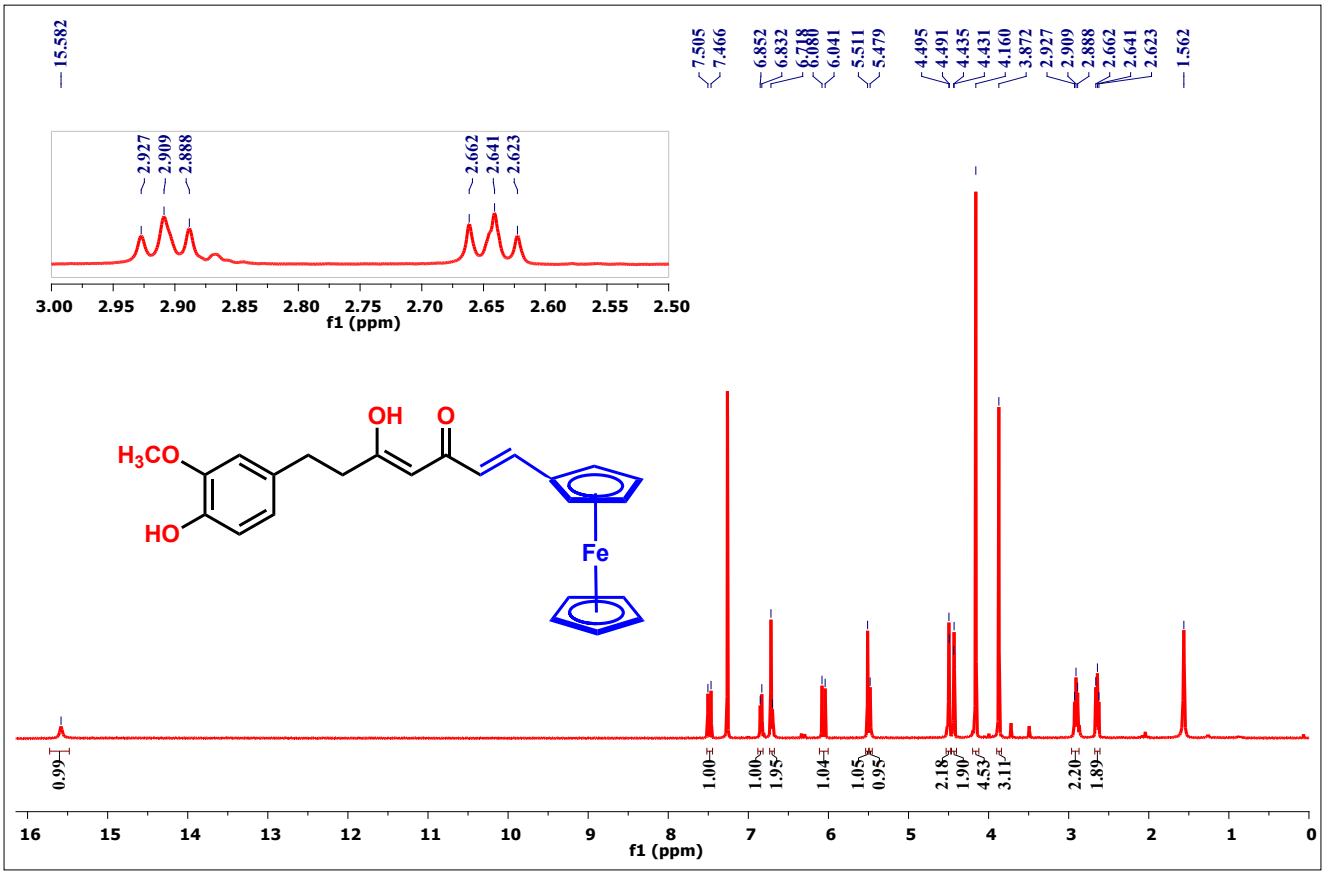



**Figure 13:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1e**) in $CDCl_3$

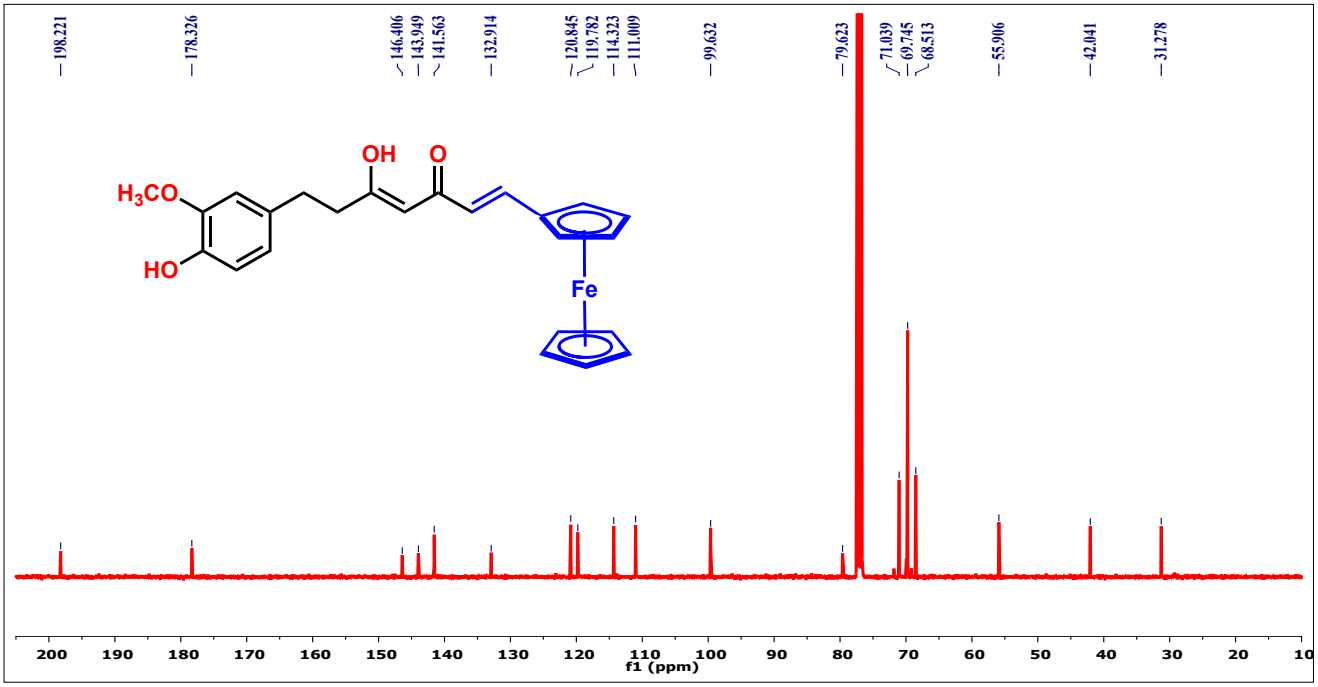



