SUPPORTING INFORMATION

Synthesis and Evaluation of Antimicrobial and Antibiofilm Properties of A-Type Procyanidin Analogues against Resistant Bacteria in Food

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S1. Physical, spectroscopic and spectrometric data of synthesized compounds.

*3',4'-Dihydroxyflavylium hydrogensulfate (**13**).* Melting point: 230 °C (decomposes). IR (ATR): ν 3078, 1587, 1545, 1508, 1454, 1335, 1308, 1231, 1130, 1047, 939, 862, 820, 754, 723, 679 cm^{-1}. UV-Vis (MeOH:HCl 1:1; pH = 1): λ_{max} (log ε): 467 (4.52), 283 (3.98) nm. ^{1}H NMR (CD_3CN/DCl, pD ≈ 1.0): δ 7.06 (d, 1, *J* = 8.7 Hz, H-8(A)), 7.86 (t, 1, *J* = 7.4 Hz, H-6(A)), 7.91 (d, 1, *J* = 1.0 Hz, H-2'(B)), 8.17 (m, 4, H-5(A), H-7(A), H-5'(B), H-6'(B)), 8.56 (d, 1, *J* = 9.1 Hz, H-3(C)), 9.17 (d, 1, *J* = 9.1 Hz, H-4(C)). ^{13}C NMR (CD_3CN/DCl, pD ≈ 1.0): δ 117.1 (C-5'(B)), 118.4 (C-8(A)), 118.5 (C-2'(B)), 119.5 (C-3(C)), 121.3 (C-1'(B)), 124.8 (C-10(A)), 129.0 (C-6'(B)), 130.6 (C-5(A)), 131.5 (C-6(A)), 139.2 (C-7(A)), 148.6 (C-3'(B)), 154.2 (C-4(C)), 156.5 (C-4'(B)), 159.6 (C-9(A)), 175.8 (C-2(C)). HRMS (ESI-QTOF) *m/z* $[M]^+$ Calcd. for $C_{15}H_{11}O_3$ 239.0703, found 239.0705.

*3',4',5,7-Tetrahydroxyflavylium chloride (**14**).* Melting point: 95 °C (decomposes). IR (ATR): ν 3314, 3011, 1639, 1589, 1508, 1327, 1271, 1219, 1151, 1080, 1034, 941, 818, 683 cm^{-1}. UV-Vis (MeOH:HCl 1:1; pH = 1): λ_{max} (log ε) 491 (4.43), 279 (4.25) nm. ^{1}H NMR (CD_3CN/DCl, pD ≈ 1.0): δ 6.74 (d, 1, *J* = 1.9 Hz, H-6(A)), 6.99 (d, 1, *J* = 1.9 Hz, H-8(A)), 7.07 (d, 1, *J* = 8.5 Hz, H-5'(B)), 7.77 (d, 1, *J* = 2.3 Hz, H-2'(B)), 7.86 (dd, 1, *J* = 8.5 Hz, *J* = 2.3 Hz, H-6'(B)), 8.03 (d, 1, *J* = 8.9 Hz, H-3(C)), 8.99 (d, 1, *J* = 8.9 Hz, H-4(C)). ^{13}C NMR (CD_3CN/DCl, pD ≈ 1.0): δ 96.0 (C-8(A)), 103.2 (C-6(A)), 110.5 (C-3(C)), 113.1 (C-10(A)), 115.6 (C-2'(B)), 117.8 (C-5'(B)), 121.2 (C-1'(B)), 125.2 (C-6'(B)), 147.5 (C-3'(B)), 148.6 (C-4(C)), 155.6 (C-4'(B)), 159.1 (C-9(A)), 159.8 (C-5(A)), 171.5 (C-7(A)), 173.9 (C-2(C)). HRMS (ESI-QTOF) *m/z* $[M]^+$ Calcd. for $C_{15}H_{11}O_5$ 271.0601, found 271.0601.

3',4',7-Trihydroxyflavylium hydrogensulfate (**15**). Melting point: 215 ^{o}C (decomposes). IR (ATR): ν 3059, 1632, 1593, 1504, 1344, 1313, 1209, 1146, 1015, 849, 750, 687 cm^{-1}. UV-Vis (MeOH:HCl 1:1; pH = 1): λ_{max} (log ε): 477 (4.65), 271 (4.25) nm. ^{1}H NMR (CD_3OD/DCl, pD ≈ 1.0): δ 6.99 (d, 1, *J* = 8.5 Hz, H-5'(B)), 7.34 (dd, 1, *J* = 8.8 Hz, *J* = 2.2 Hz, H-6(A)), 7.44 (d, 1, *J* = 2.2 Hz, H-8(A)), 7.74 (d, 1, *J* = 2.1 Hz, H-2'(B)), 7.89 (dd, 1, *J* = 8.5 Hz, H-6'(B)), 8.06 (d, 1, *J* = 8.8 Hz, H-5(A)), 8.15 (d, 1, *J* = 8.7 Hz, H-3(C)), 8.94 (d, 1, *J* = 8.7 Hz, H-4(C)). ^{13}C NMR (CD_3OD/DCl, pD ≈ 1.0): δ 103.7 (C-8(A)), 113.6 (C-3(C)), 116.2 (C-5'(B)), 118.0 (C-2'(B)), 119.7 (C-10(A)), 121.5 (C-1'(B)), 122.1 (C-6(A)), 126.4 (C-6'(B)), 133.8 (C-5(A)), 148.1 (C-3'(B)), 153.8 (C-4(C)), 157.0 (C-4'(B)), 159.8 (C-9(A)), 169.8 (C-7(A)), 173.2 (C-2(C)). HRMS (ESI-QTOF) *m/z* $[M]^+$ Calcd. for $C_{15}H_{11}O_4$ 255.0652, found 255.0651.

6-Nitro-3',4'-dihydroxyflavylium hydrogensulfate (**16**). Melting point: 130 ^{o}C (decomposes). IR (ATR): ν 3381, 3105, 1593, 1504, 1445, 1337, 1205, 1086, 926, 881, 812, 744, 681 cm^{-1}. UV-Vis (MeOH:HCl 1:1; pH = 1): λ_{max} (log ε) 486 (3.52), 275 (4.32) nm. ^{1}H NMR (CD_3CN/DCl, pD ≈ 1.0): δ 7.24$^{\#}$ (d, 1, *J* = 8.6 Hz, H-5'(B)), 8.08* (br s, 1, H-2'(B)), 8.23$^{\&}$ (br d, 1, *J* = 8.6 Hz, H-6'(B)), 8.34 (d, 1, *J* = 9.2 Hz, H-3(C)), 8.53$^{\#}$ (d, 1, *J* = 9.3 Hz, H-8(A)), 8.87$^{\&}$ (br d, 1, *J* = 9.3 Hz, H-7(A)), 9.05* (br s, 1, H-5(A)), 9.13 (d, 1, *J* = 9.2 Hz, H-4(C)) ($^{*,\&,\#}$these signals may be interchanged). HRMS (ESI-QTOF) *m/z* $[M]^+$ Calcd. for $C_{15}H_{10}NO_5$ 284.0559, found 284.0554.

3-Chloro-3',4'-dihydroxyflavylium chloride (**17**). Melting point: 220 ^{o}C (decomposes). IR (ATR): ν 3071, 1672, 1589, 1489, 1410, 1298, 1194, 1148, 991, 872, 824, 756 cm^{-1}. UV-Vis (MeOH:HCl 1:1; pH = 1): λ_{max} (log ε) 469 (3.07), 277 (4.20) nm. ^{1}H NMR (CD_3CN/DCl, pD ≈ 1.0): δ 7.23 (d, 1, *J* = 8.7 Hz, H-5'(B)), 7.91 (t, 1, *J* = 7.4 Hz, H-6(A)), 8.17 (m, 5, H-5(A), H-7(A), H-8(A), H-2'(B), H-6'(B)), 9.41 (s, 1, H-4(C)). ^{13}C NMR (CD_3CN/DCl, pD ≈ 1.0): δ 116.1 (C-5'(B)), 118.0* (C-8(A)), 118.0* (C-6'(B)), 119.5 (C-1'(B)), 122.5 (C-10(A)), 125.3 (C-3(C)), 128.4* (C-2'(B)), 129.0 (C-5(A)), 129.9 (C-6(A)), 138.9 (C-7(A)), 144.8 (C-3'(B)), 154.4 (C-9(A)), 154.5 (C-4(C)), 155.0 (C-4'(B)), 170.9 (C-2(C)) (*these signals may be interchanged). HRMS (ESI-QTOF) *m/z* $[M]^+$ Calcd. for $C_{15}H_{10}ClO_3$ 273.0318, found 273.0314.

*2-(3',4'-Dihydroxyphenyl)chromane-(4→8,2→O-7)-catechin (Analogue **1**).* IR (ATR): ν 3346, 1610, 1520, 1439, 1286, 1231, 1105, 1055, 907, 866, 818, 756 cm^{-1}. UV-Vis (MeOH): λ_{max} (log ε) 280 (3.62) nm. ^{1}H NMR (CD_3OD): major diastereoisomer δ 2.13 (m, 2, H-3(C)), 2.50$^{\#}$ (m, 1, H-4β(F)), 2.84$^{\#}$ (m, 1, H-4α(F)), 3.93 (m, 1, H-3(F)), 4.23 (t, 1, *J* = 2.6 Hz, H-4(C)), 4.67 (d, 1, *J* = 7.4 Hz, H-2(F)), 6.03 (s, 1, H-6(D)), 6.80 (m, 5, H-6 (A), H-8 (A), H-5'(B), H-5'(E), H-6' (E)), 6.95 (m, 2, H-2'(E), H-6'(B)), 7.03 (dt, 1, *J* = 4.8 Hz, H-7(A)), 7.06 (m, 1, H-2'(B)), 7.21 (dd,1, *J* = 7.6 Hz, *J* = 1.6 Hz, H-5(A)). ^{13}C NMR (CD_3OD): major diastereoisomer δ 28.1 (C-4(C)), 28.5 (C-4(F)), 34.8 (C-3(C)), 68.7 (C-3(F)), 83.5 (C-2(F)), 96.2 (C-6(D)), 99.9 (C-2(C)), 102.3 (C-10(D)), 106.8 (C-8(D)), 114.2 (C-2'(B)), 115.5$^{\&}$ (C-2'(E)), 115.9* (C-5'(B)), 116.0* (C-6(A)), 116.7* (C-5'(E)), 118.3$^{\&}$ (C-6'(B)), 120.3 (C-6'(E)), 121.9* (C-8(A)), 128.3 (C-7(A)), 129.0 (C-10(A)), 129.1 (C-5(A)), 132.2 (C-1'(E)), 135.1 (C-1'(B)), 145.9 (C-3'(E)), 146.3 (C-4'(E)), 146.4 (C-3'(B)), 146.6 (C-4'(B)), 152.2 (C-7(D)), 152.5 (C-9(D)), 153.8 (C-9(A)), 155.7 (C-5(D)) ($^{*,\&,\#}$these signals maybe interchanged). ^{1}H NMR (CD_3OD): minor diastereoisomer δ 2.13 (m, 2, H-3(C)), 2.50$^{\#}$ (m, 1, H-4β(F)), 2.84$^{\#}$ (m, 1, H-4α(F)), 3.93 (m, 1, H-3(F)), 4.28 (t, 1, *J* = 2.6 Hz, H-4(C)), 4.55 (d, 1, *J* = 7.4 Hz, H-2(F)), 6.02 (s, 1, H-6(D)), 6.80 (m, 5, H-6 (A), H-8 (A), H-5’(B), H-5'(E), H-6' (E)), 6.95 (m, 2, H-2'(E), H-6'(B)), 7.03 (dt, 1, *J* = 4.8 Hz, H-7(A)), 7.06 (m, 1, H-2'(B)), 7.12 (dd,1, *J* = 7.6 Hz, *J* = 1.6 Hz, H-5(A)). ^{13}C NMR (CD_3OD): minor diastereoisomer δ 28.1 (C-4(C)), 29.2 (C-4(F)), 34.7 (C-3(C)), 68.7 (C-3(F)), 82.9 (C-2(F)), 96.3 (C-6(D)), 99.9 (C-2(C)), 102.7 (C-10(D)), 107.0 (C-8(D)), 114.2 (C-2'(B)), 115.5$^{\&}$ (C-2'(E)), 115.9* (C-5'(B)), 116.2 (C-6(A)), 116.7* (C-5'(E)), 118.3$^{\&}$ (C-6'(B)), 120.2 (C-6'(E)), 121.9* (C-8(A)), 128.2 (C-7(A)), 128.5 (C-5(A)), 129.2 (C-10(A)), 132.1 (C-1'(E)), 135.1 (C-1'(B)), 145.9 (C-3'(E)), 146.3 (C-4'(E)), 146.4 (C-3'(B)), 146.6 (C-4'(B)), 152.1 (C-7(D)), 152.7 (C-9(D)), 153.7 (C-9(A)), 155.7 (C-5(D)) ($^{*,\&,\#}$these signals may be interchanged). HRMS (ESI-QTOF) *m/z* $[M + H]^+$ Calcd. for $C_{30}H_{24}O_9$ 529.1420, found 529.1422.

*2-(3',4'-Dihydroxyphenyl)-5,7-dihydroxychromane-(4→4'',2→O-5'')-phloroglucinol (Analogue **2**)*. IR (ATR): ν 3329, 1610, 1475, 1294, 1130, 1082, 1007, 887, 820 cm^{-1}. UV-Vis (MeOH): λ_{max} (log ε) 280 (3.02) nm. ^{1}H NMR (CD_3OD): δ 2.12 (d, 2, *J* = 3.3 Hz, H-3(C)), 4.25 (t, 1, *J* = 3.3 Hz, H-4(C)), 5.94* (d, 2, *J* = 2.3 Hz, H-2''(D), H-6''(D)), 5.97* (d, 2, *J* = 2.3 Hz, H-6(A), H-8(A)), 6.76 (d, 1, *J* = 8.3 Hz, H-5'(B)), 6.94 (dd, 1, *J* = 8.3 Hz, *J* = 2.1 Hz, H-6'(B)), 7.07 (d, 1, *J* = 2.1 Hz, H-2'(B)). ^{13}C NMR (CD_3OD): δ 21.8 (C-4(C)), 34.9 (C-3(C)), 96.7* (C-6''(D), C-2''(D)), 97.1* (C-8(A), C-6(A)), 99.8 (C-2(C)), 107.8 (C-10(A), C-4''(D)), 114.3 (C-2'(B)), 115.9 (C-5'(B)), 118.4 (C-6'(B)), 135.0 (C-1'(B)), 145.9 (C-3'(B)), 146.7 (C-4'(B)), 154.5$^{\&}$ (C-9(A)), 154.7$^{\&}$ (C-5''(D)), 158.2$^{\&}$ (C-1''(D), C-3''(D), C-5(A), C-7(A)) ($^{*,\&}$these signals may be interchanged). HRMS (ESI-QTOF) *m/z* $[M + H]^+$ Calcd. for $C_{21}H_{16}O_8$ 397.0845 found 397.0847.

