

Supporting Information
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**Discovery of new capsaicin and dihydrocapsaicin derivatives
as histone deacetylase inhibitors and molecular docking
studies**

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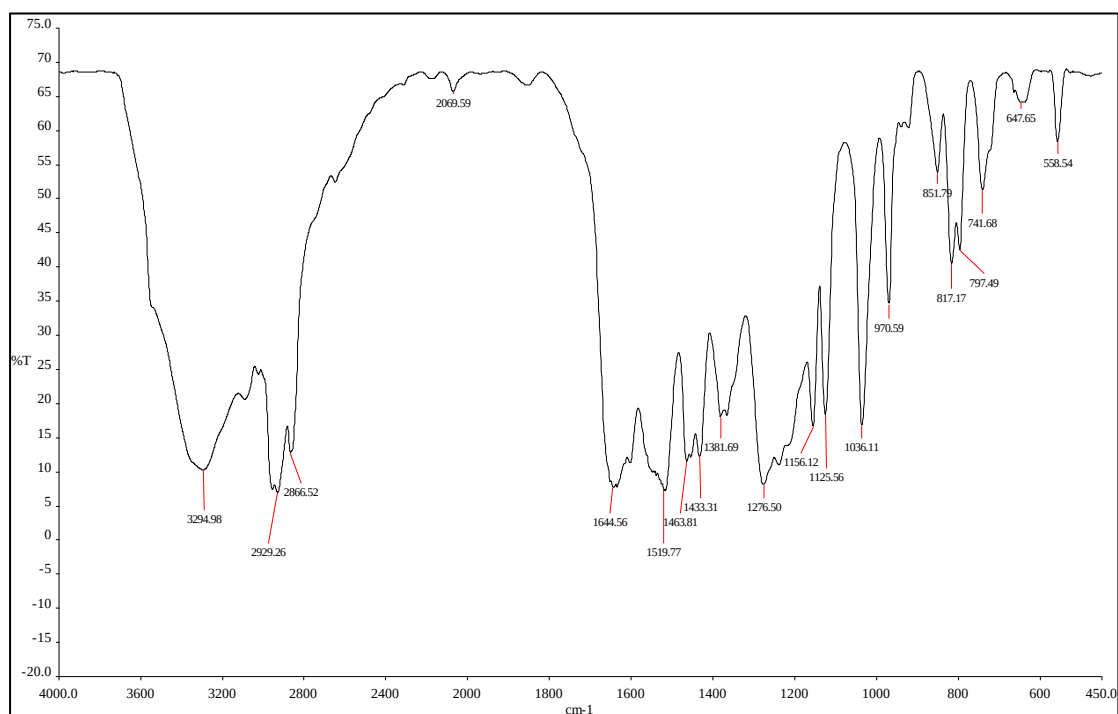


Figure S1: IR spectrum of (*E*)-*N*-(4-hydroxy-3-methoxybenzyl)-8-methylnon-6-enamide (**1**) and *N*-(4-hydroxy-3-methoxybenzyl)-8-methylnonanamide (**2**)

