APPENDIX 1

Ethyl 5-(2-hydroxy-5-isopropylbenzoyl)-2-methylbenzoate (6)

Anal. Calcd. For $C_{20}H_{22}O_4$: C, 73.60; H, 6.79; Found: C, 73.46; H, 7.00.

5-(3-Hydroxy-5,5,8,8-tetramethyl-5,6,7,8-tetrahydronaphthalene-2-carbonyl)-2-methylbenzioc acid **(10)**

Anal. Calcd. For $C_{23}H_{26}O_4$: C, 75.38, H, 7.15; Found: C, 75.09, H, 7.34.

APPENDIX 2

X-RAY CRYSTAL DATA FOR COMPOUND 5

Table 1. Refined Positional Parameters for Compound 5

Atom	x	y	z	U_{eq}, Å^2
C1	0.1119(2)	0.7628(2)	0.19503(11)	0.0239(3)
H1	0.0258	0.6834	0.2195	0.032
C2	0.0516(2)	0.8144(2)	0.10365(12)	0.0289(3)
H2	-0.0735	0.7695	0.0662	0.039
C3	0.1796(2)	0.9341(2)	0.06796(11)	0.0275(3)
H3	0.1411	0.9665	0.0039	0.037
C4	0.3620(2)	1.0051(2)	0.12590(11)	0.0248(3)
H4	0.4446	1.0876	0.1033	0.033
C5	0.4238(2)	0.9540(2)	0.21830(11)	0.0212(3)
C6	0.3004(2)	0.8277(2)	0.25194(10)	0.0195(3)
C7	0.3730(2)	0.7703(2)	0.34532(10)	0.0200(3)
C8	0.2740(2)	0.61625(14)	0.36262(10)	0.0191(3)
C9	0.3023(2)	0.60092(14)	0.48278(10)	0.0186(3)
H9	0.3661	0.6892	0.5506	0.025
C10	0.2380(2)	0.45760(14)	0.50453(10)	0.0180(3)
C11	0.1406(2)	0.32261(14)	0.40217(10)	0.0192(3)
C12	0.1122(2)	0.3399(2)	0.28268(11)	0.0226(3)
H12	0.0473	0.2524	0.2146	0.030
C13	0.1774(2)	0.4827(2)	0.26207(11)	0.0214(3)
H13	0.1568	0.4899	0.1809	0.028
C14	0.2834(2)	0.4450(2)	0.62979(10)	0.0187(3)
H14	0.2697	0.3451	0.6323	0.025
C15	0.3421(2)	0.5620(2)	0.74012(11)	0.0214(3)
H15	0.3450	0.6625	0.7447	0.029
C16	0.4020(2)	0.5335(2)	0.85446(10)	0.0196(3)
C17	0.0703(2)	0.1647(2)	0.41889(11)	0.0258(3)
H17a	0.0063	0.0890	0.3394	0.039
H17b	-0.0183	0.1671	0.4867	0.039
H17c	0.1780	0.1368	0.4413	0.039
O1	0.60489(12)	1.02943(11)	0.27190(8)	0.0316(3)
H1a	0.6235	0.9966	0.3299	0.047
O2	0.52546(12)	0.85028(10)	0.41123(7)	0.0260(2)
O3	0.38904(12)	0.40266(10)	0.85837(7)	0.0253(2)
O4	0.47421(14)	0.66172(10)	0.95269(7)	0.0295(3)
H4a	0.5138	0.6395	1.0113	0.044

$U_{eq}=1/3[U_{11}(aa^*)^2+U_{22}(bb^*)^2+U_{33}(cc^*)^2+2U_{12}aa^*bb^*cos\gamma+2U_{13}aa^*cc^*cos\beta+2U_{23}bb^*cc^*cos\alpha]$