*2-(3',4'-Dihydroxyphenyl)-7-hydroxychromane-(4→4'',2→O-5'')-phloroglucinol (Analogue **3**)*. IR (ATR): ν 3375, 2933, 1697, 1614, 1504, 1441, 1298, 1113, 1070, 1026, 972, 818 cm^{-1}. UV-Vis (MeOH): λ_{max} (log ε) 280 (3.72) nm. ^1H NMR (CD_3CN): δ 2.22 (d, 2, *J* = 2.8 Hz, H-3(C)), 4.27 (d, 1, *J* = 2.8 Hz, H-4(C)), 5.97 (s, 2, H-2''(D), H-6''(D)), 6.40 (m, 2, H-6(A), H-8(A)), 6.87 (d, 1, *J* = 8.3 Hz, H-5'(B)), 7.06 (dd, *J* = 8.3 Hz, *J* = 1.9 Hz, 1H, H-6'(B)), 7.17 (m, 2, H-2'(B), H-5(A)). ^{13}C NMR (CD_3CN): δ 25.4 (C-4(C)), 33.0 (C-3(C)), 94.4* (C-6''(D)), 95.3* (C-2''(D)), 98.2 (C-2(C)), 102.4 (C-8 (A)), 106.2 (C-4''(D)), 107.9 (C-6(A)), 112.7 (C-2'(B)), 114.5 (C-5'(B)), 117.1 (C-6'(B)), 118.9 (C-10(A)), 127.8 (C-5(A)), 133.6 (C-1'(B)), 143.4 (C-3'(B)), 144.7 (C-4'(B)), 152.6 (C-5''(D)), 152.8 (C-9(A)), 153.5 (C-3''(D)), 156.1 (C-1''(D)), 156.1 (C-7(A)) (*these signals may be interchanged). HRMS (ESI-QTOF) *m/z* $[M + H]^+$ Calcd. for $C_{21}H_{16}O_7$ 381.0896, found 381.0890.

*2-(3',4'-Dihydroxyphenyl)-6-nitrochromane-(4→4'',2→O-5'')-phloroglucinol (Analogue **4**)*. Melting point: 180 °C (decomposes). IR (ATR): ν 3325, 1610, 1510, 1479, 1437, 1335, 1252, 1126, 1088, 1067, 1007, 897, 818, 746 cm^{-1}. UV-Vis (MeOH): λ_{max} (log ε) 313 (4.01), 287 (4.07) nm. ^1H NMR (CD_3CN): δ 2.36 (m, 2, H-3(C)), 4.49 (br s, 1, H-4(C)), 6.02 (s, 2, H-2''(D), H-6''(D)), 6.91 (d, 1, *J* = 7.6 Hz, H-5'(B)), 7.09 (m, 2, H-6'(B), H-8(A)), 7.17 (br s, 1, H-2'(B)), 8.02 (br d, 1, *J* = 8.2 Hz, H-7(A)), 8.24 (br s, 1, H-5(A)). ^{13}C NMR (CD_3CN): δ 26.1 (C-4(C)), 31.6 (C-3(C)), 94.6* (C-2''(D)), 95.7* (C-6''(D)), 99.9 (C-2(C)), 104.2 (C-4''(D)), 112.7 (C-2'(B)), 114.6 (C-5'(B)), 116.4 (C-8(A)), 117.1 (C-6'(B)), 122.9 (C-5(A)), 123.3 (C-7(A)), 128.5 (C-10(A)), 132.2 (C-1'(B)), 141.1 (C-6(A)), 144.1 (C-3'(B)), 145.0 (C-4'(B)), 152.4& (C-5''(D)), 154.4& (C-3''(D)), 156.8 (C-1''(D)), 157.7 (C-9(A)) (*,&these signals may be interchanged). HRMS (ESI-QTOF) *m/z* $[M + H]^+$ Calcd. for $C_{21}H_{15}NO_8$ 410.0798, found 410.0793.

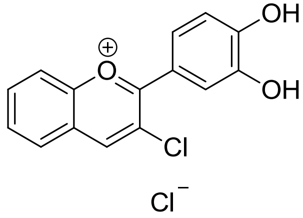
*3-Chloro-2-(3',4'-dihydroxyphenyl)chromane-(4→4'',2→O-5'')-phloroglucinol (Analogue **5**)*. IR (ATR): ν 3329, 1609, 1516, 1483, 1462, 1308, 1229, 1204, 1140, 1117, 1067, 1003, 964, 883, 839, 822, 754 cm^{-1}. UV-Vis (MeOH): λ_{max} (log ε) 280 (3.88) nm. ^1H NMR (CD_3OD): δ 4.48 (d, 1, *J* = 3.1 Hz, H-4(C)), 4.54 (d, 1, *J* = 3.1 Hz, H-3(C)), 6.78 (d, 1, *J* = 8.3 Hz, H-5'(B)), 6.81 (dd,1, *J* = 8.0 Hz, *J* = 1.2 Hz, H-8(A)), 6.83 (dt, 1, *J* = 7.4 Hz, *J* = 1.2 Hz, H-6(A)), 6.98 (dd, 1, *J* = 8.3 Hz, *J* = 2.2 Hz, H-6'(B)), 7.04 (ddd, 1, *J* = 8.0 Hz, *J* = 7.4 Hz, *J* = 1.7 Hz, H-7(A)), 7.11 (d,1, *J* = 2.2 Hz, H-2'(B)), 7.34 (dd,1, *J* = 7.4 Hz, *J* = 1.7 Hz, H-5(A)). ^{13}C NMR (CD_3OD): δ 37.2 (C-4(C)), 57.4 (C-3(C)), 100.0 (C-2(C)), 103.6 (C-4''(D)), 115.5 (C-2'(B)), 115.6 (C-5'(B)), 116.5 (C-8(A)), 119.8 (C-6'(B)), 122.4 (C-6(A)), 128.3 (C-10(A)), 128.7 (C-5(A)), 129.0 (C-7(A)), 131.9 (C-1'(B)), 145.6 (C-3'(B)), 147.0 (C-4'(B)), 152.9 (C-9(A)), 153.6 (C-5''(D)), 157.2 (C-3''(D)), 158.3 (C-1''(D)). HRMS (ESI-QTOF) *m/z* $[M + H]^+$ Calcd. for $C_{21}H_{15}ClO_6$ 399.0557, found 399.0554.

*3-Chloro-2-(3',4'-diacetoxyphenyl)chromane-(4→4'',2→O-5'')-1,3-diacetylphloroglucinol (Analogue **6**)*. ^1H NMR ($CDCl_3$): δ 2.24 (s, 3, OAc), 2.30 (s, 3, OAc), 2.31 (s, 3, OAc), 2.46 (s, 3, OAc), 4.48 (d, 1, *J* = 3.1 Hz, H-4(C)), 4.50 (d, 1, *J* = 3.1 Hz, H-3(C)), 6.74* (d, 1, *J* = 2.3 Hz, H-2''(D)), 6.81* (d, 1, *J* = 2.3 Hz, H-6''(D)), 6.97 (m, 2, H-6(A), H-7(A)), 7.18 (br d, 2, *J* = 8.0 Hz, H-5(A), H-8(A)), 7.29 (d, 1, *J* = 8.3 Hz, H-5'(B)), 7.56 (d,1, *J* = 2.2 Hz, H-2'(B)), 7.60 (dd,1, *J* = 8.3 Hz, *J* = 2.2 Hz, H-6'(B)). ^{13}C NMR ($CDCl_3$): δ 20.6 (OAc), 20.7 (OAc), 21.1 (OAc), 21.3 (OAc), 36.8 (C-4(C)), 54.3 (C-3(C)), 98.3 (C-2(C)), 107.7$^\&$ (C-2''(D)), 109.9$^\&$ (C-6''(D)), 112.4 (C-4''(D)), 116.6$^\#$ (C-6(A)), 122.3 (C-2'(B)), 122.7$^\#$ (C-7(A)), 124.3 (C-10(A)), 125.3 (C-6'(B)), 127.1$^\wedge$ (C-5(A)), 129.2$^\wedge$ (C-8(A)), 136.3 (C-1'(B)), 141.7 (C-3'(B)), 143.0 (C-

4'(B)), 148.6[$] (C-1"(D)), 149.9[$] (C-3"(D)), 151.1 (C-9(A)), 151.4[$] (C-5"(D)), 167.9 (OAc), 168.0 (2×OAc), 169.7 (OAc) ([*,&,#,^,$]these signals may be interchanged).

S2. ^{1}H NMR and ^{13}C NMR spectra of the new compounds and those biologically evaluated.

^{1}H NMR (400 MHz, CD_3CN/DCl)



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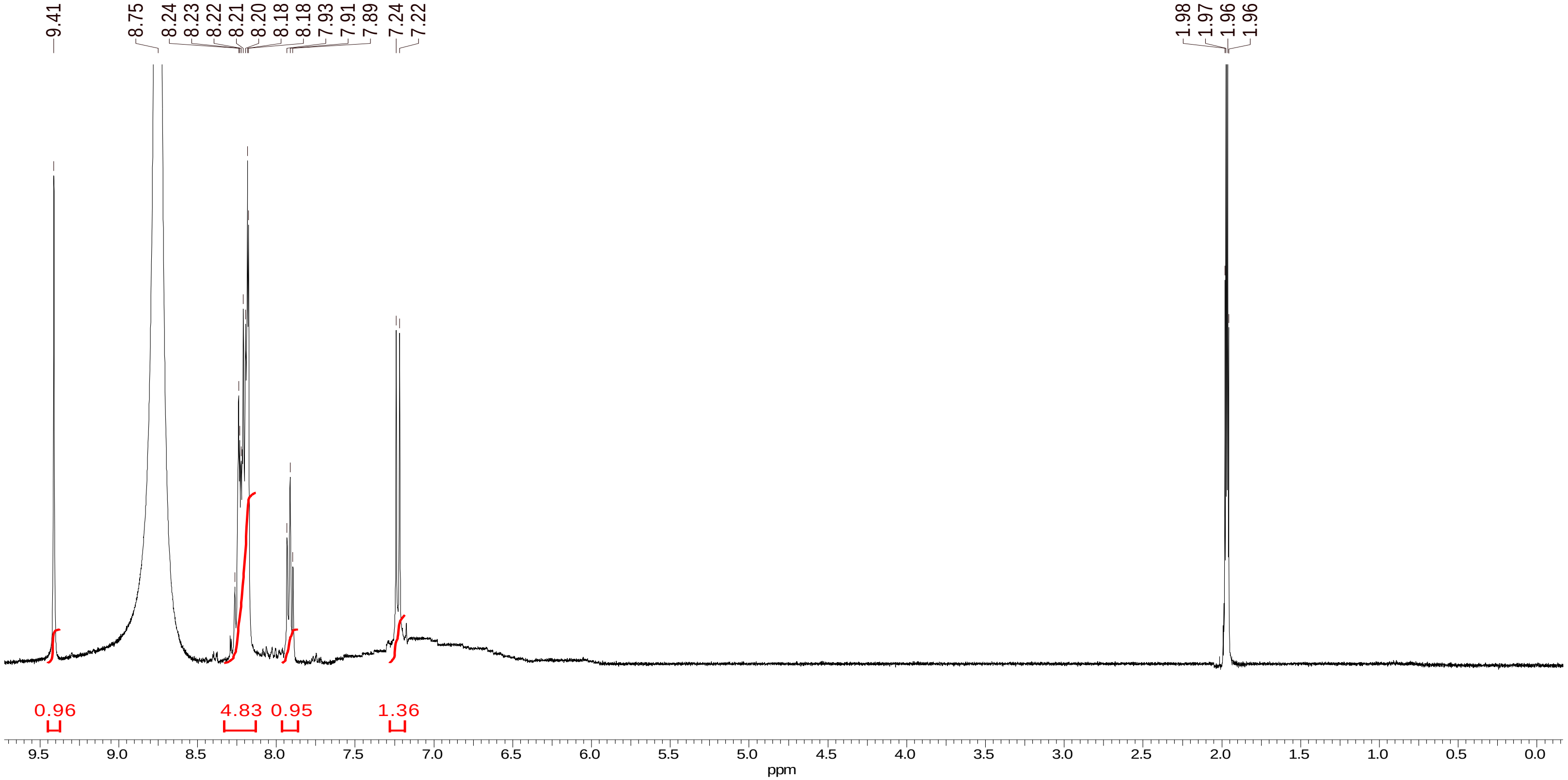

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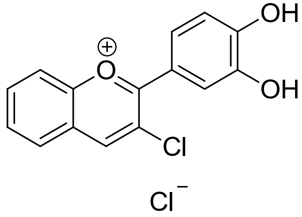