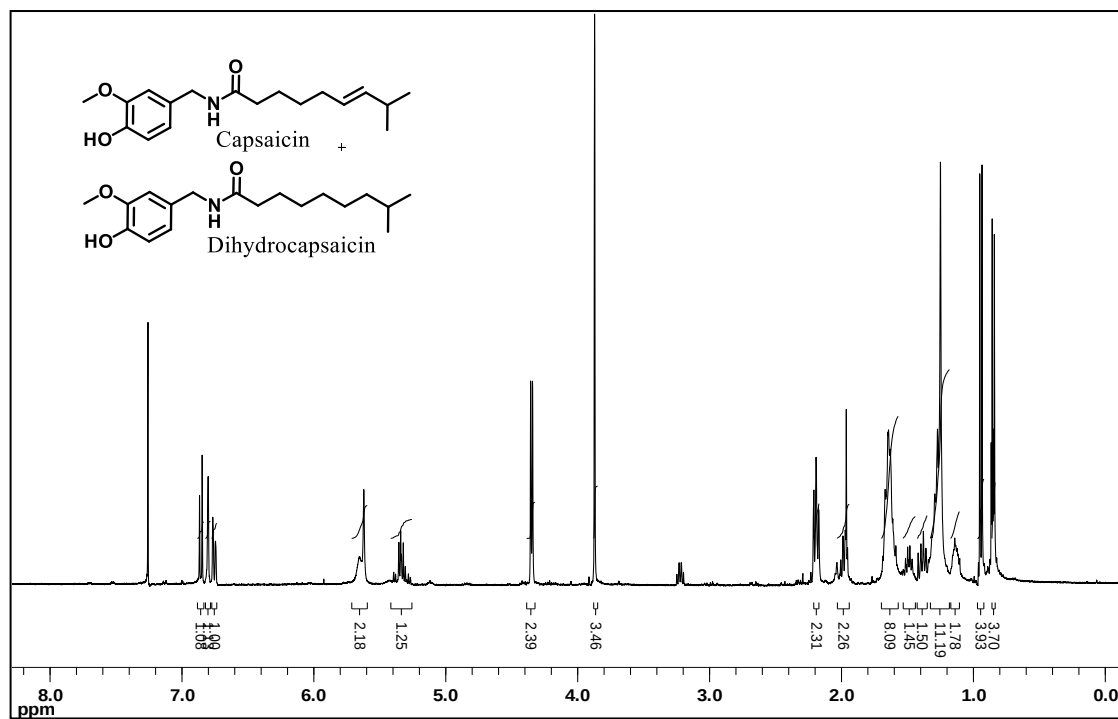


Figure S2: ¹H NMR spectrum of (*E*)-*N*-(4-hydroxy-3-methoxybenzyl)-8-methylnon-6-enamide (**1**) and *N*-(4-hydroxy-3-methoxybenzyl)-8-methylnonanamide (**2**)

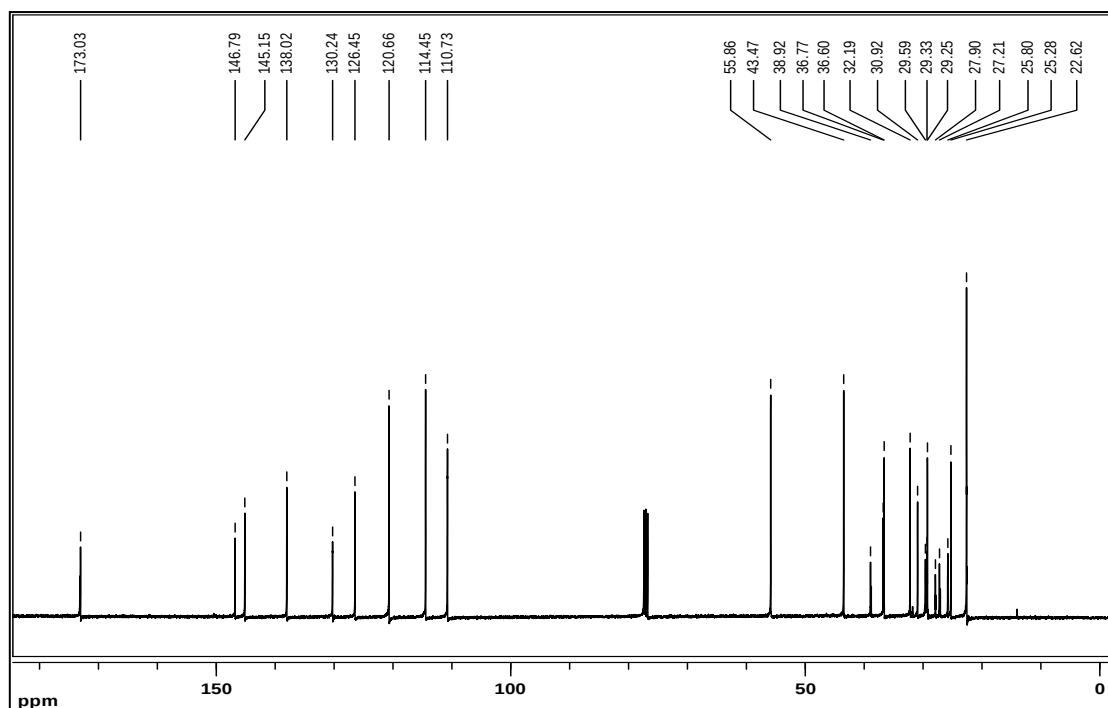


Figure S3: ¹³C NMR spectrum of (*E*)-*N*-(4-hydroxy-3-methoxybenzyl)-8-methylnon-6-enamide (**1**) and *N*-(4-hydroxy-3-methoxybenzyl)-8-methylnonanamide (**2**)