Table 2. Refined Thermal Parameters (U's) for Compound 5

Atom	U_{11}	U_{22}	U_{33}	U_{23}	U_{13}	U_{12}
C1	0.0239(7)	0.0246(8)	0.0271(6)	0.0134(6)	0.0037(5)	0.0075(6)
C2	0.0249(7)	0.0337(9)	0.0325(7)	0.0154(6)	-0.0042(6)	0.0089(6)
C3	0.0361(8)	0.0292(8)	0.0244(6)	0.0141(6)	-0.0010(6)	0.0139(6)
C4	0.0336(7)	0.0207(8)	0.0226(6)	0.0102(5)	0.0047(5)	0.0087(6)
C5	0.0241(7)	0.0193(7)	0.0190(6)	0.0038(5)	0.0014(5)	0.0075(5)
C6	0.0244(7)	0.0193(7)	0.0166(6)	0.0058(5)	0.0024(5)	0.0091(5)
C7	0.0248(7)	0.0206(7)	0.0152(6)	0.0036(5)	0.0020(5)	0.0102(6)
C8	0.0204(6)	0.0217(7)	0.0188(6)	0.0084(5)	0.0008(5)	0.0093(5)
C9	0.0202(6)	0.0186(7)	0.0160(6)	0.0026(5)	-0.0008(5)	0.0075(5)
C10	0.0173(6)	0.0220(7)	0.0178(6)	0.0080(5)	0.0016(5)	0.0087(5)
C11	0.0181(6)	0.0205(7)	0.0203(6)	0.0065(5)	0.0010(5)	0.0078(5)
C12	0.0246(7)	0.0213(7)	0.0189(6)	0.0022(5)	-0.0049(5)	0.0065(6)
C13	0.0248(6)	0.0259(8)	0.0159(6)	0.0075(5)	-0.0010(5)	0.0101(6)
C14	0.0173(6)	0.0191(7)	0.0218(6)	0.0100(5)	0.0018(5)	0.0050(5)
C15	0.0255(7)	0.0214(7)	0.0213(6)	0.0101(5)	0.0007(5)	0.0091(5)
C16	0.0206(6)	0.0209(7)	0.0172(6)	0.0069(5)	0.0030(5)	0.0055(5)
C17	0.0293(7)	0.0232(8)	0.0235(6)	0.0069(5)	-0.0039(5)	0.0059(6)
O1	0.0302(5)	0.0275(6)	0.0348(5)	0.0157(4)	-0.0083(4)	-0.0020(4)
O2	0.0295(5)	0.0227(5)	0.0244(4)	0.0077(4)	-0.0069(4)	0.0045(4)
O3	0.0354(5)	0.0203(5)	0.0204(4)	0.0093(4)	-0.0051(4)	0.0045(4)
O4	0.0510(6)	0.0214(5)	0.0166(4)	0.0062(4)	-0.0072(4)	0.0103(4)

The form of the anisotropic displacement parameter is:
$\exp[-2\pi^2(a^{*2}U_{11}h^2+b^{*2}U_{22}k^2+c^{*2}U_{33}l^2+ 2b^*c^*U_{23}kl+2a^*c^*U_{13}hl+2a^*b^*U_{12}hk)]$.

Table 3. Bond Distances in Compound 5, Å

C1-C2	1.377(2)	C1-C6	1.403(2)	C2-C3	1.390(2)
C3-C4	1.371(2)	C4-C5	1.389(2)	C5-O1	1.3509(14)
C5-C6	1.410(2)	C6-C7	1.477(2)	C7-O2	1.2408(14)
C7-C8	1.491(2)	C8-C9	1.394(2)	C8-C13	1.395(2)
C9-C10	1.392(2)	C10-C11	1.414(2)	C10-C14	1.468(2)
C11-C12	1.395(2)	C11-C17	1.498(2)	C12-C13	1.382(2)
C14-C15	1.330(2)	C15-C16	1.466(2)	C16-O3	1.229(2)
C16-O4	1.3173(14)				