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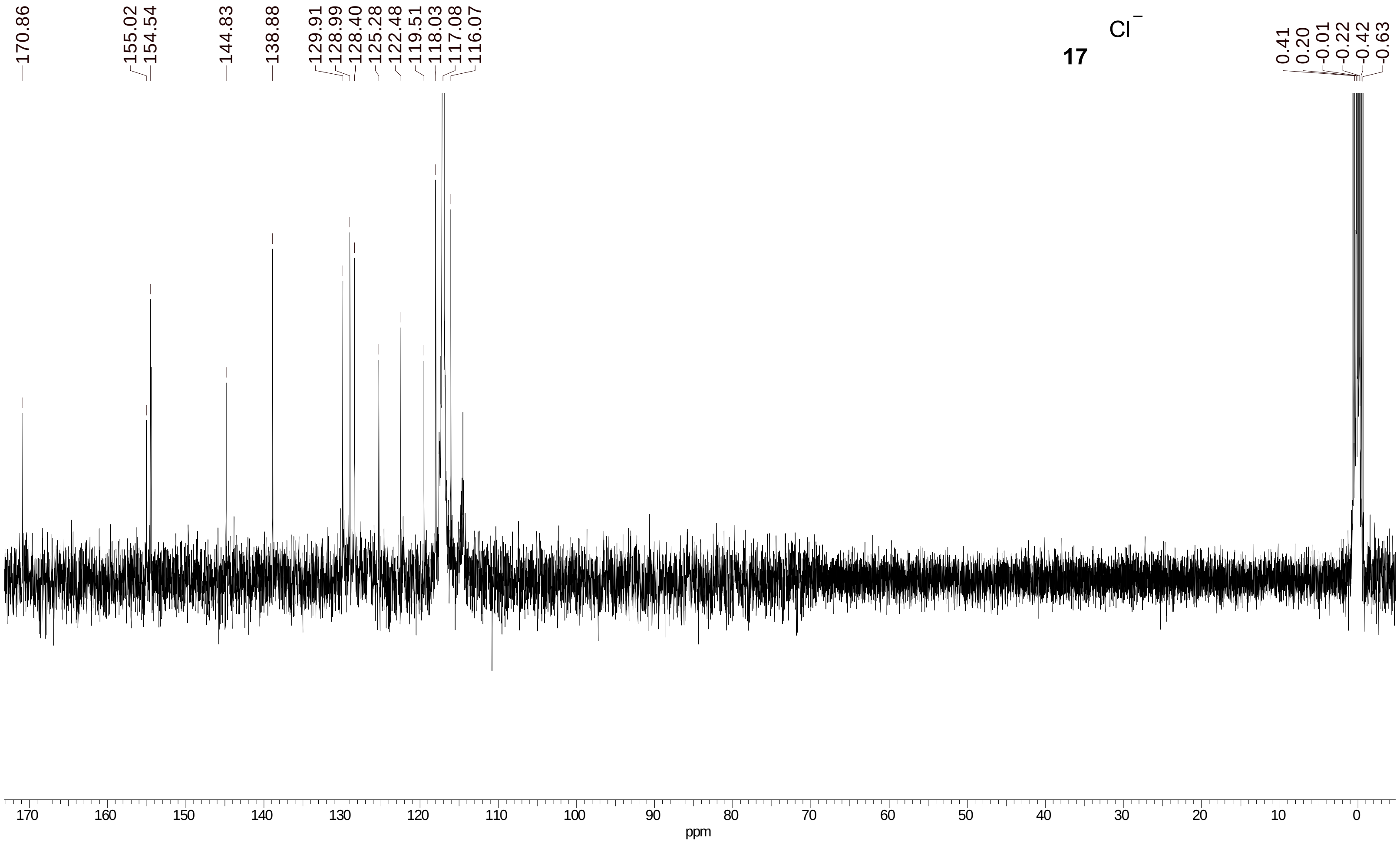

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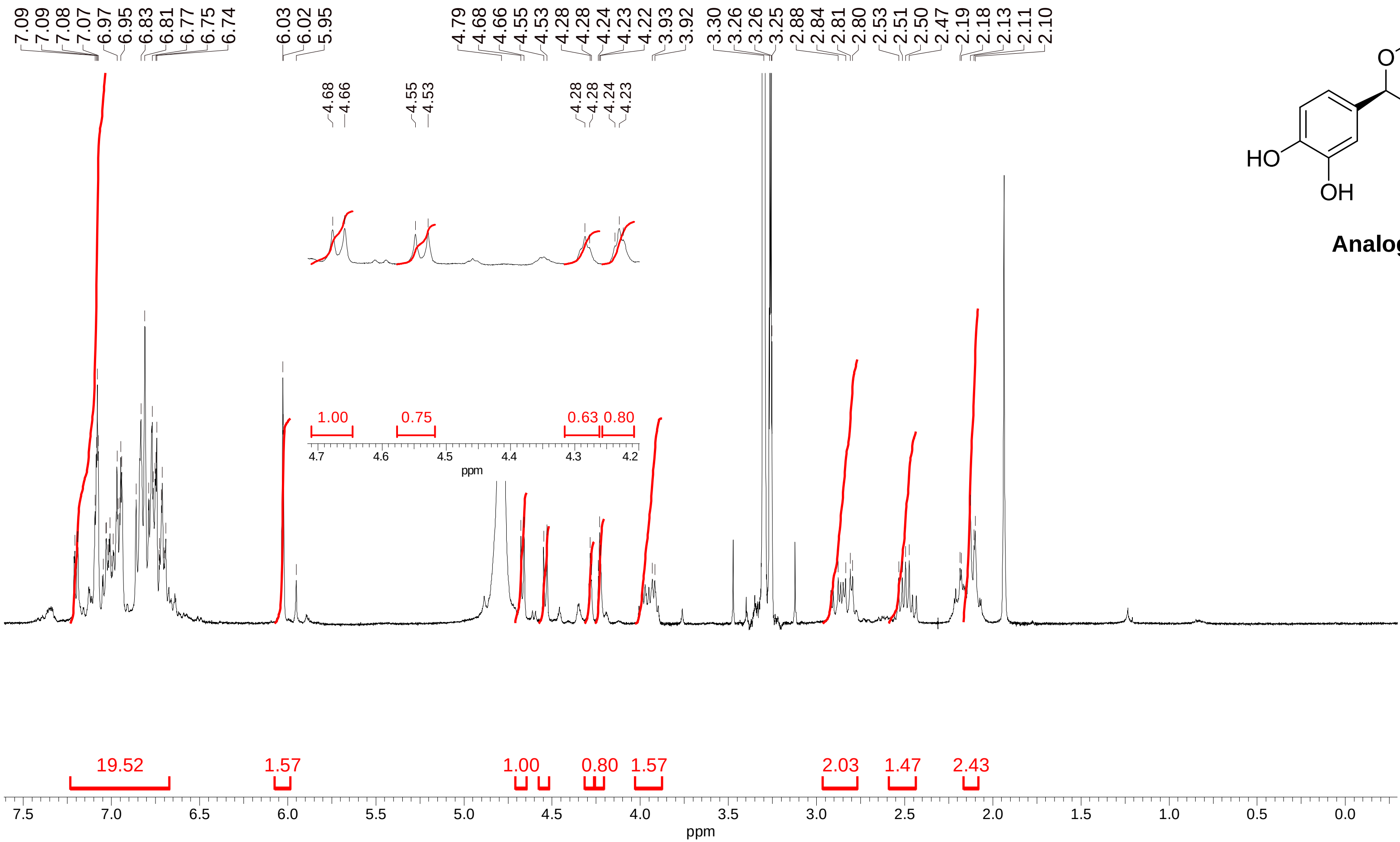
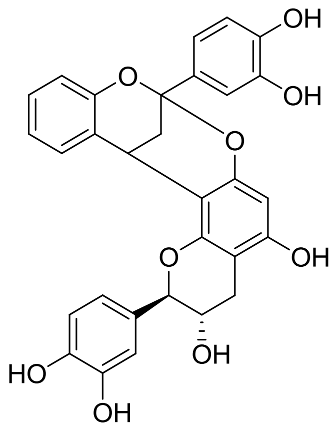
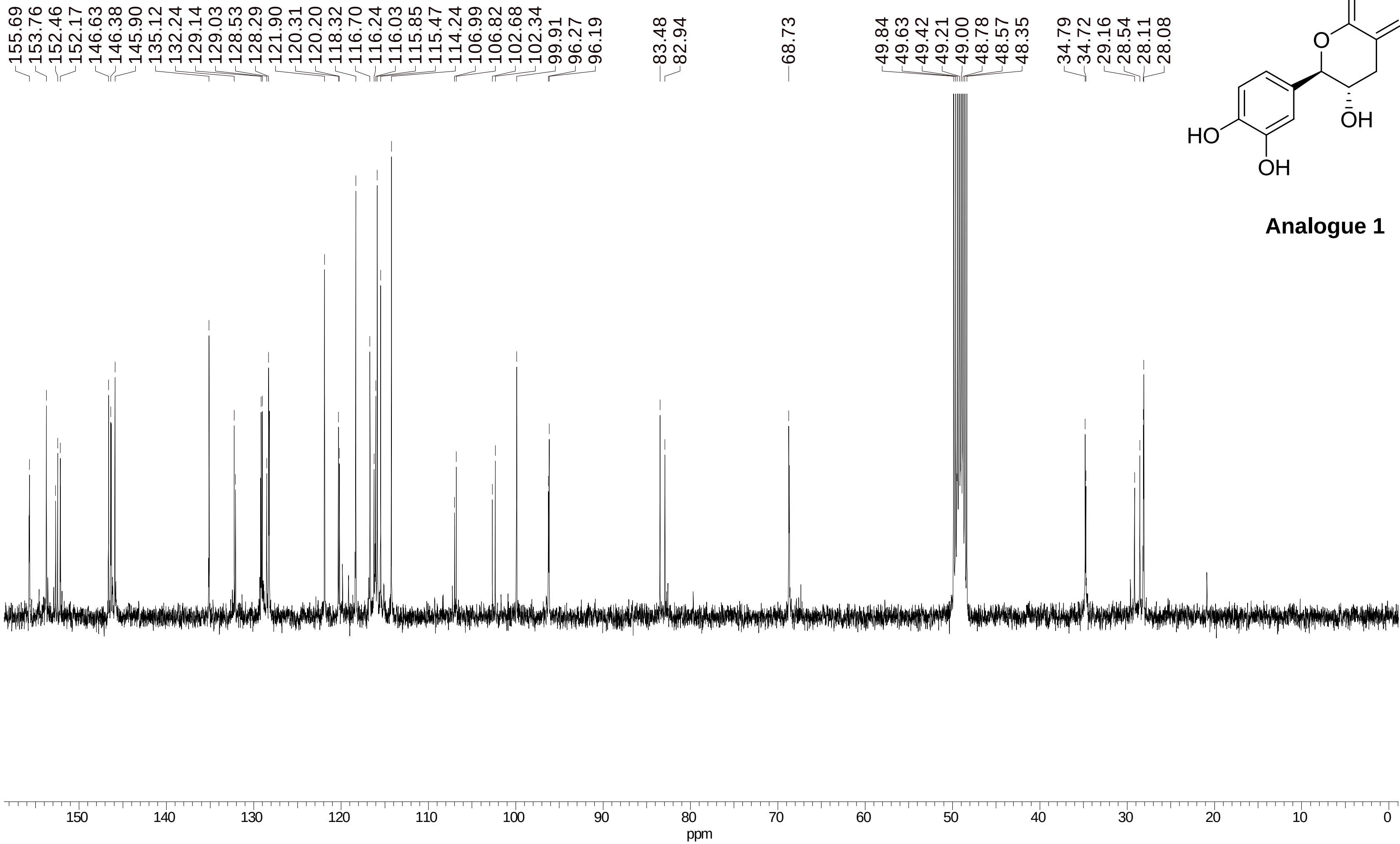
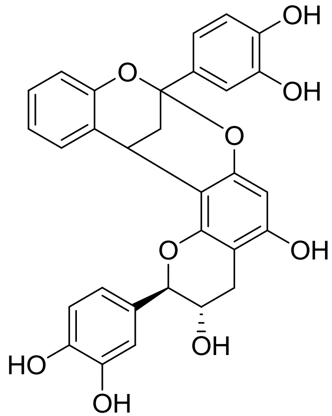




Analogue 1

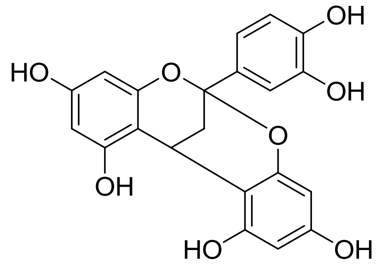
^{13}C NMR (100 MHz, CD_3OD)