**Figure 14:** 100 MHz $^{13}$C NMR spectrum of dihydrocurcumin (**1e**) in $CDCl_3$

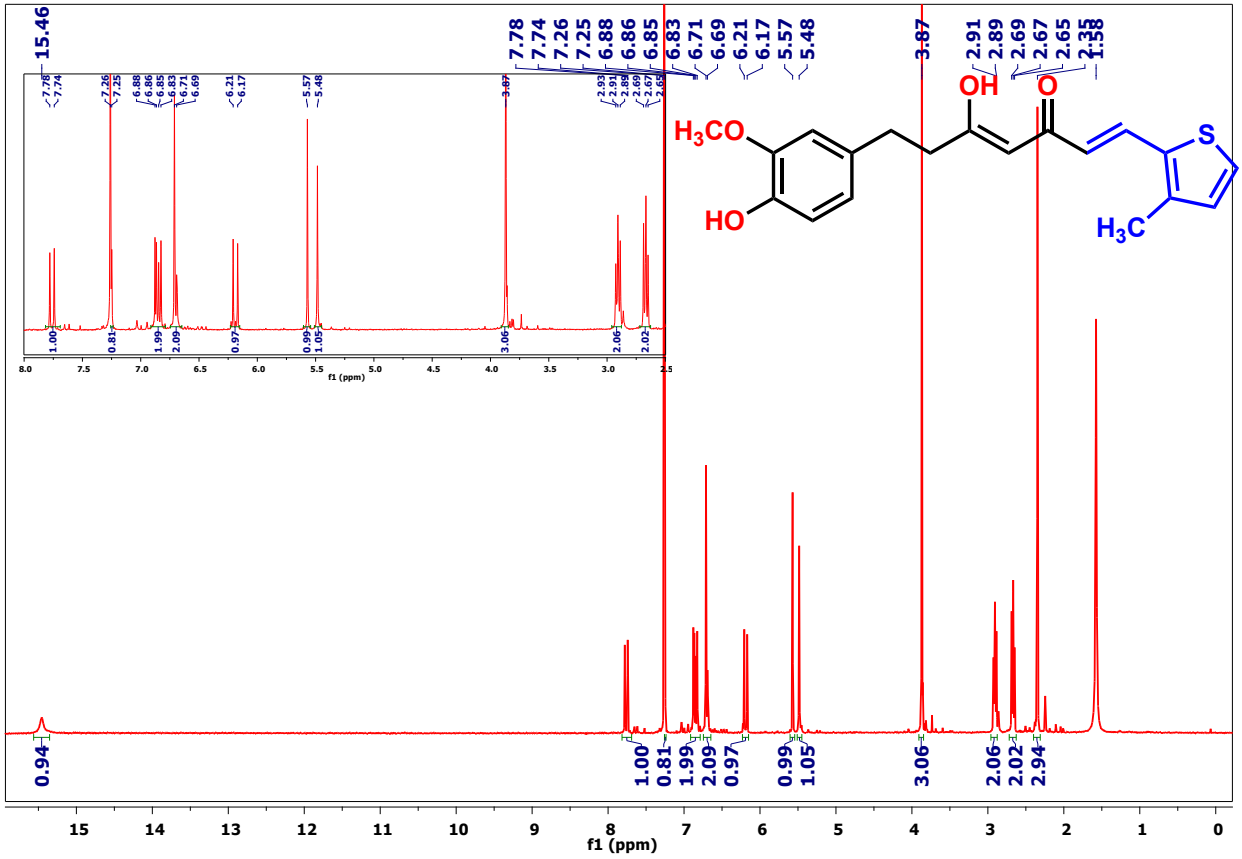