Table 4. Bond Angles in Compound 5, °

C2-C1-C6	121.38(12)	C1-C2-C3	119.31(11)	C4-C3-C2	120.87(11)
C3-C4-C5	120.14(12)	O1-C5-C4	117.09(11)	O1-C5-C6	122.63(10)
C4-C5-C6	120.27(11)	C1-C6-C5	117.89(10)	C1-C6-C7	122.90(11)
C5-C6-C7	119.21(10)	O2-C7-C6	119.63(11)	O2-C7-C8	117.38(10)
C6-C7-C8	122.96(10)	C9-C8-C13	118.25(11)	C9-C8-C7	117.22(10)
C13-C8-C7	123.95(10)	C10-C9-C8	122.09(11)	C9-C10-C11	119.41(10)
C9-C10-C14	120.17(10)	C11-C10-C14	120.28(11)	C12-C11-C10	117.86(11)
C12-C11-C17	120.16(10)	C10-C11-C17	121.98(10)	C13-C12-C11	122.21(11)
C12-C13-C8	120.18(10)	C15-C14-C10	126.52(12)	C14-C15-C16	120.32(12)
O3-C16-O4	122.81(10)	O3-C16-C15	123.43(11)	O4-C16-C15	113.75(11)

APPENDIX 3

X-RAY CRYSTAL DATA FOR COMPOUND 10

Table 5. Refined Positional Parameters for Compound 10

Atom	x	y	z	U_{eq}, Å^2
C1	0.4930(3)	0.6135(2)	0.7317(2)	0.0289(6)
H1	0.5819	0.6203	0.7860	0.038
C2	0.4131(3)	0.7246(2)	0.7119(2)	0.0276(5)
C3	0.2774(3)	0.7135(2)	0.6305(2)	0.0270(5)
C4	0.2262(3)	0.5926(2)	0.5775(2)	0.0293(6)
H4	0.1344	0.5852	0.5266	0.039
C5	0.3077(3)	0.4821(2)	0.5980(2)	0.0290(6)
C6	0.4476(3)	0.4920(2)	0.6746(2)	0.0279(6)
C7	0.5373(3)	0.3762(2)	0.6943(2)	0.0305(6)
C8	0.6993(3)	0.3865(2)	0.7534(2)	0.0291(6)
C9	0.7503(3)	0.2848(2)	0.8209(2)	0.0277(5)
H9	0.6806	0.2179	0.8340	0.037
C10	0.9037(3)	0.2799(2)	0.8698(2)	0.0285(6)
C11	1.0104(3)	0.3808(2)	0.8532(2)	0.0311(6)
C12	0.9575(3)	0.4820(2)	0.7849(2)	0.0327(6)
H12	1.0261	0.5501	0.7730	0.044
C13	0.8059(3)	0.4849(2)	0.7339(2)	0.0311(6)
H13	0.7756	0.5529	0.6866	0.041
C14	0.9476(3)	0.1612(2)	0.9320(2)	0.0303(6)
C15	1.1780(3)	0.3870(3)	0.9032(3)	0.0417(7)
H15a	1.1851	0.3768	0.9908	0.063
H15b	1.2247	0.4691	0.8877	0.063
H15c	1.2306	0.3191	0.8628	0.063
C16	0.4831(3)	0.8526(2)	0.7718(2)	0.0309(6)
C17	0.3628(3)	0.9573(2)	0.7654(2)	0.0367(6)
H17a	0.2909	0.9436	0.8273	0.049
H17b	0.4147	1.0413	0.7850	0.049
C18	0.2745(3)	0.9569(2)	0.6400(2)	0.0377(6)
H18a	0.3466	0.9713	0.5783	0.050
H18b	0.2054	1.0279	0.6400	0.050
C19	0.1805(3)	0.8308(2)	0.6031(2)	0.0297(6)
C20	0.6211(3)	0.8926(3)	0.7021(3)	0.0477(7)
H20a	0.6959	0.8271	0.7068	0.071
H20b	0.6669	0.9729	0.7390	0.071
H20c	0.5871	0.9027	0.6169	0.071
C21	0.5378(3)	0.8409(2)	0.9083(3)	0.0428(7)
H21a	0.4542	0.8074	0.9508	0.064
H21b	0.5720	0.9246	0.9454	0.064
H21c	0.6216	0.7835	0.9143	0.064
C22	0.0384(3)	0.8234(2)	0.6776(3)	0.0403(7)
H22a	0.0712	0.8196	0.7640	0.060