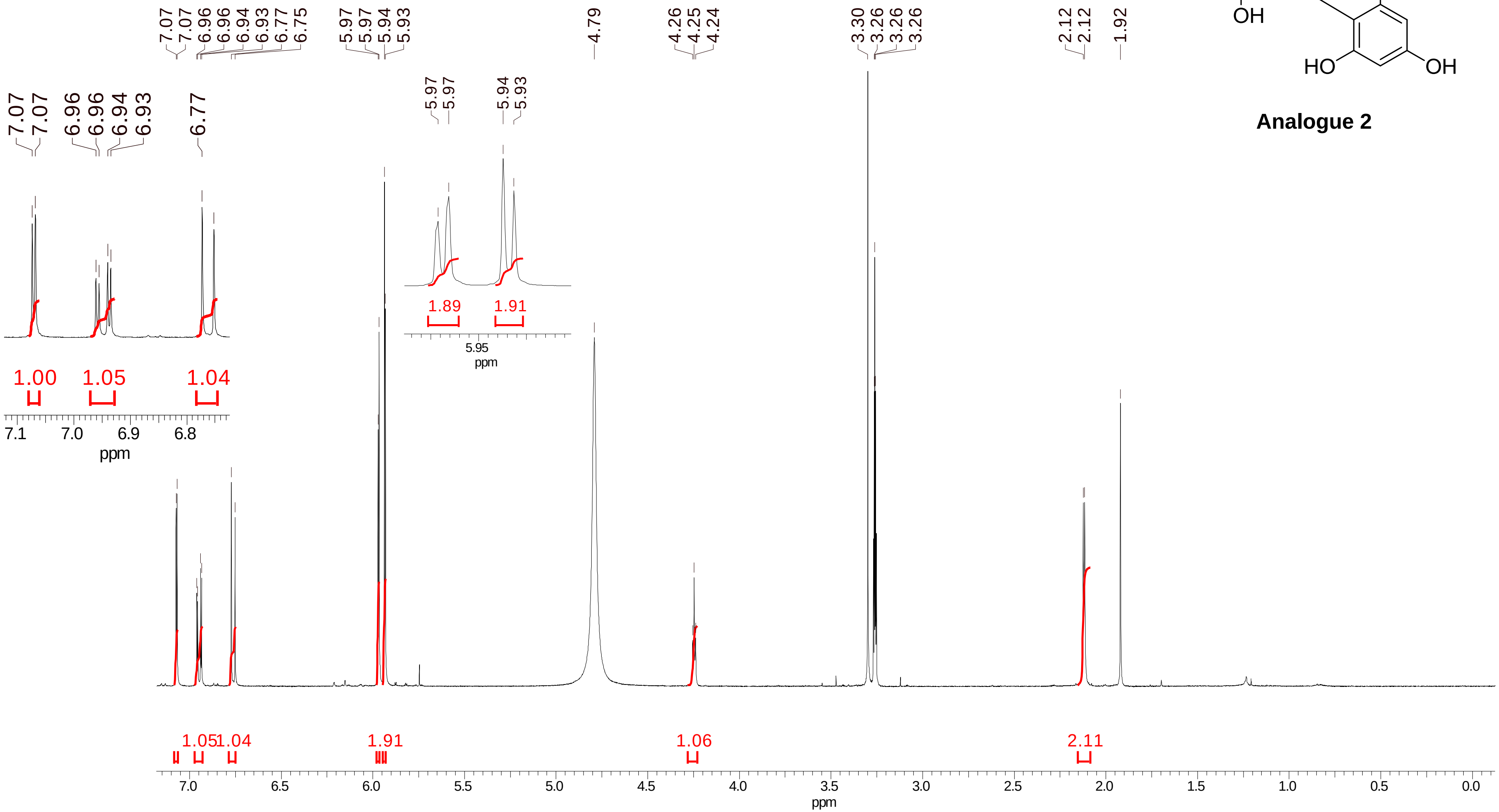


Analogue 1

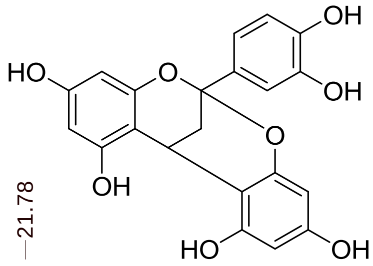
^{1}H NMR (400 MHz, CD_3OD)



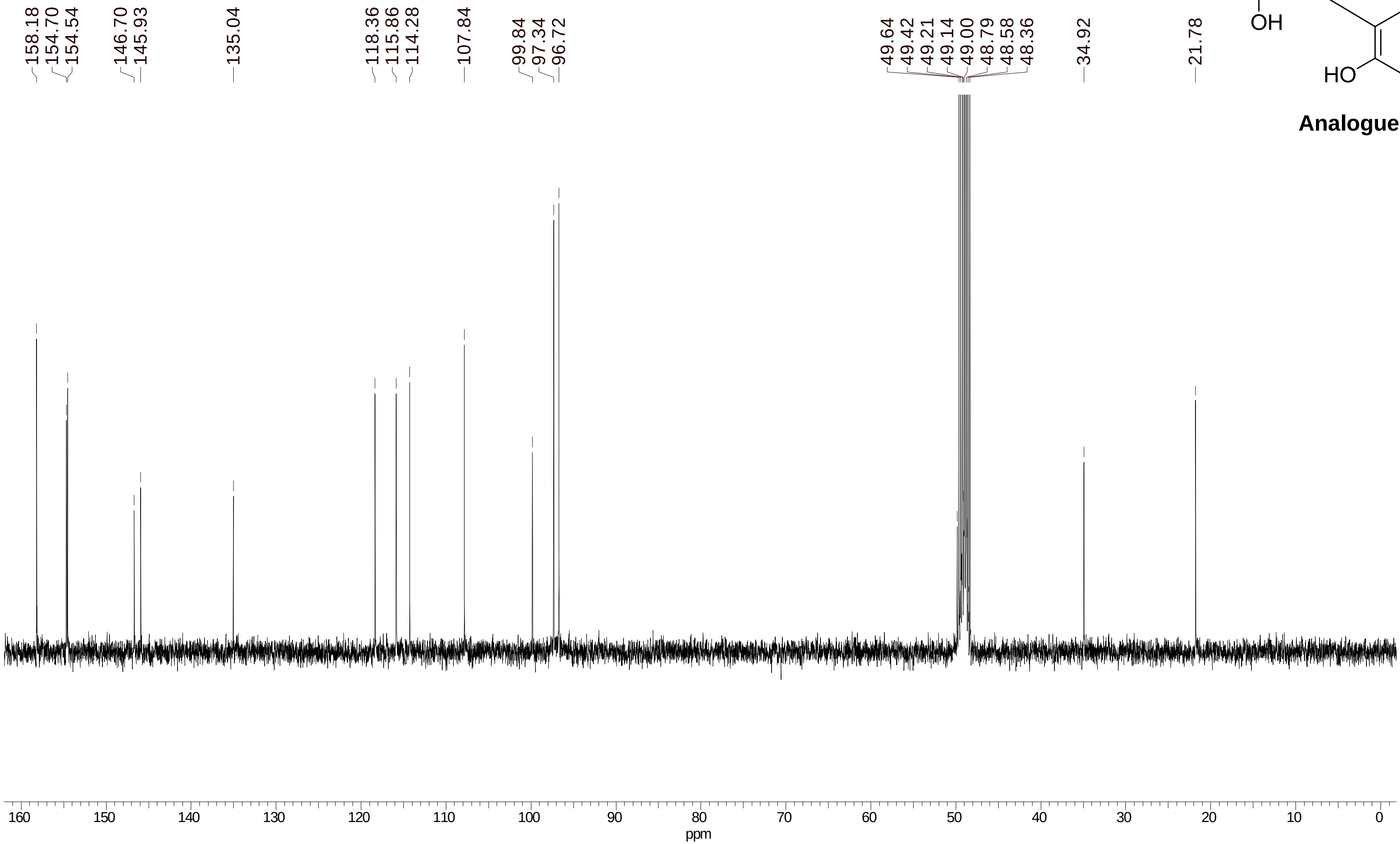
Analogue 2



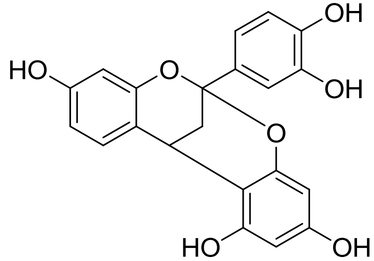
^{13}C NMR (100 MHz, CD_3OD)



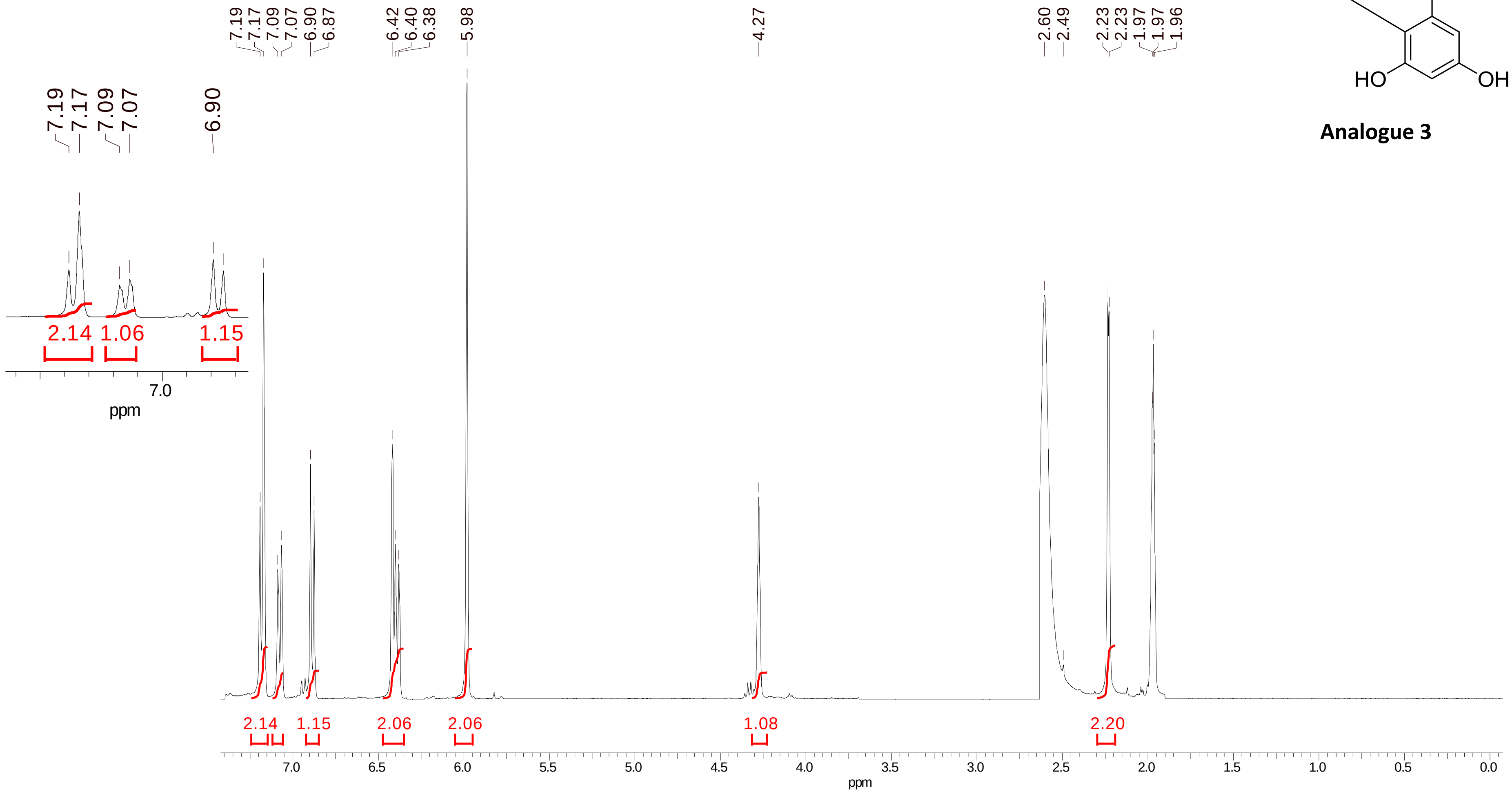
Analogue 2



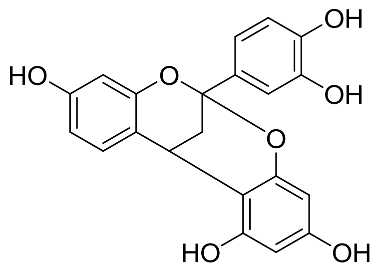
^{1}H NMR (400 MHz, CD_3CN)