**Figure 15:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1f**) in $CDCl_3$

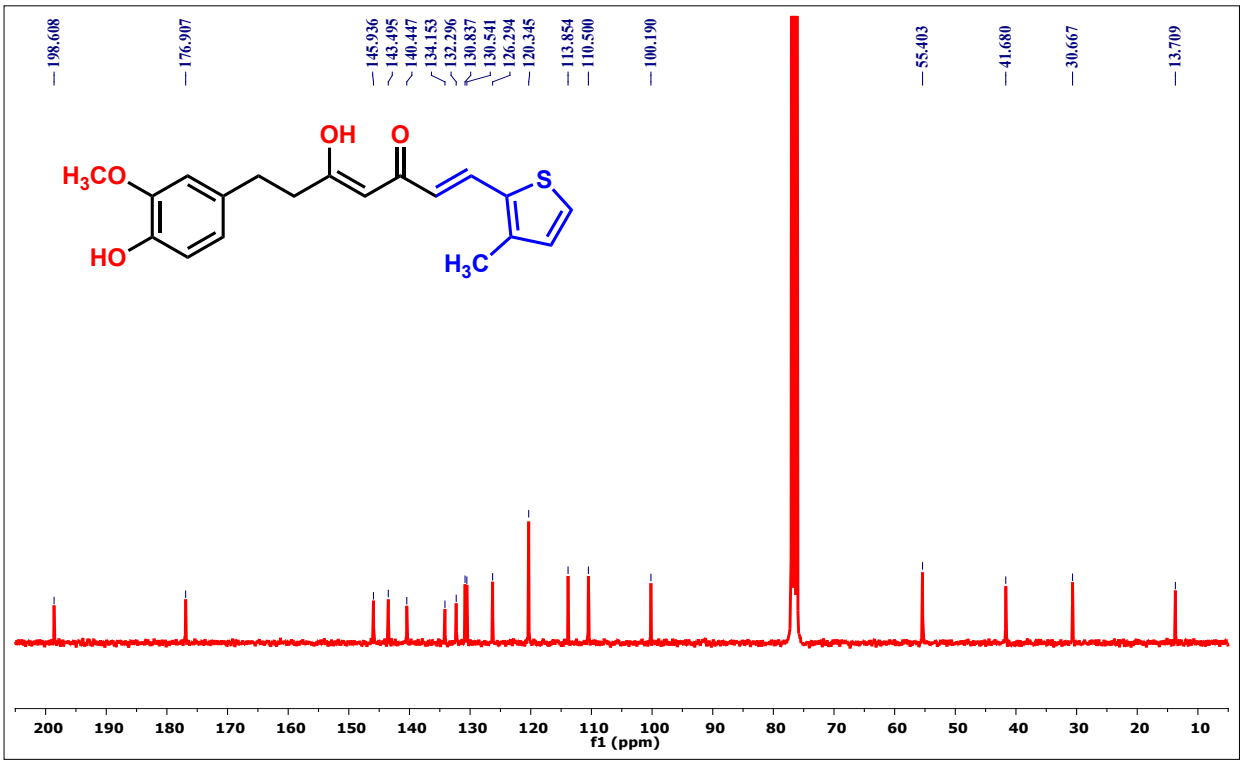



**Figure 16:** 100 MHz $^{13}$C NMR spectrum of dihydrocurcumin (**1f**) in $CDCl_3$

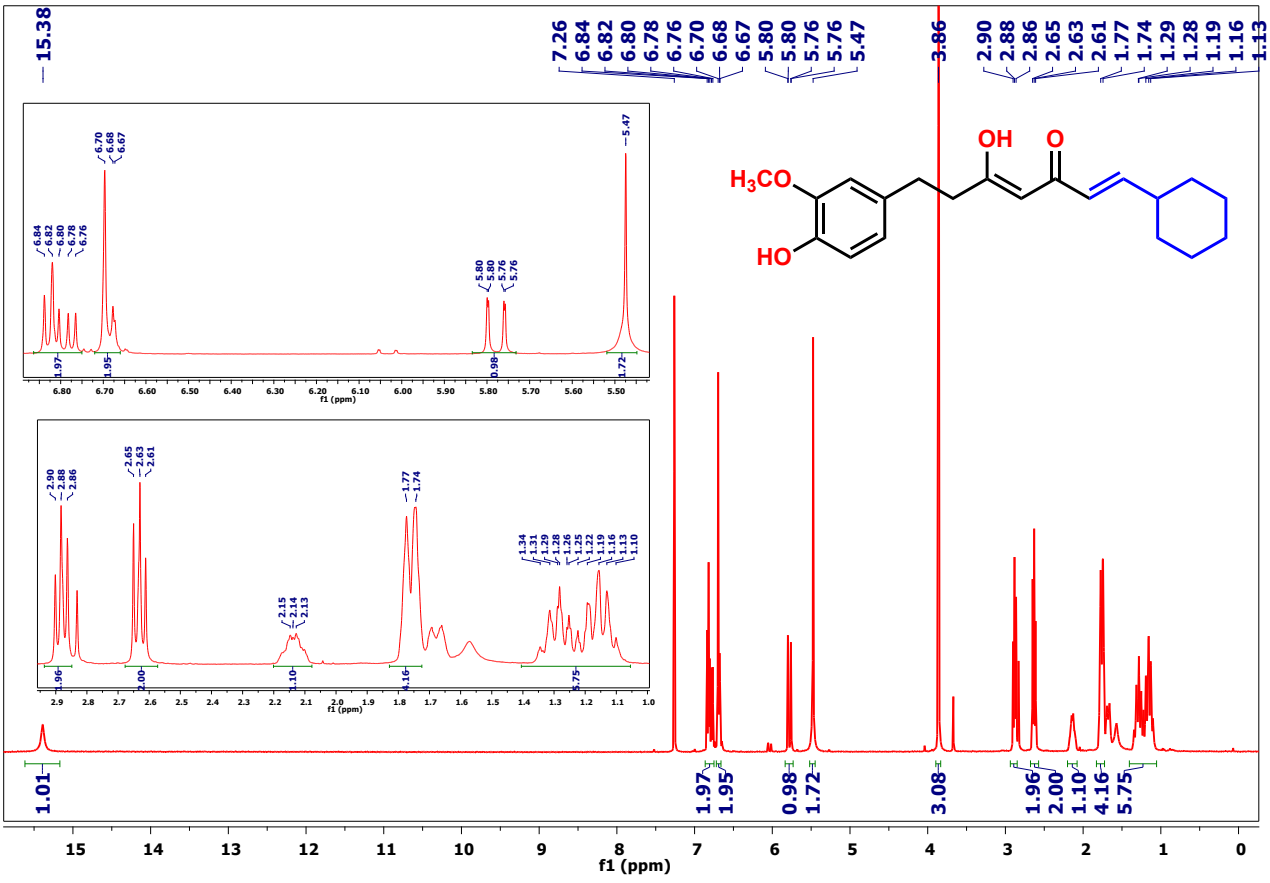



**Figure 17:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1f**) in $CDCl_3$