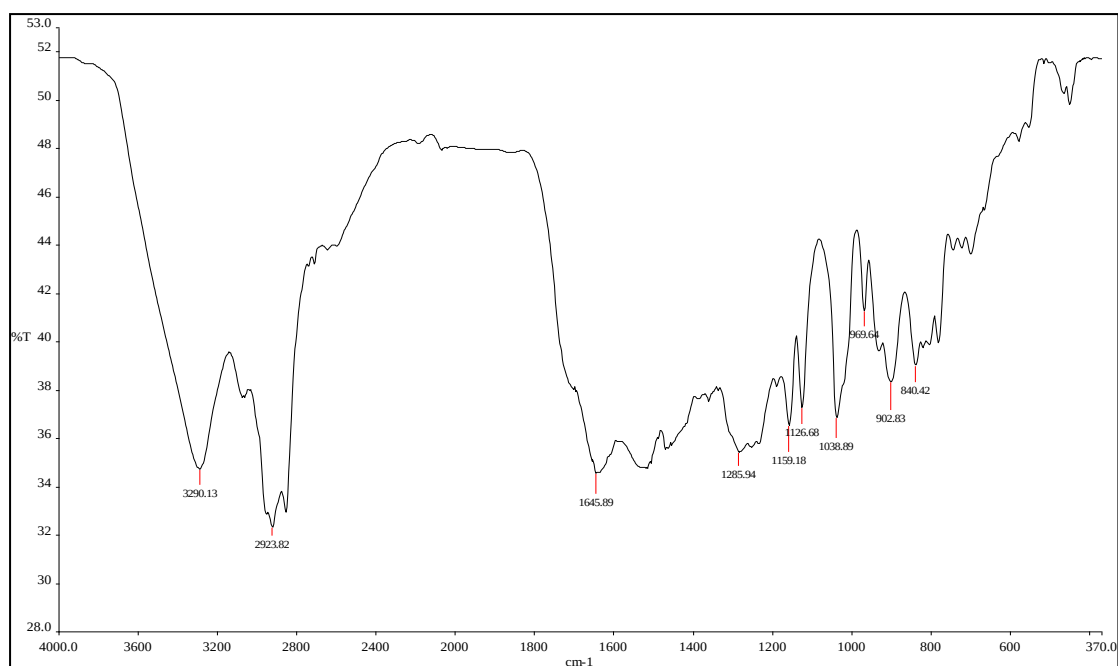


Figure S4: IR spectrum of (*E*)-*N*-(4-(*tert*-butyldimethylsilyloxy)-3-methoxybenzyl)-8-methylnon-6-enamide (**3**) and *N*-(4-(*tert*-butyldimethylsilyloxy)-3-methoxybenzyl)-8-methylnonanamide (**4**)

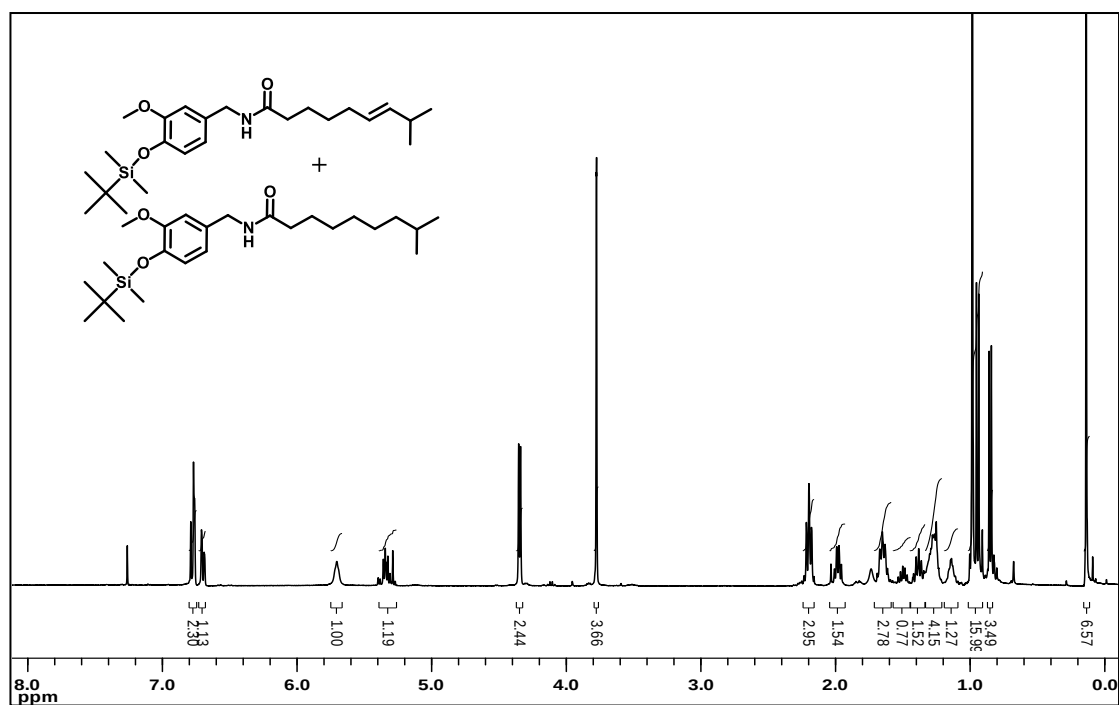


Figure S5: ¹H NMR spectrum of (*E*)-*N*-(4-(*tert*-butyldimethylsilyloxy)-3-methoxy-benzyl)-8-methylnon-6-enamide (**3**) and *N*-(4-(*tert*-butyldimethylsilyloxy)-3-methoxybenzyl)-8-methylnonanamide (**4**)