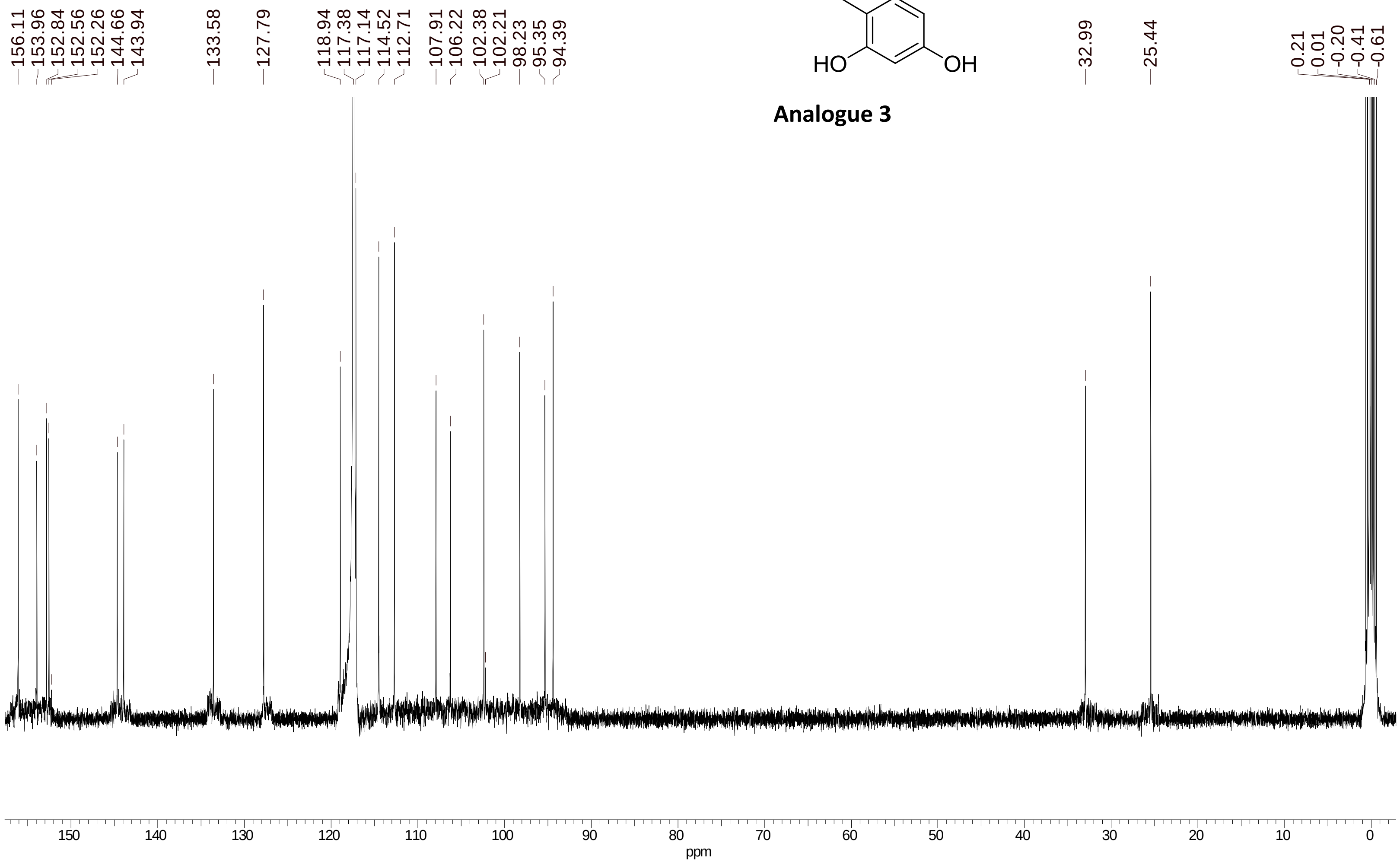
Analogue 3



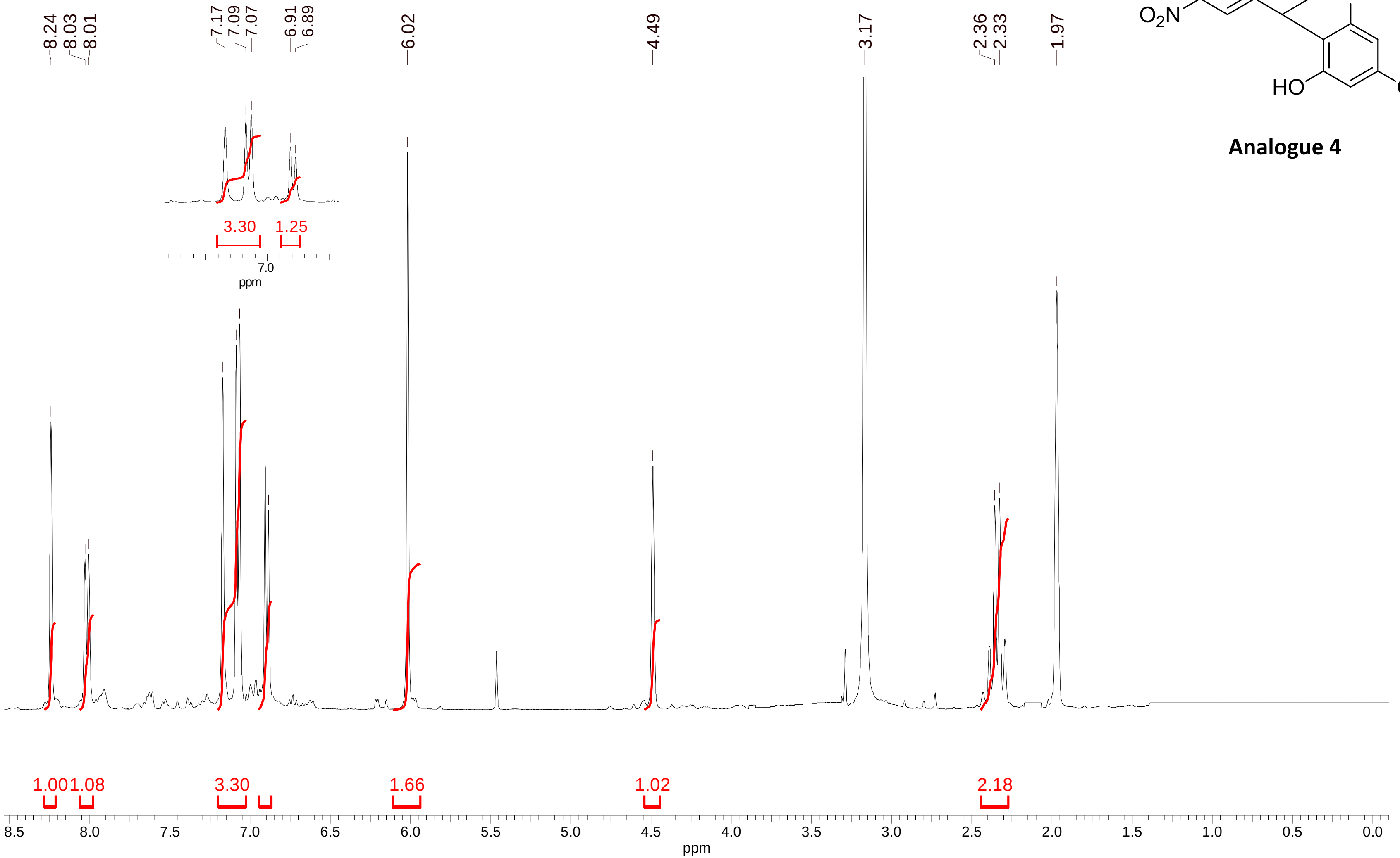
^{13}C NMR (100 MHz, CD_3CN)

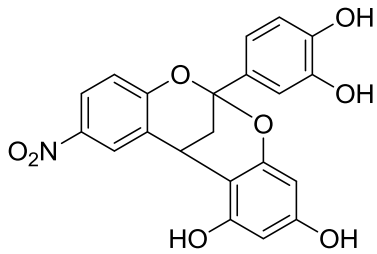


Analogue 3



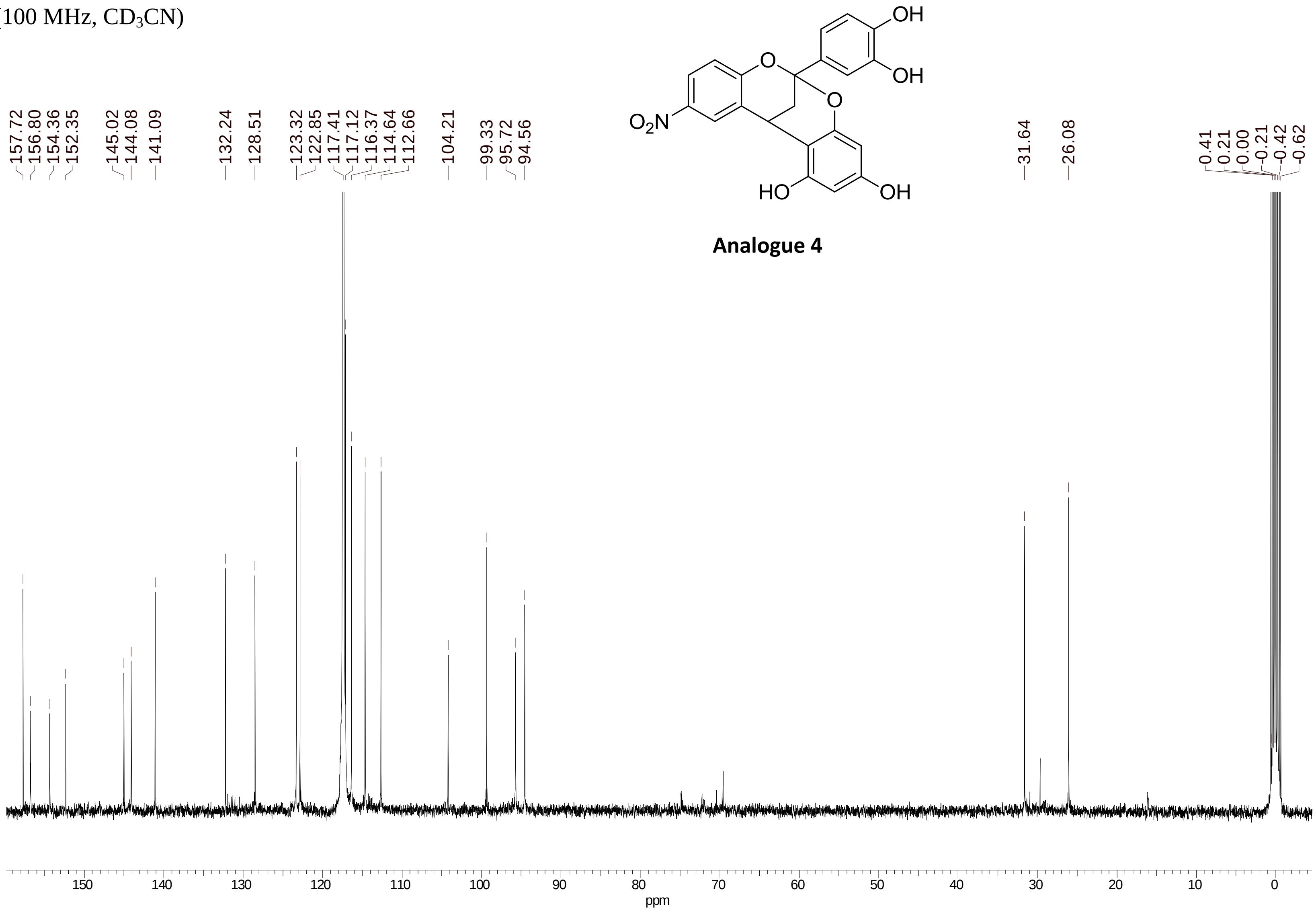
^{1}H NMR (400 MHz, CD_3CN)





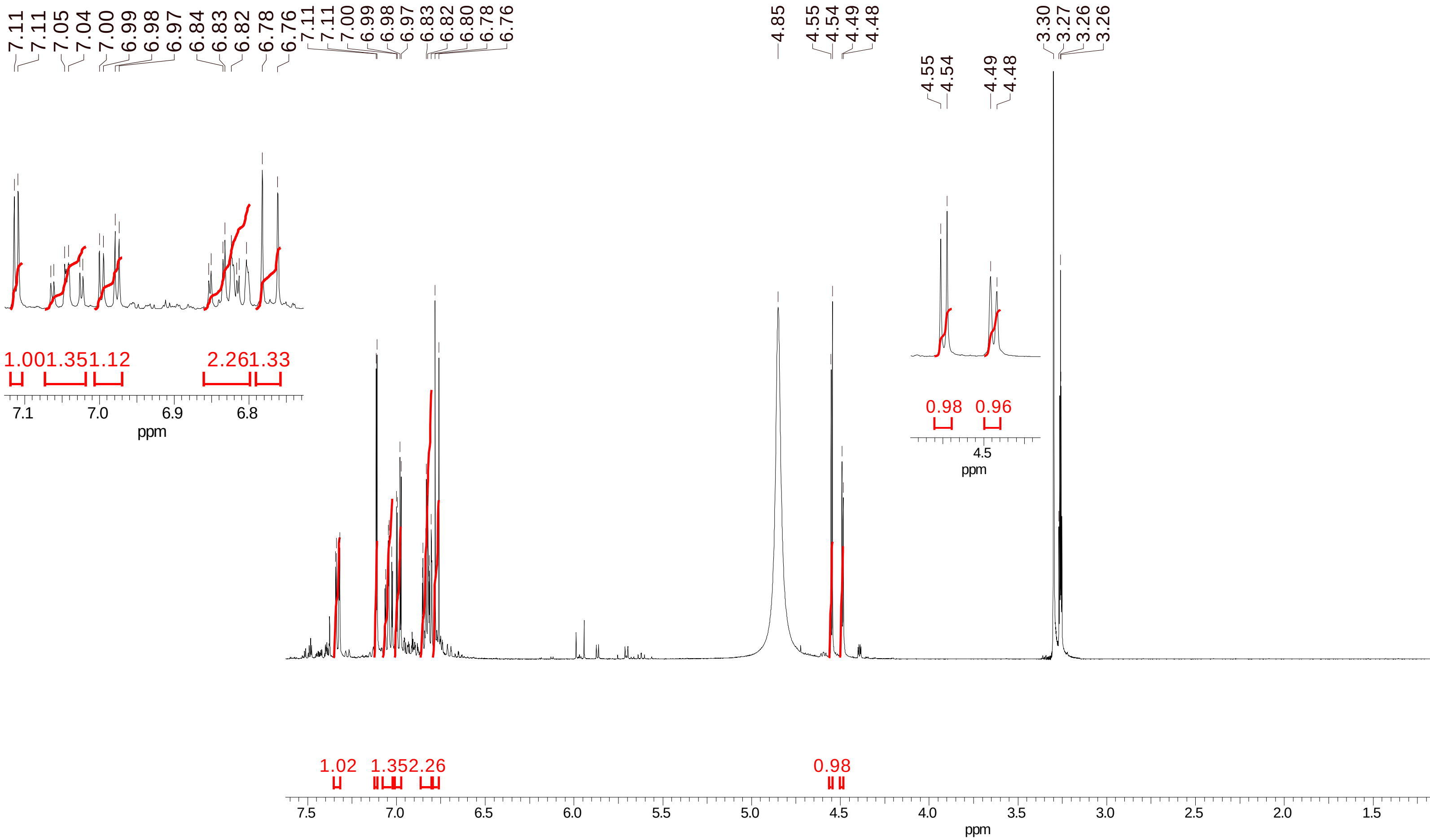
Analogue 4

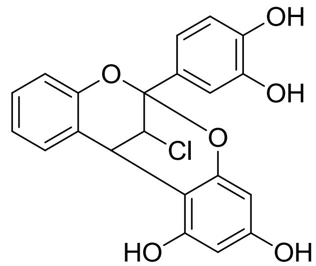
^{13}C NMR (100 MHz, CD_3CN)