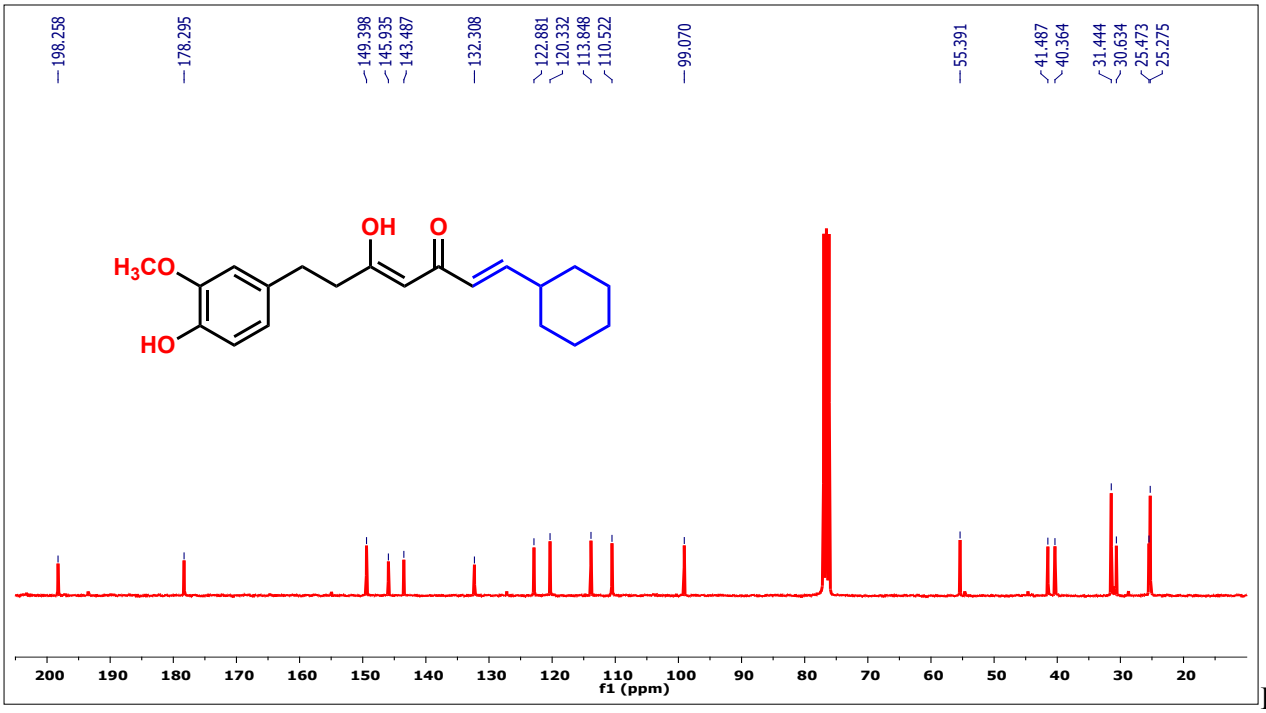



**Figure 18:** 100 MHz $^{13}$C NMR spectrum of dihydrocurcumin (**1f**) in $CDCl_3$

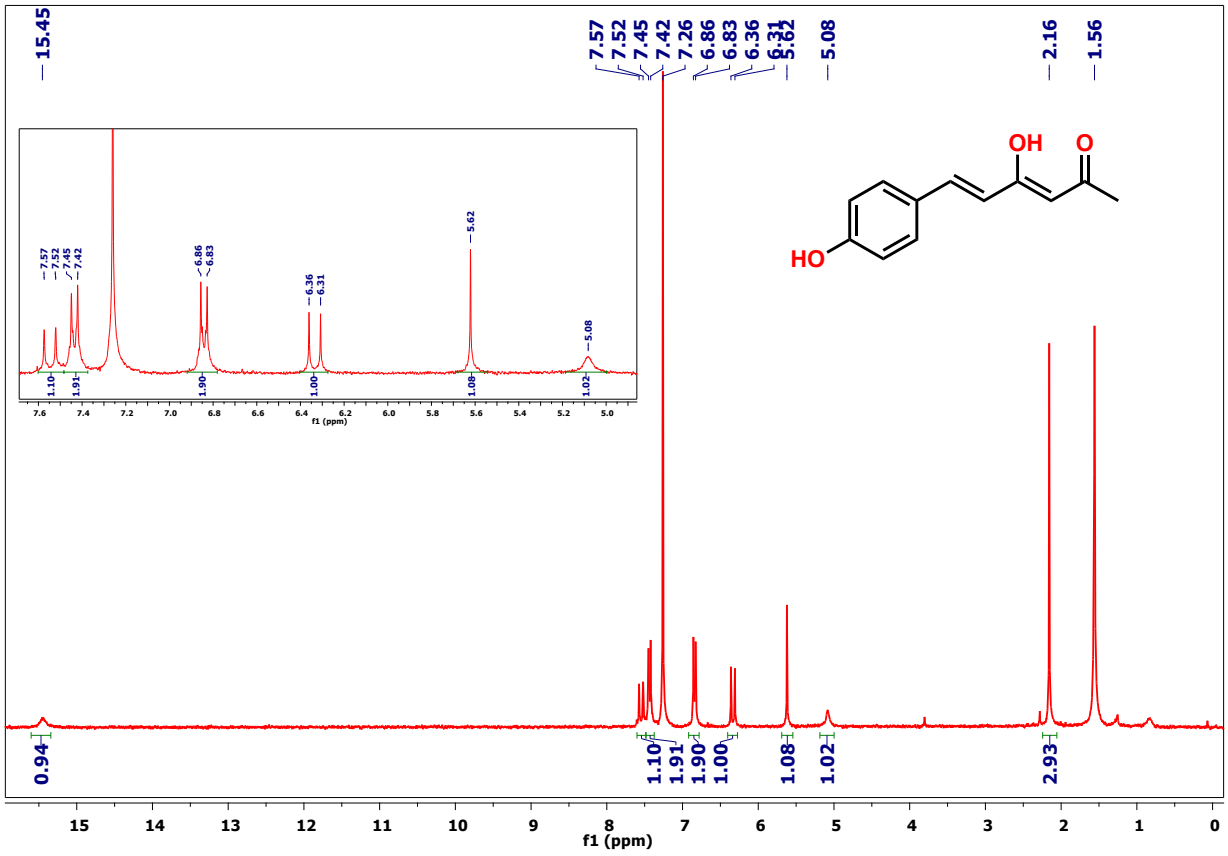