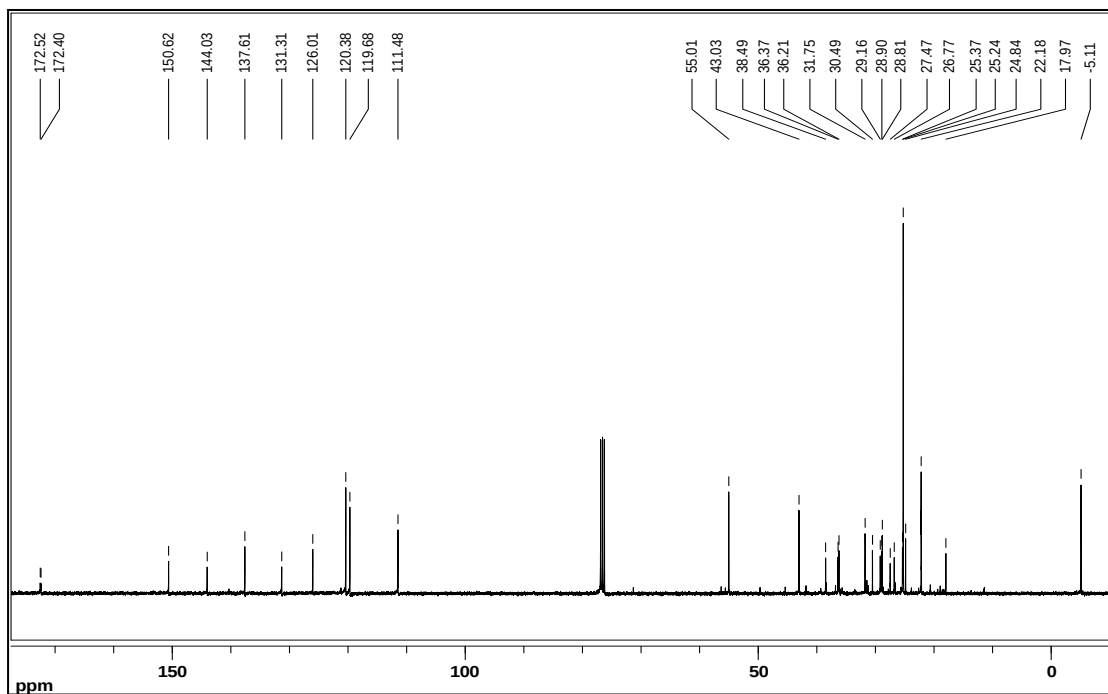


Figure S6: ¹³C NMR spectrum of (*E*)-*N*-(4-(*tert*-butyldimethylsilyloxy)-3-methoxy-benzyl)-8-methylnon-6-enamide (**3**) and *N*-(4-(*tert*-butyldimethylsilyloxy)-3-methoxybenzyl)-8-methylnonanamide (**4**)

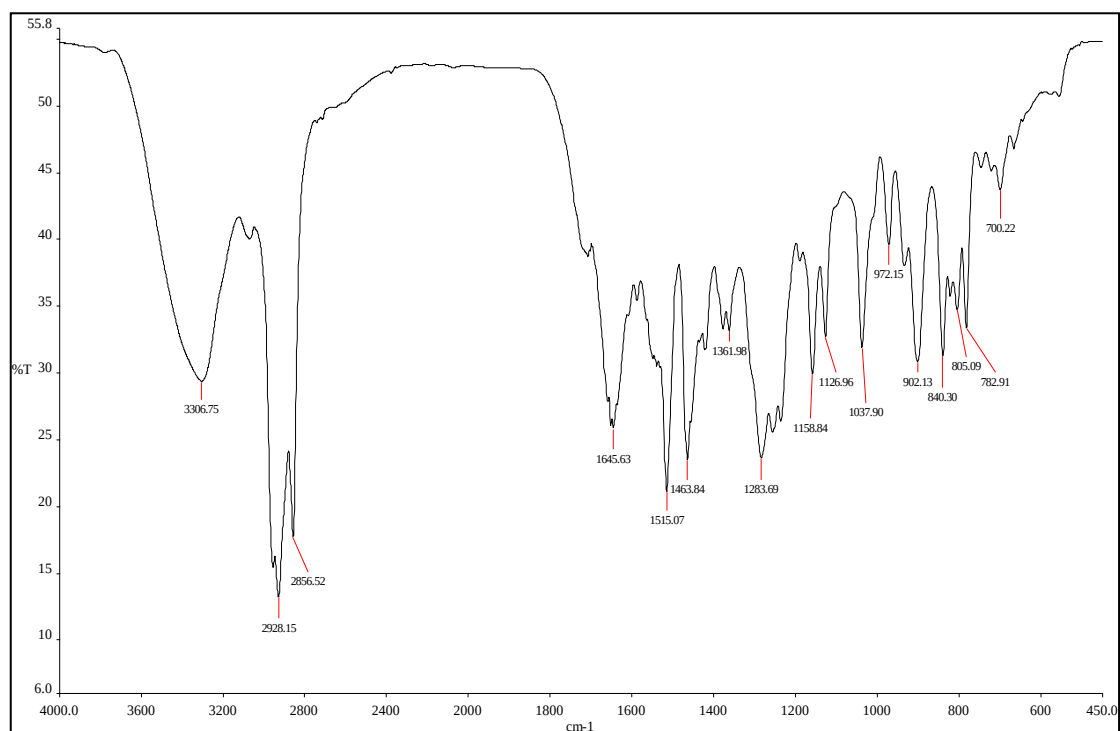


Figure S7: IR spectrum of (E)-N-(4-(tert-butyl dimethylsilyloxy)-3-methoxybenzyl)-5-hydroxy-8-methylnon-6-enamide (5)