Analogue 4

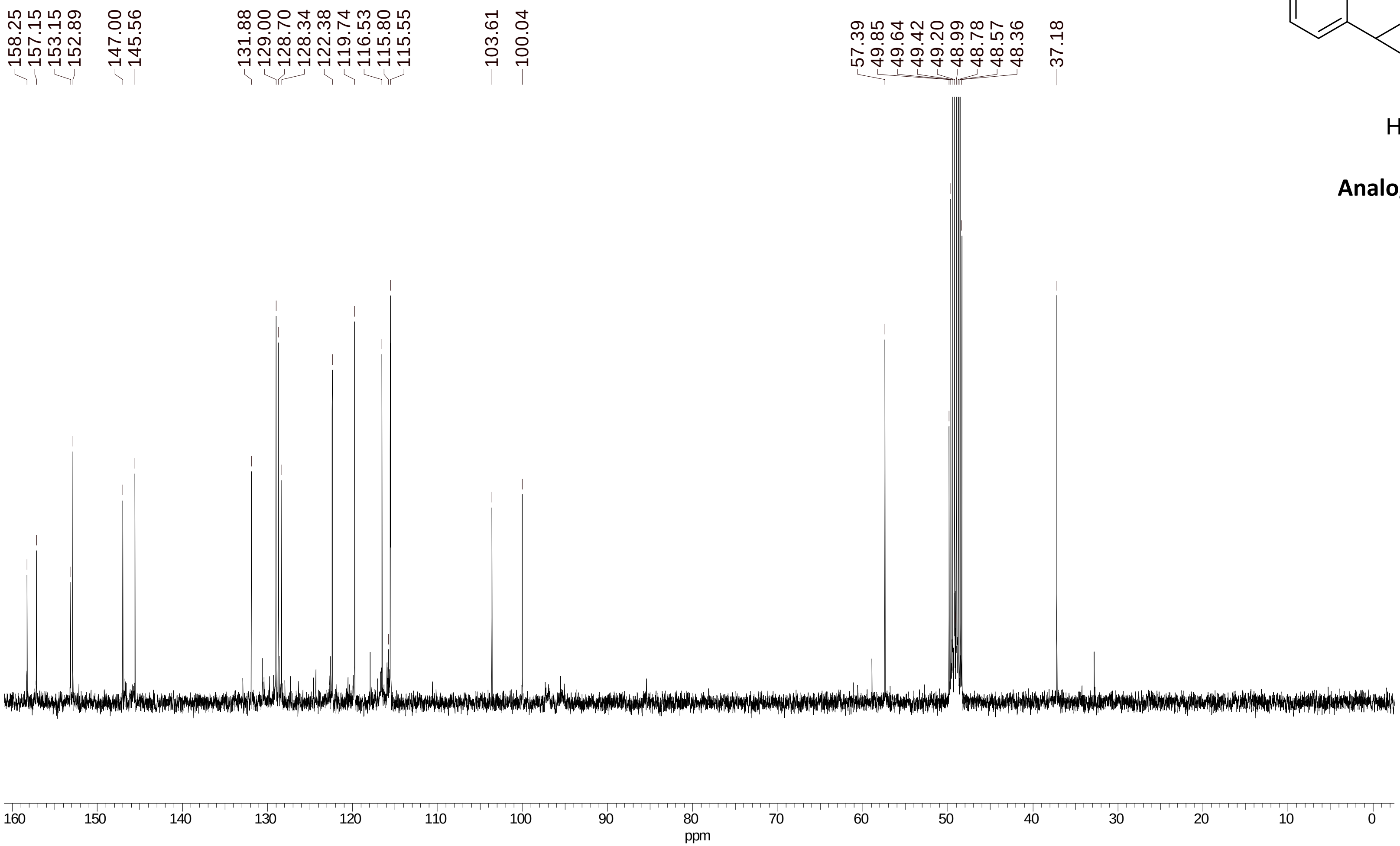
^{1}H NMR (400 MHz, CD_3OD)

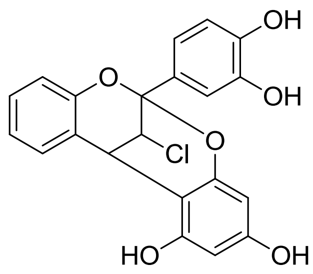




Analogue 5

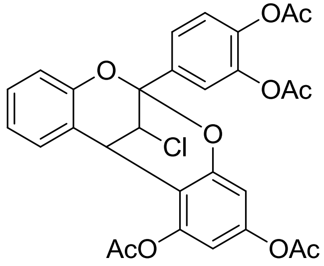
^{13}C NMR (100 MHz, CD_3OD)



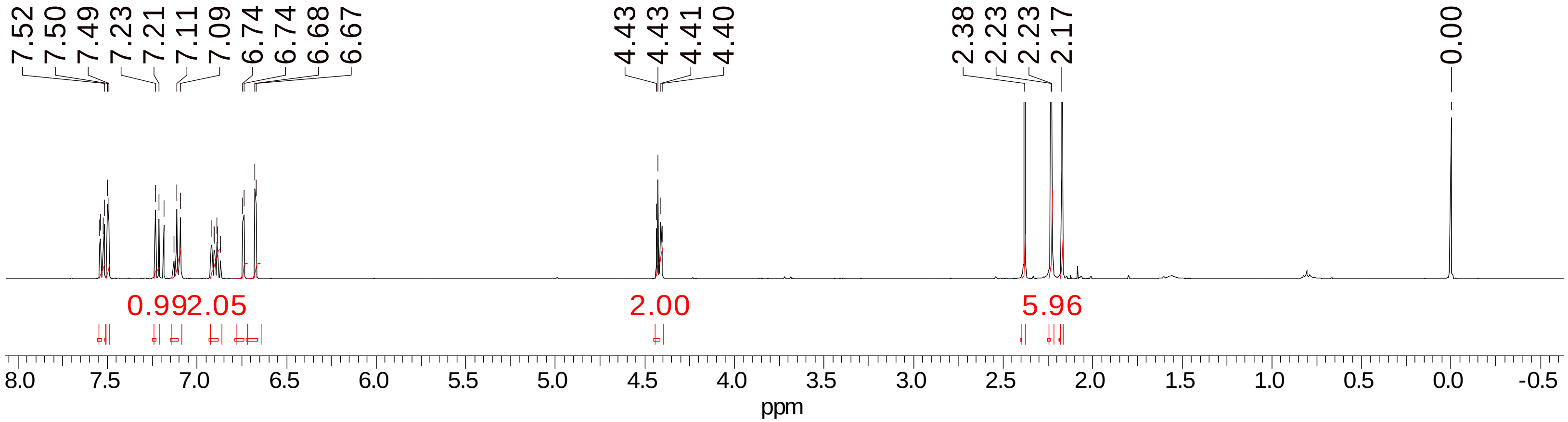


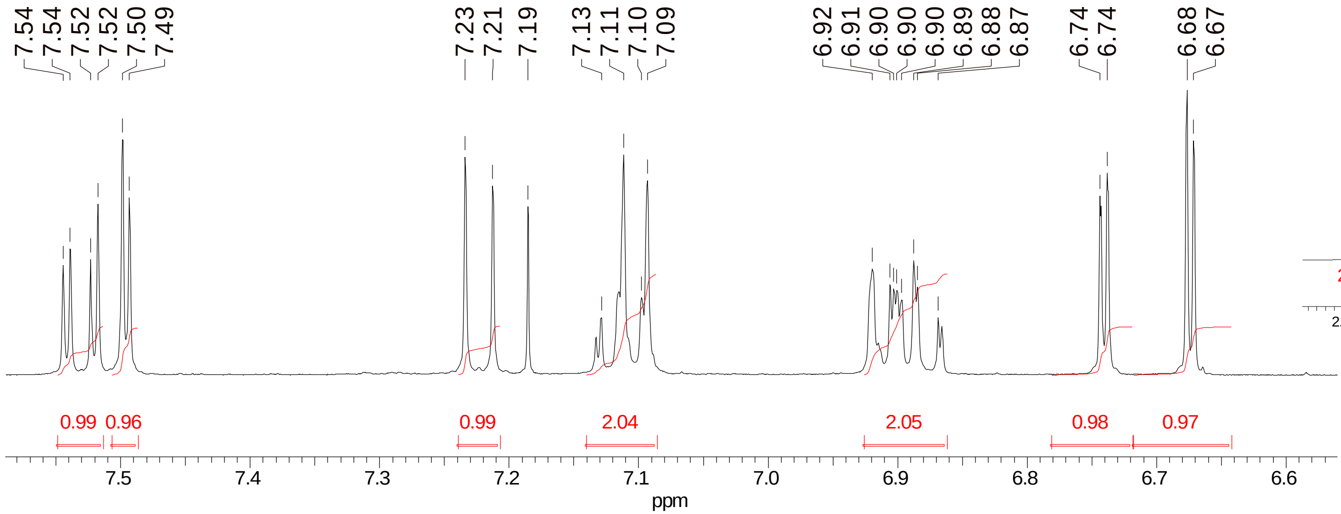
Analogue 5

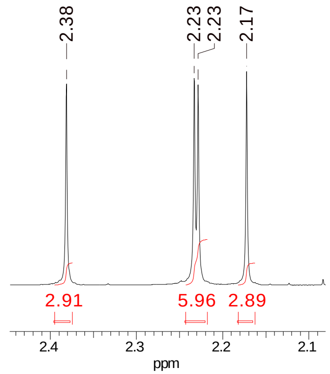
^{1}H NMR (400 MHz, $CDCl_3$)



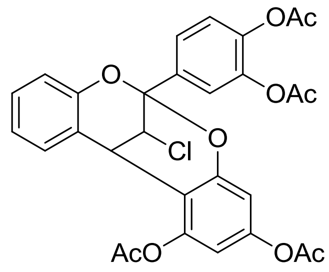
Analogue 6



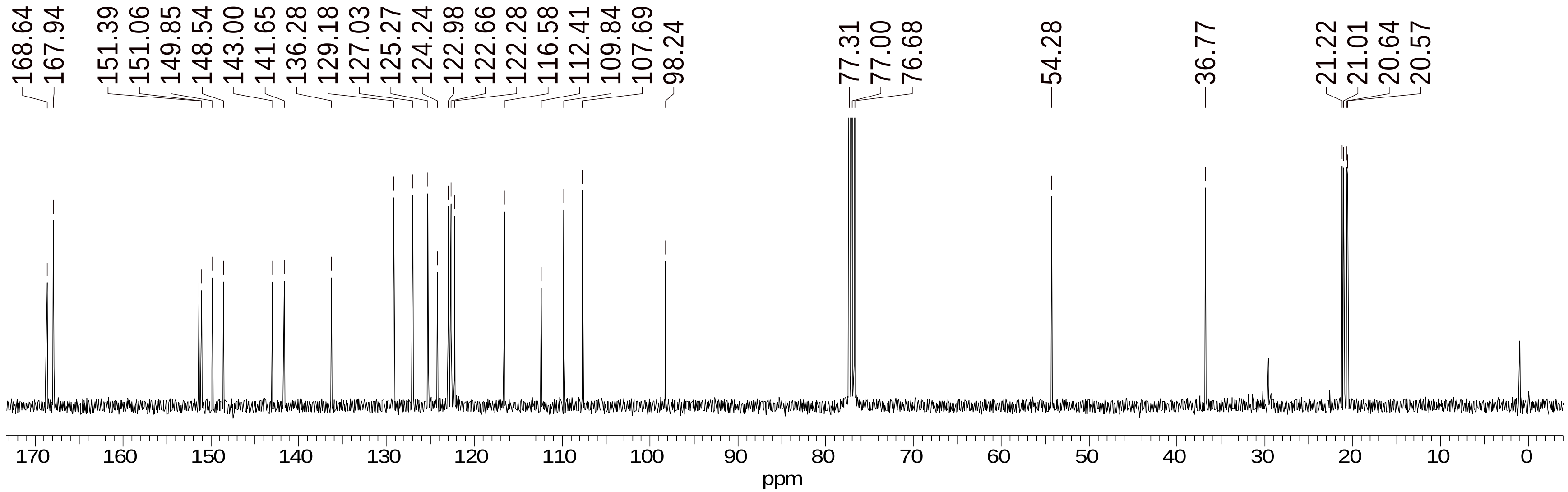




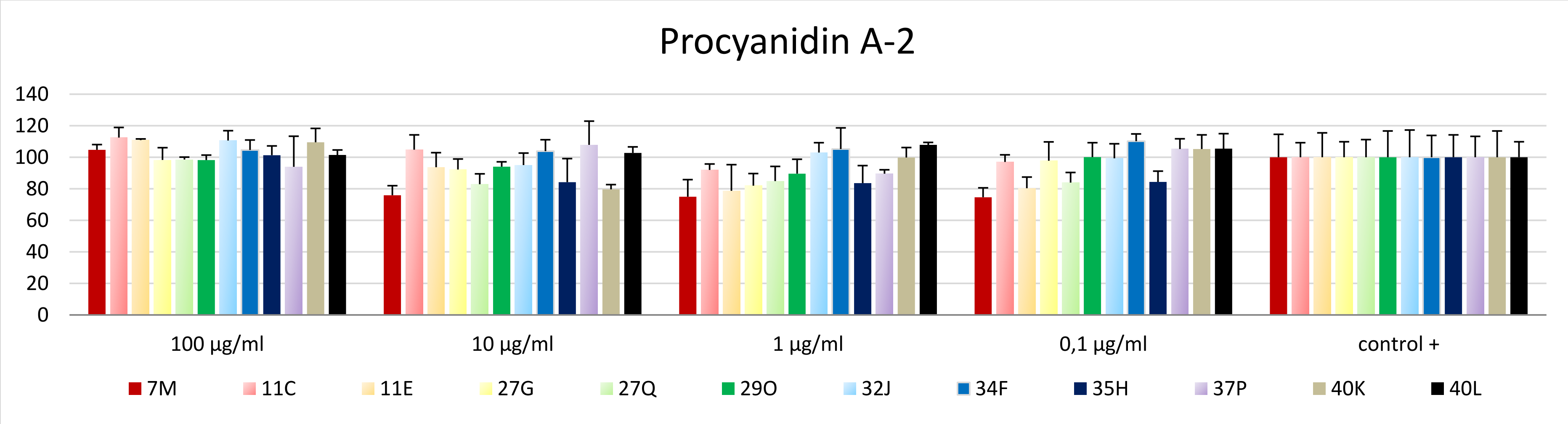
^{13}C NMR (100 MHz, $CDCl_3$)