**Figure 19:** 300 MHz $^{1}$H NMR spectrum of feruloylacetone (**4**) in $CDCl_3$

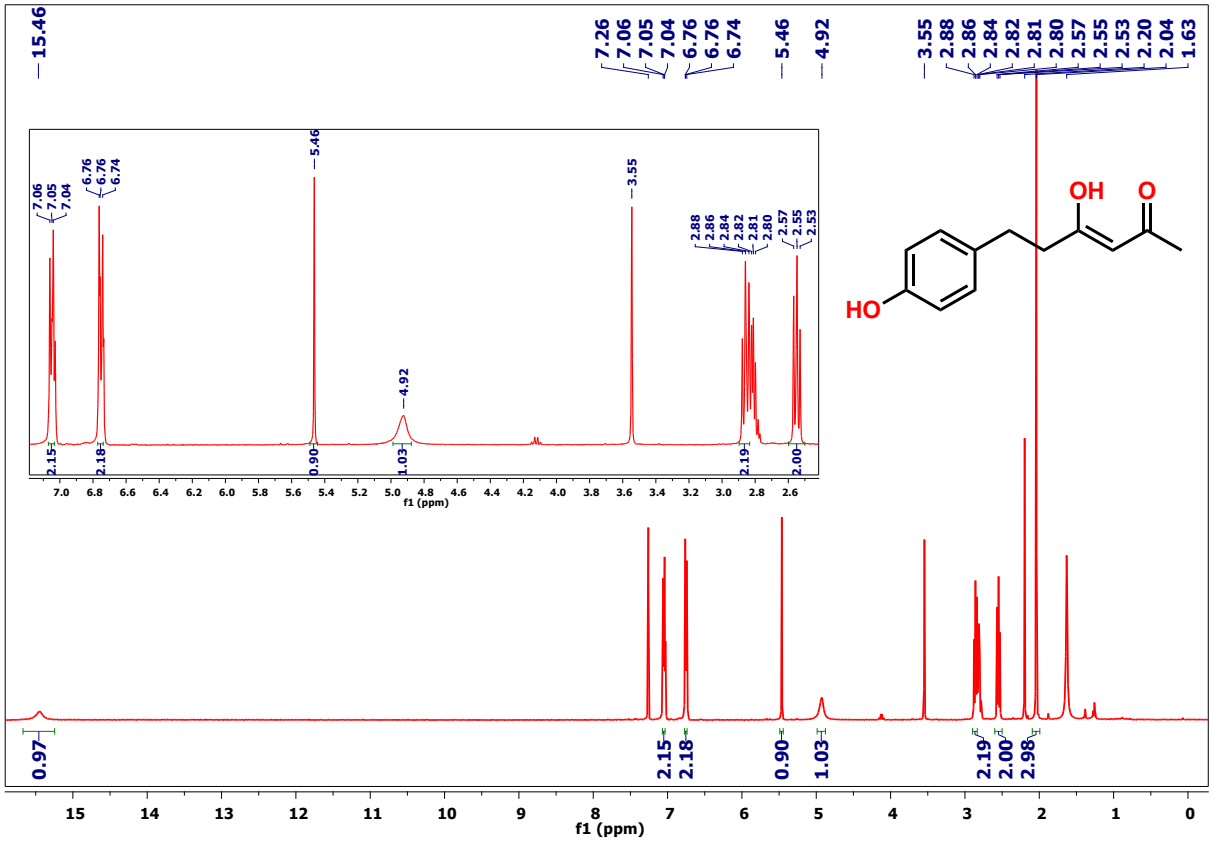



**Figure 20:** 400 MHz $^{1}$H