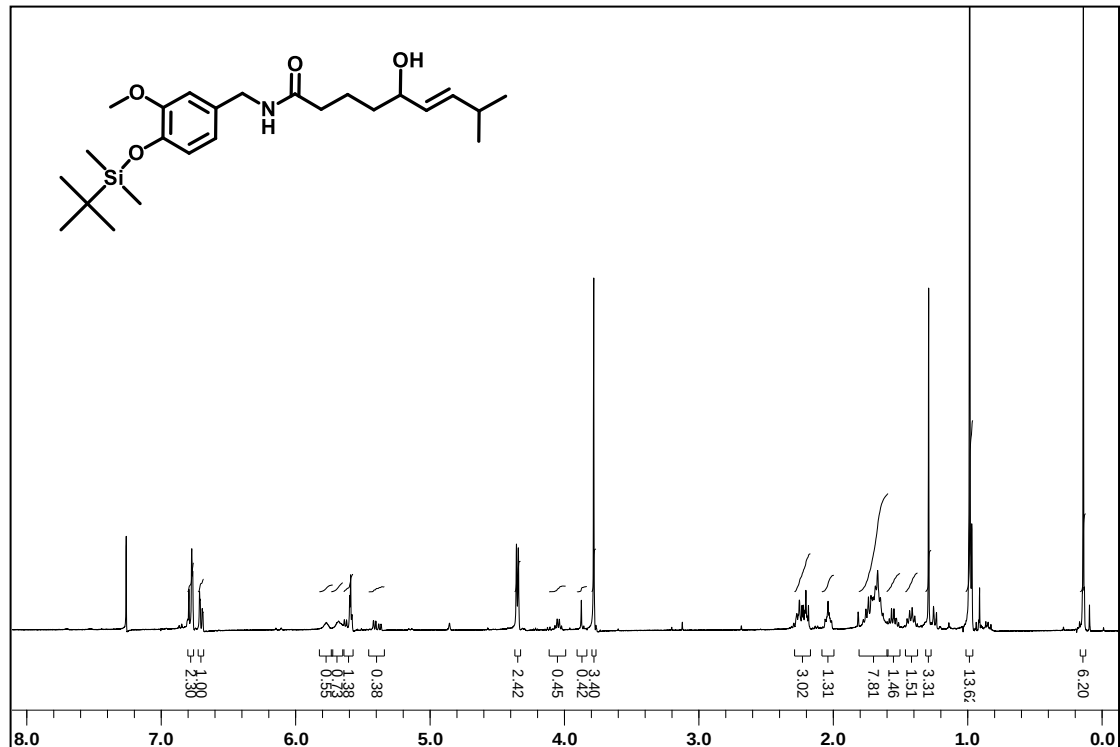


Figure S8: ¹H NMR spectrum of (E)-N-(4-(tert-butyl dimethylsilyloxy)-3-methoxybenzyl)-5-hydroxy-8-methylnon-6-enamide (5)

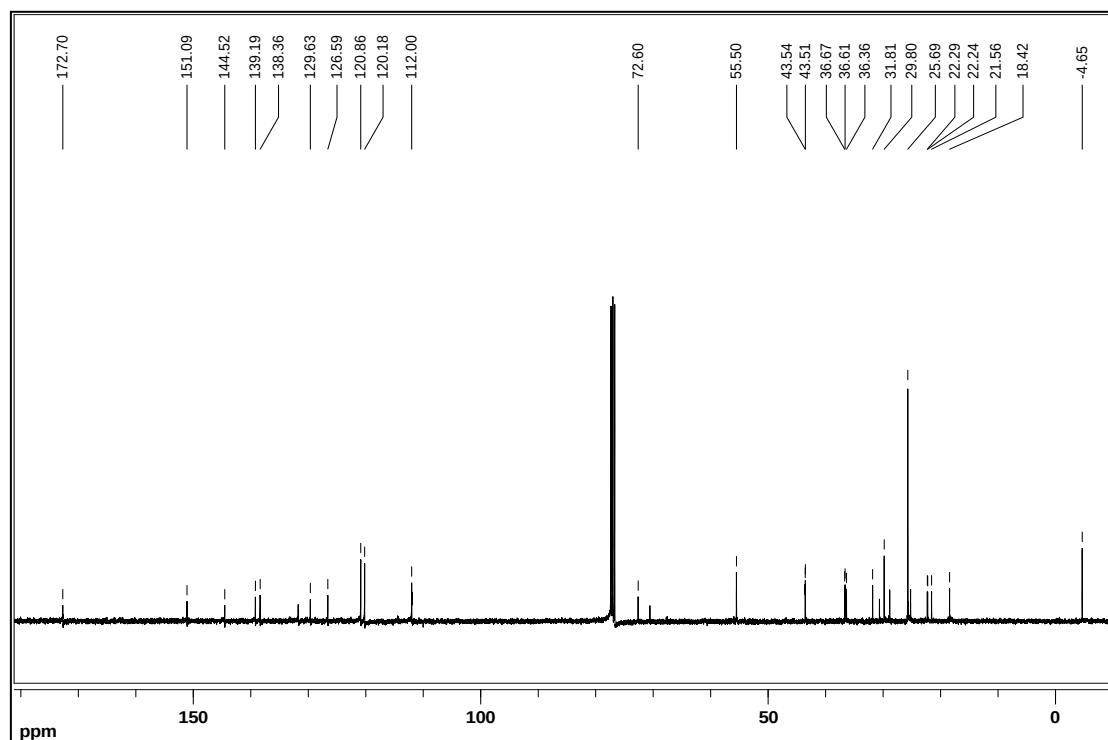


Figure S9: ¹³C NMR spectrum of (*E*)-*N*-(4-(*tert*-butyldimethylsilyloxy)-3-methoxy-benzyl)-5-hydroxy-8-methylnon-6-enamide (**5**)