H22b	-0.0241	0.7474	0.6495	0.060
H22c	-0.0206	0.8986	0.6658	0.060
C23	0.1268(3)	0.8304(2)	0.4655(3)	0.0440(7)
H23a	0.0746	0.9082	0.4496	0.066
H23b	0.0577	0.7570	0.4425	0.066
H23c	0.2145	0.8257	0.4178	0.066
O1	0.2489(2)	0.3687(2)	0.5419(2)	0.0389(5)
H1a	0.2982	0.3092	0.5688	0.058
O2	0.4807(2)	0.2675(2)	0.6596(2)	0.0420(5)
O3	1.0850(2)	0.1404(2)	0.9621(2)	0.0594(6)
O4	0.8387(2)	0.0812(2)	0.9499(2)	0.0520(6)
H4a	0.8750	0.0140	0.9729	0.078
$U_{eq}=1/3[U_{11}(aa^*)^2+U_{22}(bb^*)^2+U_{33}(cc^*)^2+2U_{12}aa^*bb^*cos\gamma+2U_{13}aa^*cc^*cos\beta+2U_{23}bb^*cc^*cos\alpha]$				

Table 6. Refined Thermal Parameters (U's) for Compound 10

Atom	U_{11}	U_{22}	U_{33}	U_{23}	U_{13}	U_{12}
C1	0.0241(12)	0.0307(12)	0.0313(13)	0.0053(10)	-0.0038(10)	0.0027(10)
C2	0.0230(11)	0.0291(12)	0.0314(13)	0.0062(10)	0.0029(10)	0.0033(9)
C3	0.0251(12)	0.0278(11)	0.0295(13)	0.0078(10)	0.0055(10)	0.0055(9)
C4	0.0225(12)	0.0340(12)	0.0309(13)	0.0074(10)	0.0041(10)	0.0031(10)
C5	0.0270(12)	0.0270(11)	0.0327(14)	0.0067(10)	-0.0022(10)	-0.0009(9)
C6	0.0248(12)	0.0275(11)	0.0320(13)	0.0086(10)	-0.0006(10)	0.0034(9)
C7	0.0310(13)	0.0297(12)	0.0311(13)	0.0075(10)	-0.0005(11)	0.0031(10)
C8	0.0292(13)	0.0264(11)	0.0319(13)	0.0049(10)	0.0004(10)	0.0061(10)
C9	0.0253(12)	0.0284(11)	0.0301(13)	0.0070(10)	0.0025(10)	0.0034(9)
C10	0.0284(12)	0.0290(12)	0.0290(13)	0.0073(10)	0.0012(10)	0.0072(10)
C11	0.0286(13)	0.0328(12)	0.0333(14)	0.0082(10)	0.0036(10)	0.0077(10)
C12	0.0301(13)	0.0297(12)	0.040(2)	0.0100(10)	0.0054(11)	0.0032(10)
C13	0.0332(13)	0.0268(11)	0.0349(14)	0.0088(10)	0.0035(11)	0.0087(10)
C14	0.0267(12)	0.0293(12)	0.0352(14)	0.0078(10)	0.0000(11)	0.0022(10)
C15	0.0293(14)	0.0434(14)	0.054(2)	0.0190(12)	0.0016(12)	0.0039(11)
C16	0.0263(12)	0.0280(11)	0.0382(14)	0.0035(10)	0.0000(11)	0.0051(10)
C17	0.0334(14)	0.0302(12)	0.046(2)	0.0024(11)	-0.0024(12)	0.0055(11)
C18	0.0377(14)	0.0306(12)	0.046(2)	0.0075(11)	0.0019(12)	0.0073(11)
C19	0.0261(12)	0.0288(12)	0.0347(13)	0.0072(10)	-0.0011(10)	0.0080(10)
C20	0.0342(14)	0.0394(14)	0.070(2)	0.0002(13)	0.0103(14)	-0.0029(11)
C21	0.041(2)	0.0382(14)	0.047(2)	-0.0054(12)	-0.0098(13)	0.0117(12)
C22	0.0317(13)	0.0363(13)	0.056(2)	0.0127(12)	0.0074(12)	0.0134(11)
C23	0.048(2)	0.0378(13)	0.047(2)	0.0079(12)	-0.0050(13)	0.0134(12)
O1	0.0369(10)	0.0270(8)	0.0503(11)	0.0021(8)	-0.0119(8)	0.0033(7)
O2	0.0405(10)	0.0262(9)	0.0572(12)	0.0070(8)	-0.0128(9)	0.0031(8)
O3	0.0339(11)	0.0482(11)	0.098(2)	0.0371(11)	-0.0114(11)	0.0066(9)
O4	0.0360(11)	0.0405(10)	0.082(2)	0.0322(10)	-0037(10)	0.0037(9)