NMR spectrum of dihydroferuloylacetone (**5**) in $CDCl_3$

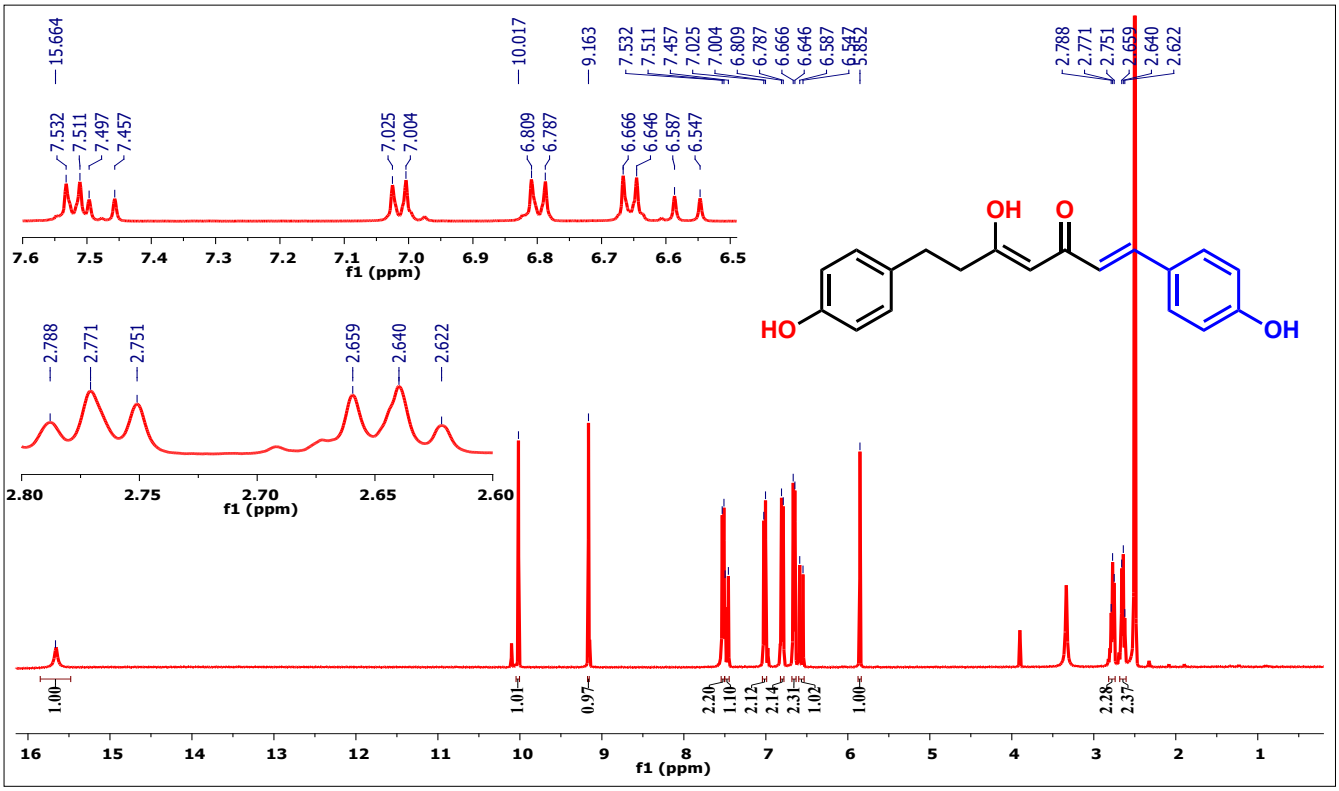



**Figure 21:** 400 MHz $^{1}$H NMR spectrum of