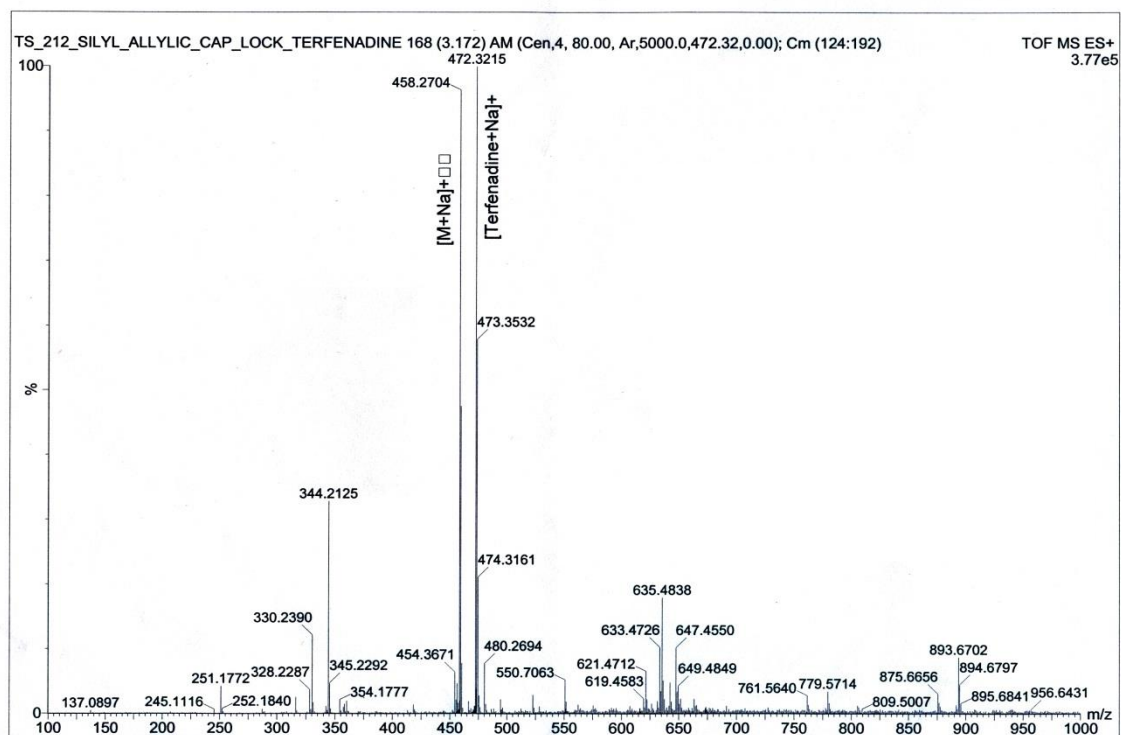


Figure S10: Mass spectrum of (*E*)-*N*-(4-(*tert*-butyldimethylsilyloxy)-3-methoxy-benzyl)-5-hydroxy-8-methylnon-6-enamide (**5**)