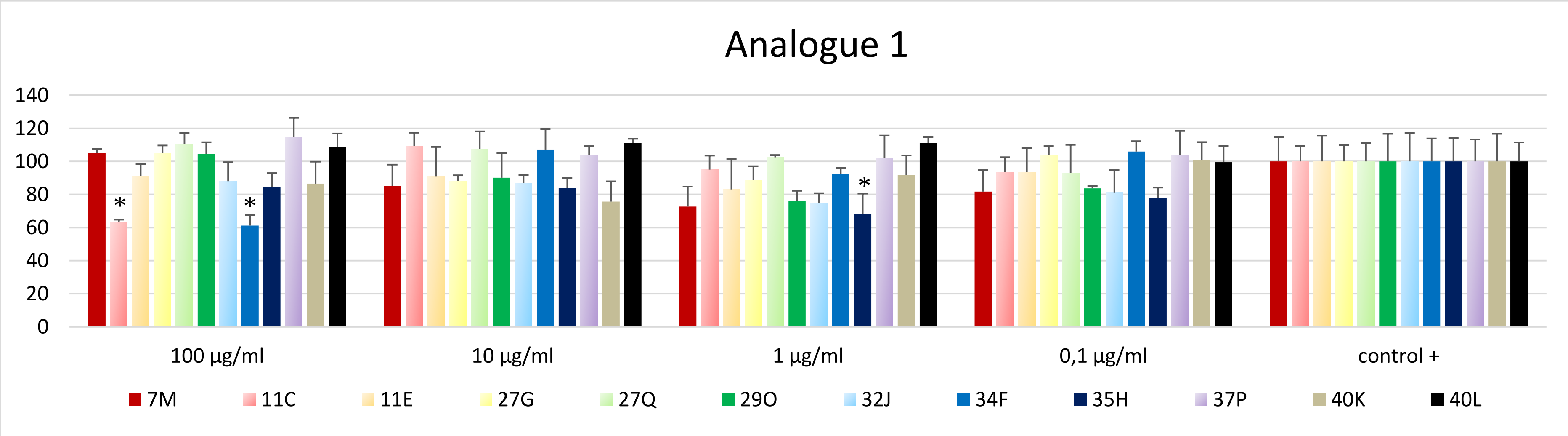


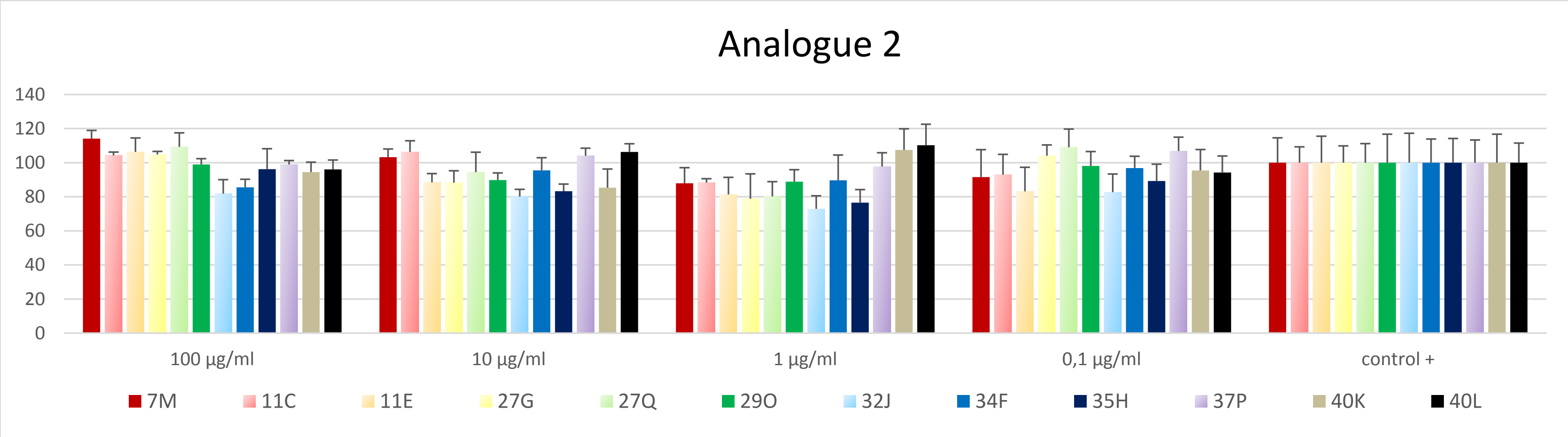
Analogue 6



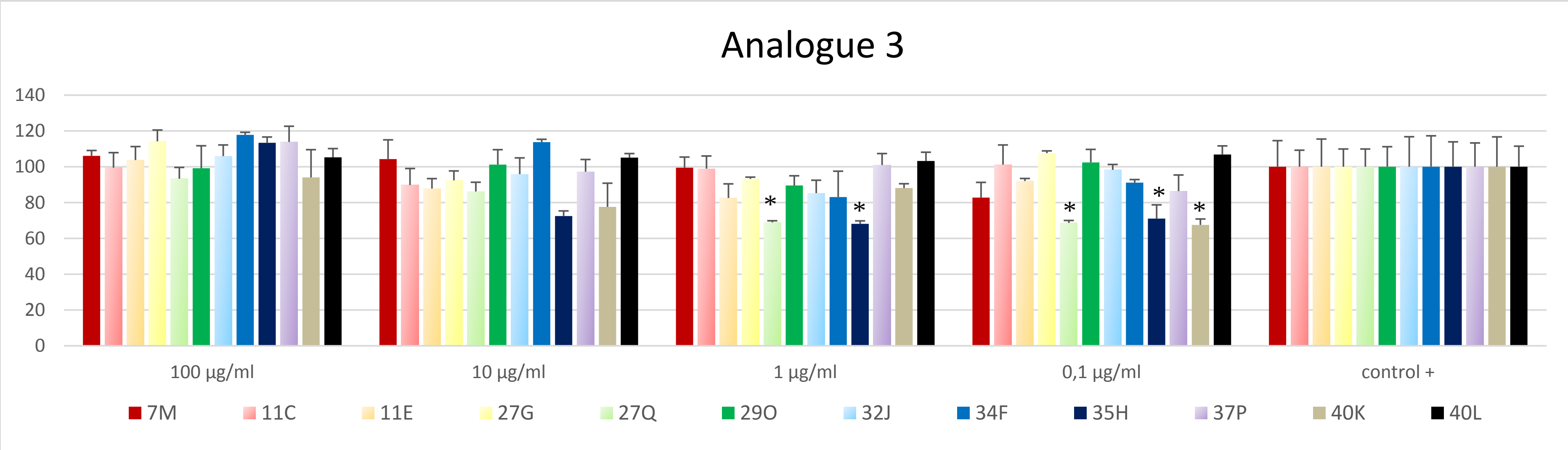
S3. Effects of procyanidin A-2 and A-type procyanidin analogues **1**–**6** on biofilm formation by resistant strains from foods.



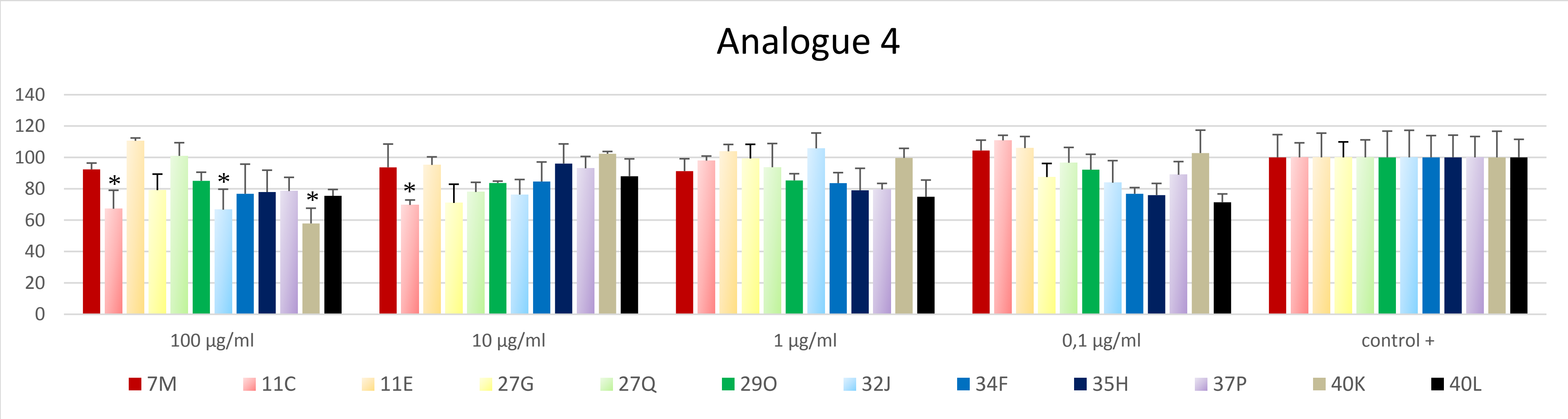


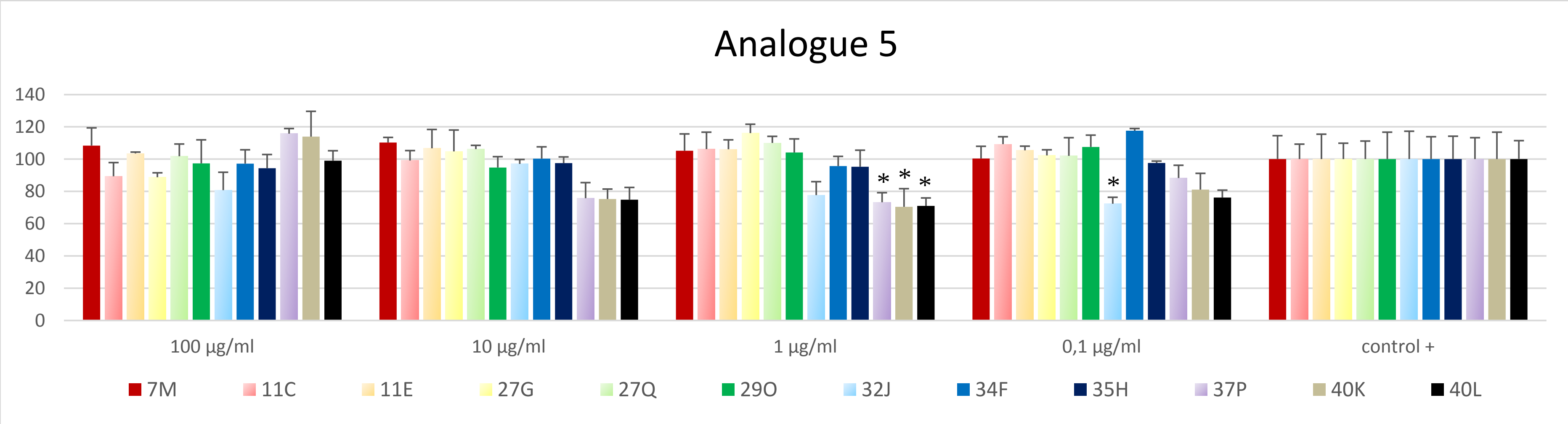


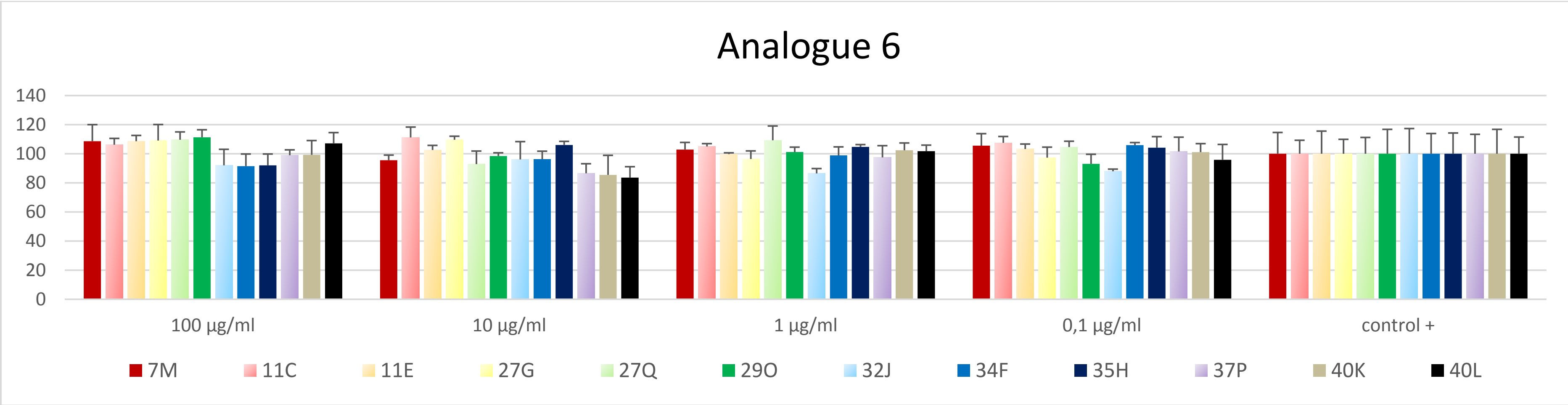
Analogue 2
140
120
100
80
60
40
20
0
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L



Analogue 3
140
120
100
80
60
40
20
0
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L

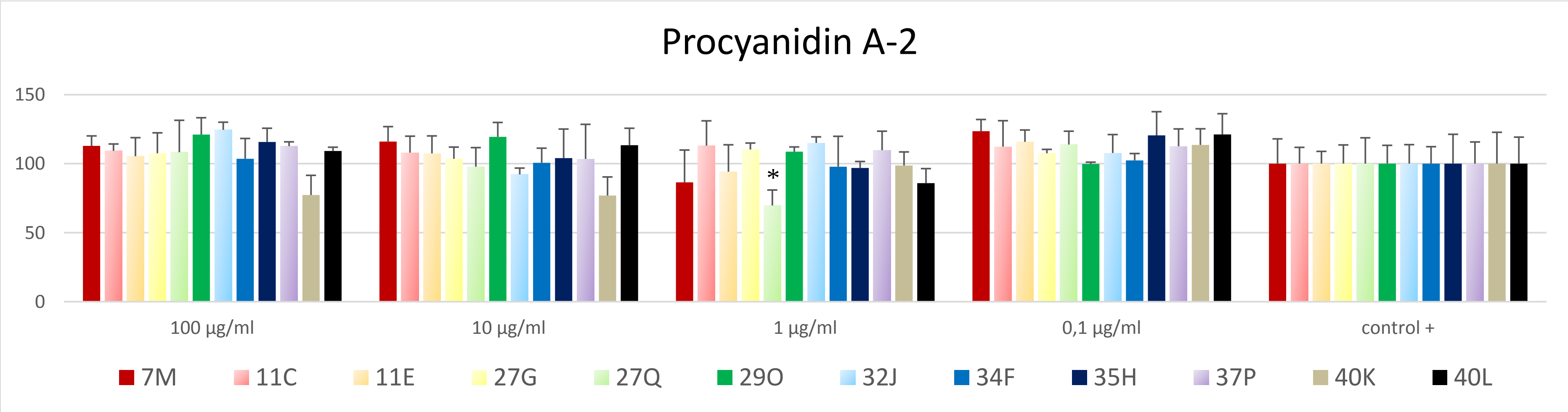

Analogue 4
140
120
100
80
60
40
20
0
*
*
*
*
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L