dihydrocurcumin (**1h**) in DMSO-d$_6$

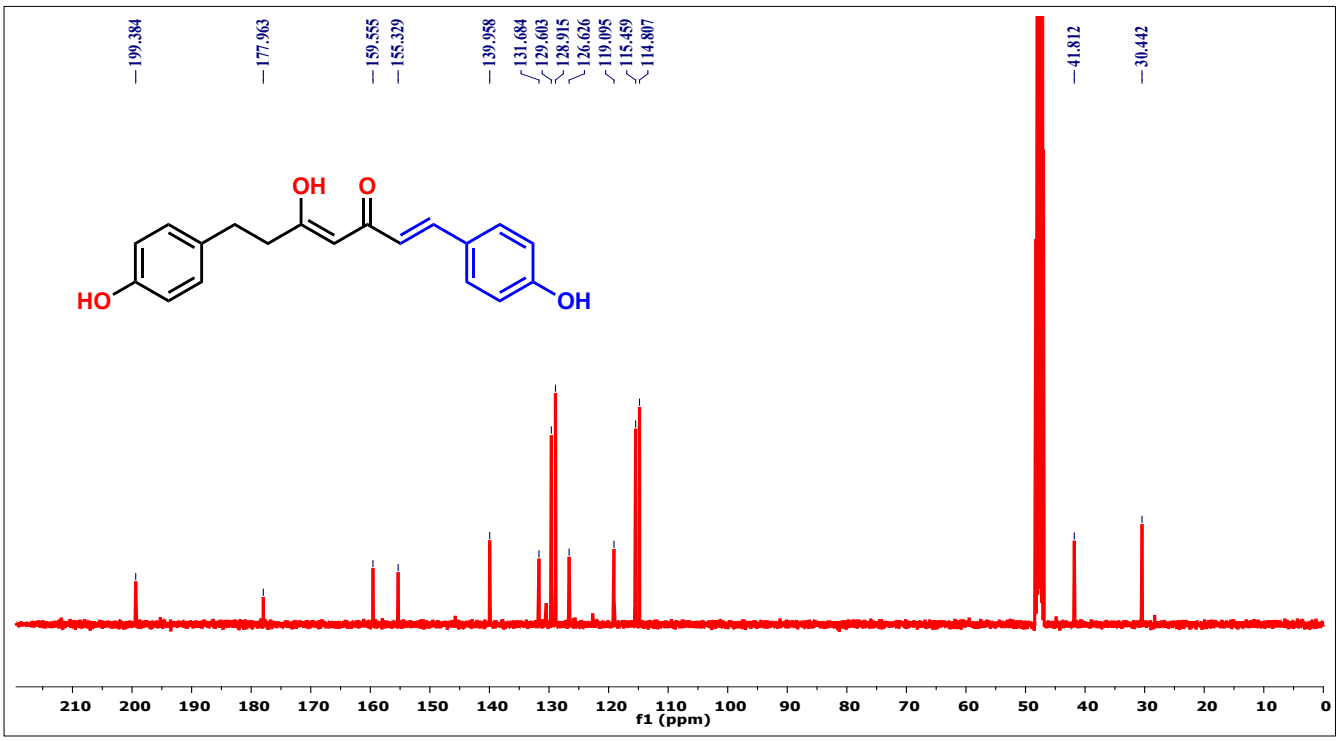



**Figure 22:** 100 MHz $^{13}$C NMR spectrum of dihydrocurcumin (**1h**) in DMSO-d$_6$