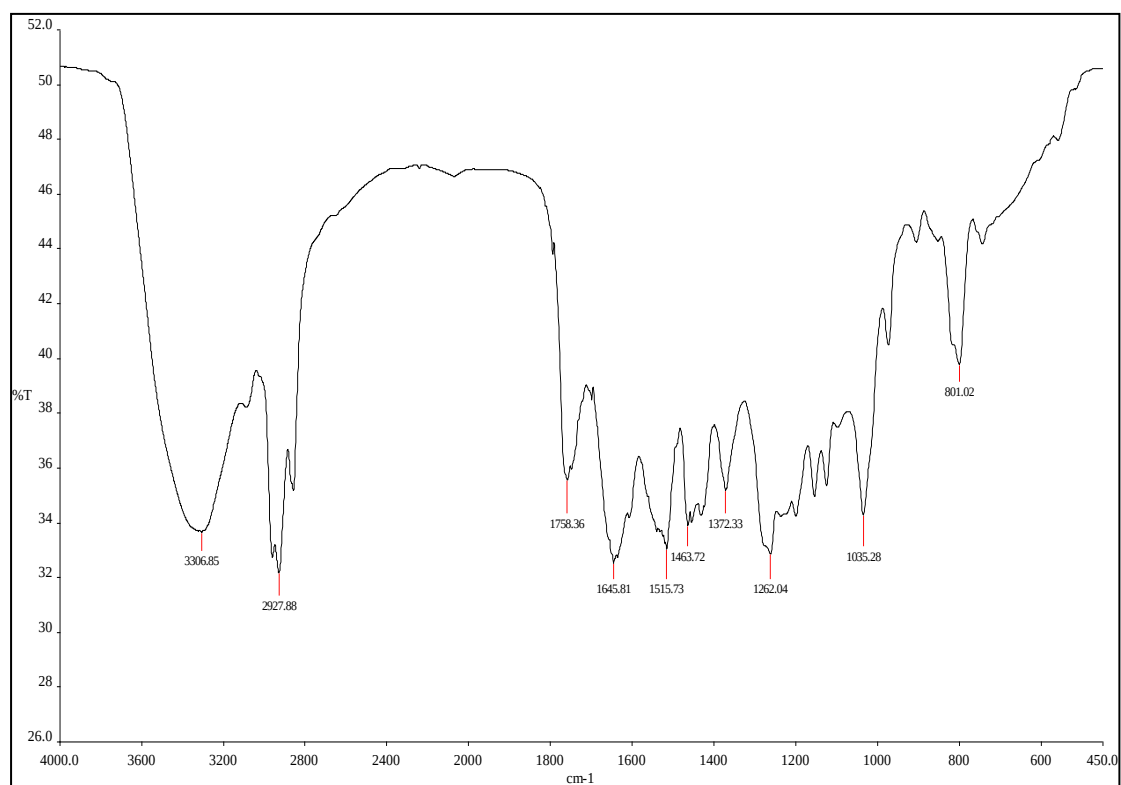


Figure S11: IR spectrum of (E)-5-hydroxy-N-(4-hydroxy-3-methoxybenzyl)-8-methylnon-6-enamide (**6**)

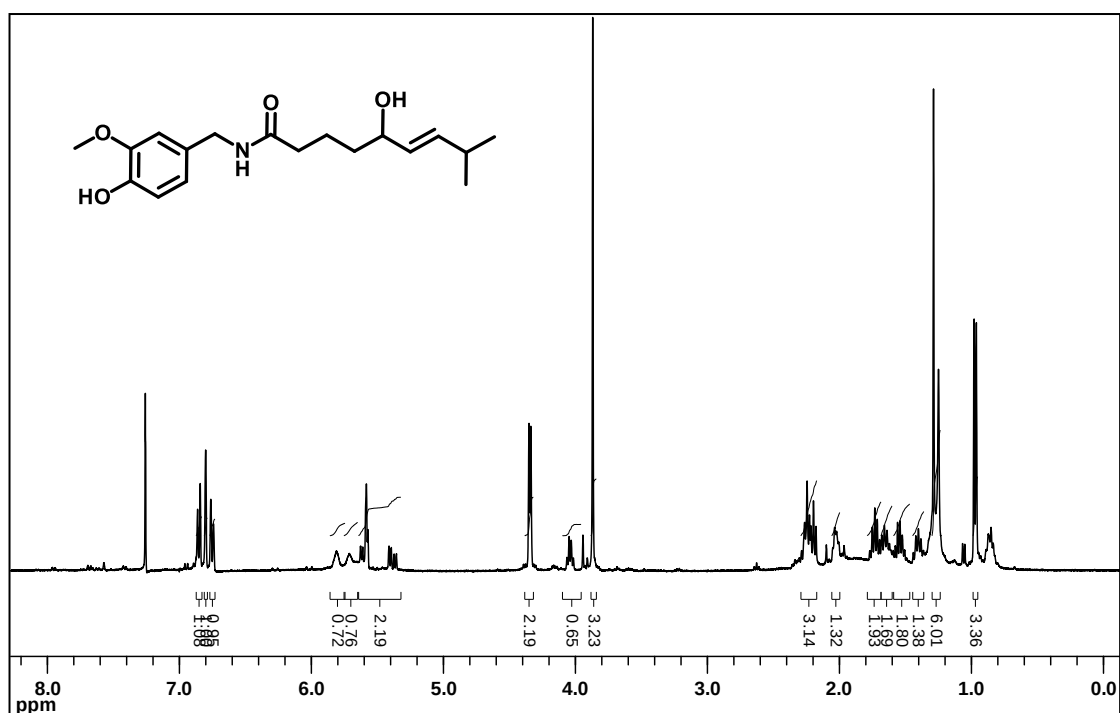


Figure S12: ¹H NMR spectrum of (E)-5-hydroxy-N-(4-hydroxy-3-methoxybenzyl)-8-methylnon-6-enamide (**6**)