The form of the anisotropic displacement parameter is:
$\exp[-2\pi^2(a^{*2}U_{11}h^2+b^{*2}U_{22}k^2+c^{*2}U_{33}l^2+ 2b^*c^*U_{23}kl+2a^*c^*U_{13}hl+2a^*b^*U_{12}hk)]$.

Table 7. Bond Distances in Compound 10, Å

C1-C2	1.388(3)	C1-C6	1.399(3)	C2-C3	1.411(3)
C2-C16	1.525(3)	C3-C4	1.390(3)	C3-C19	1.538(3)
C4-C5	1.391(3)	C5-O1	1.353(3)	C5-C6	1.412(3)
C6-C7	1.475(3)	C7-O2	1.238(3)	C7-C8	1.497(3)
C8-C9	1.387(3)	C8-C13	1.392(3)	C9-C10	1.399(3)
C10-C11	1.403(3)	C10-C14	1.488(3)	C11-C12	1.392(3)
C11-C15	1.511(3)	C12-C13	1.390(3)	C14-O3	1.244(3)
C14-O4	1.271(3)	C16-C20	1.531(3)	C16-C21	1.531(4)
C16-C17	1.539(3)	C17-C18	1.504(4)	C18-C19	1.530(3)
C19-C23	1.526(4)	C19-C22	1.536(3)		

Table 8. Bond Angles in Compound 10, °

C2-C1-C6	123.8(2)	C1-C2-C3	117.9(2)	C1-C2-C16	118.2(2)
C3-C2-C16	123.8(2)	C4-C3-C2	119.3(2)	C4-C3-C19	118.9(2)
C2-C3-C19	121.7(2)	C3-C4-C5	122.2(2)	O1-C5-C4	117.9(2)
O1-C5-C6	122.6(2)	C4-C5-C6	119.5(2)	C1-C6-C5	117.3(2)
C1-C6-C7	122.7(2)	C5-C6-C7	120.0(2)	O2-C7-C6	120.4(2)
O2-C7-C8	118.2(2)	C6-C7-C8	121.4(2)	C9-C8-C13	118.1(2)
C9-C8-C7	117.7(2)	C13-C8-C7	123.8(2)	C8-C9-C10	121.8(2)
C9-C10-C11	120.2(2)	C9-C10-C14	116.9(2)	C11-C10-C14	122.8(2)
C12-C11-C10	117.3(2)	C12-C11-C15	117.8(2)	C10-C11-C15	124.9(2)
C13-C12-C11	122.4(2)	C12-C13-C8	120.2(2)	O3-C14-O4	121.9(2)
O3-C14-C10	121.2(2)	O4-C14-C10	116.9(2)	C2-C16-C20	108.4(2)
C2-C16-C21	111.4(2)	C20-C16-C21	109.0(2)	C2-C16-C17	110.3(2)
C20-C16-C17	109.8(2)	C21-C16-C17	107.8(2)	C18-C17-C16	112.6(2)
C17-C18-C19	113.3(2)	C23-C19-C18	108.1(2)	C23-C19-C22	109.0(2)
C18-C19-C22	110.0(2)	C23-C19-C3	111.1(2)	C18-C19-C3	110.7(2)
C22-C19-C3	108.1(2)				