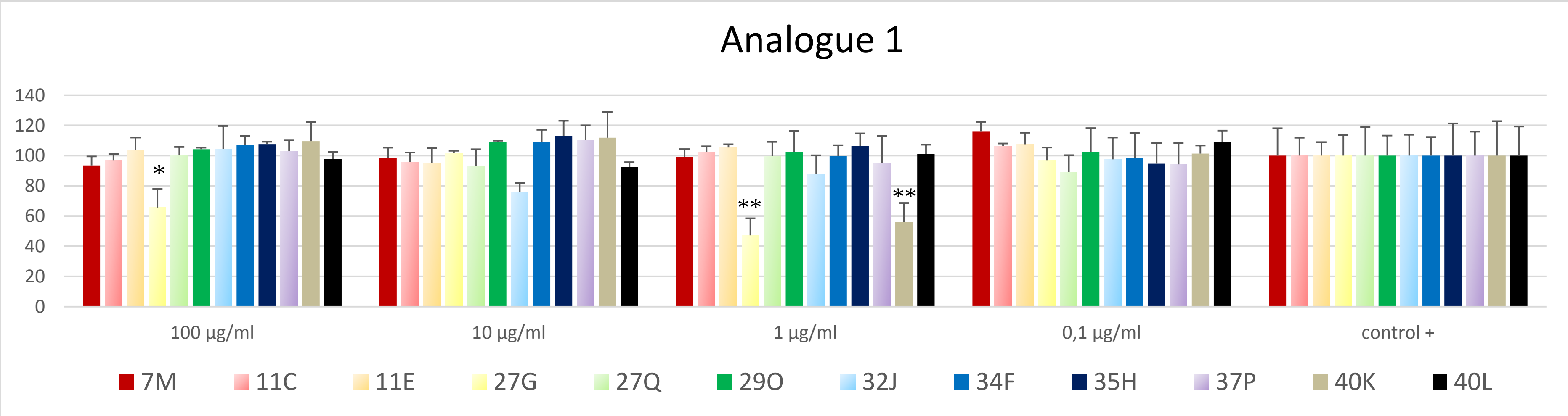

Analogue 5
140
120
100
80
60
40
20
0
*
*
*
*
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L

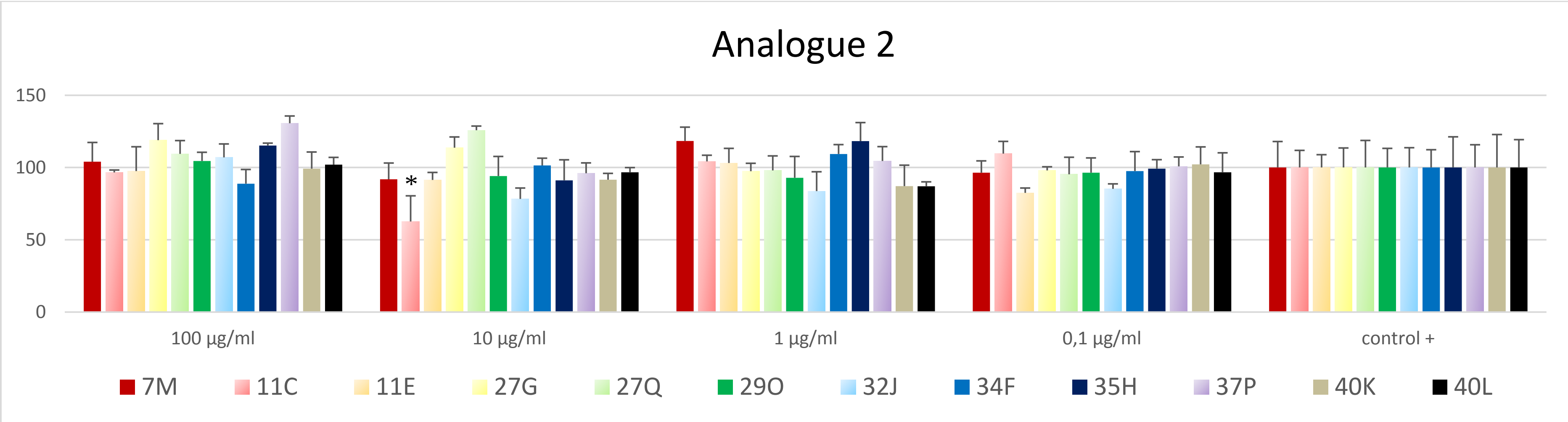

Analogue 6
140
120
100
80
60
40
20
0
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L

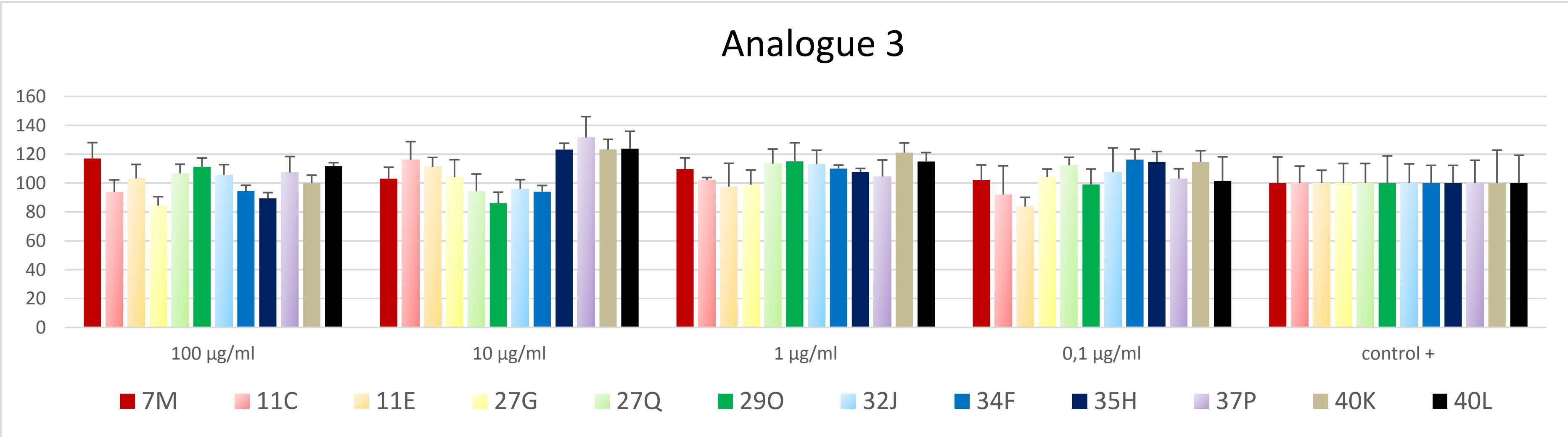
$p < 0.05$

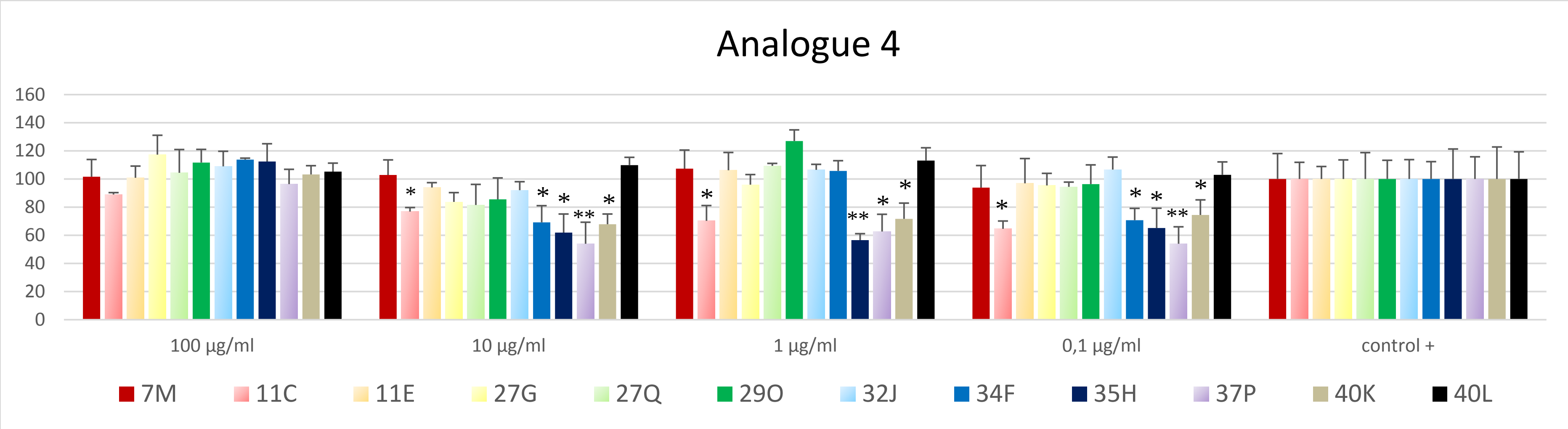
S4. Effects of of procyanidin A-2 and A-type procyanidin analogues **1**–**6** on disruption of pre-formed biofilms by resistant strains from foods.

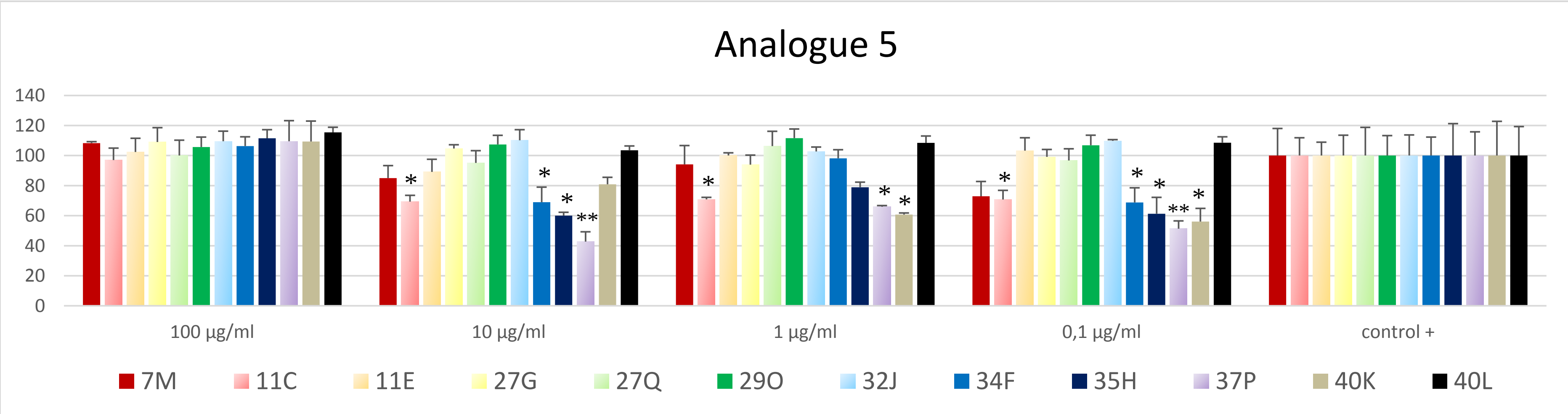


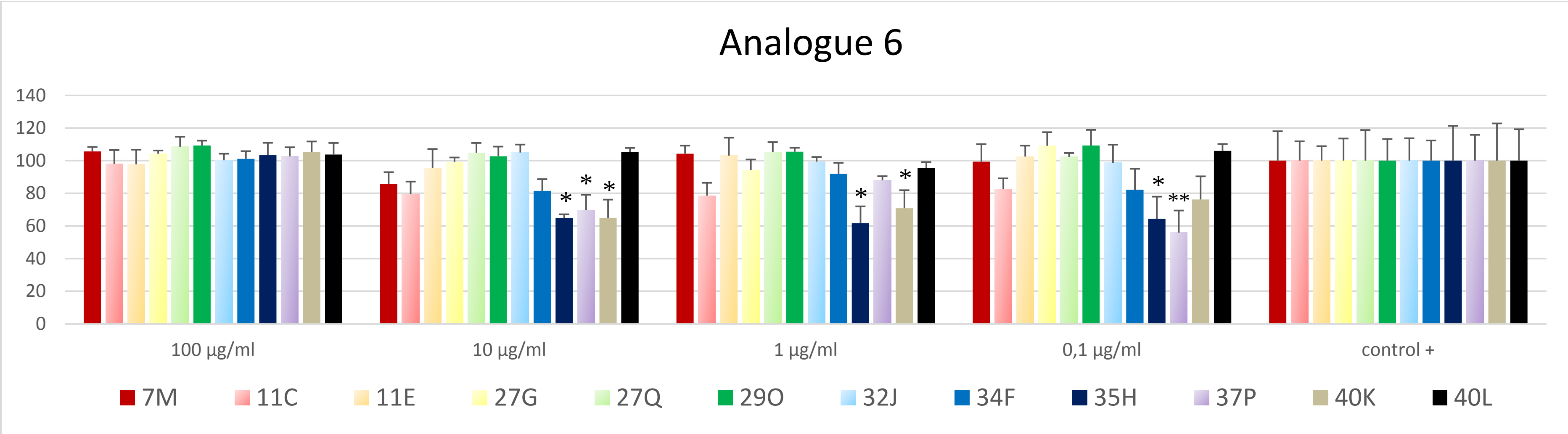



Analogue 2
150
100
50
0
*
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L


Analogue 3
160
140
120
100
80
60
40
20
0
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L


Analogue 4
160
140
120
100
80
60
40
20
0
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L


Analogue 5
140
120
100
80
60
40
20
0
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L


Analogue 6
140
120
100
80
60
40
20
0
100 µg/ml
10 µg/ml
1 µg/ml
0,1 µg/ml
control +
7M
11C
11E
27G
27Q
29O
32J
34F
35H
37P
40K
40L

$^{*}p < 0.05$; $^{**}p < 0.01$