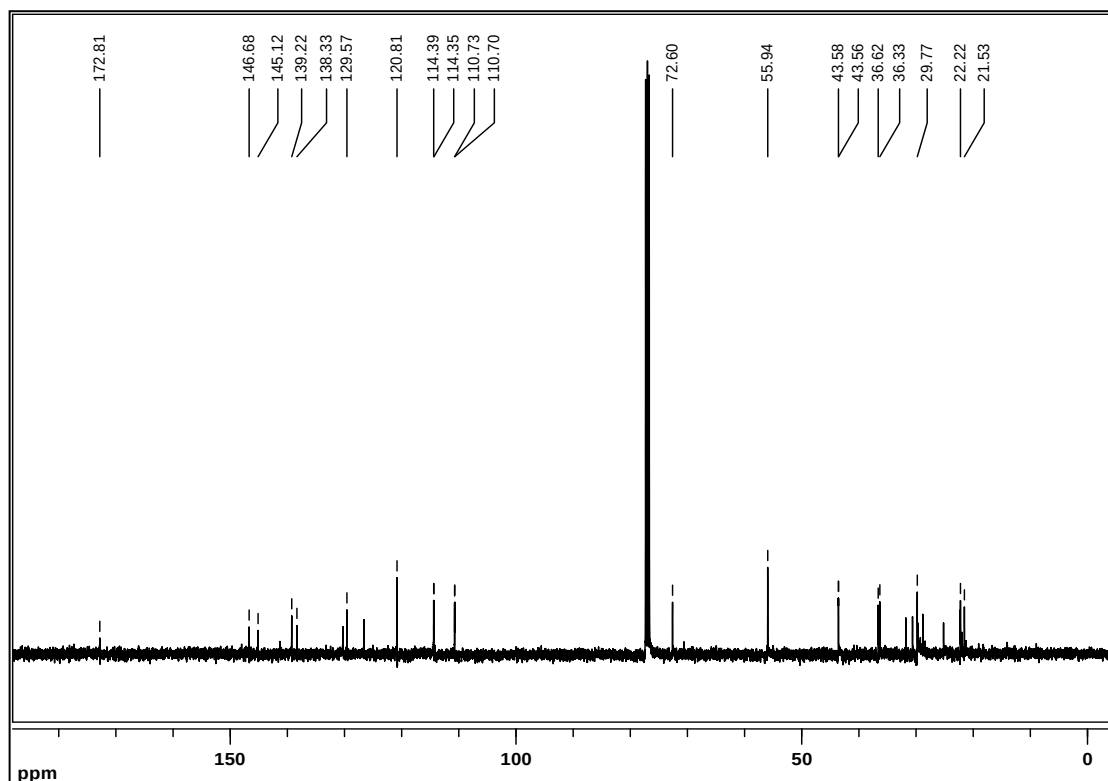


Figure S13: ¹³C NMR spectrum of (E)-5-hydroxy-N-(4-hydroxy-3-methoxybenzyl)-8-methylnon-6-enamide (**6**)

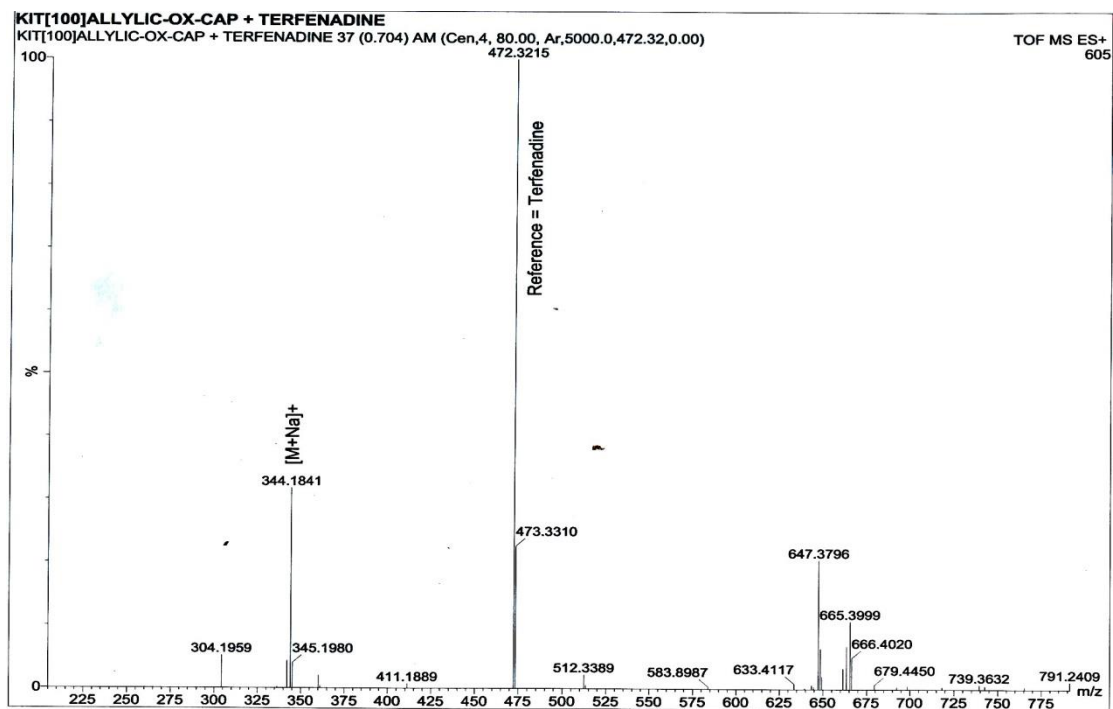


Figure S14: Mass spectrum of (E)-5-hydroxy-N-(4-hydroxy-3-methoxybenzyl)-8-methylnon-6-enamide (**6**)

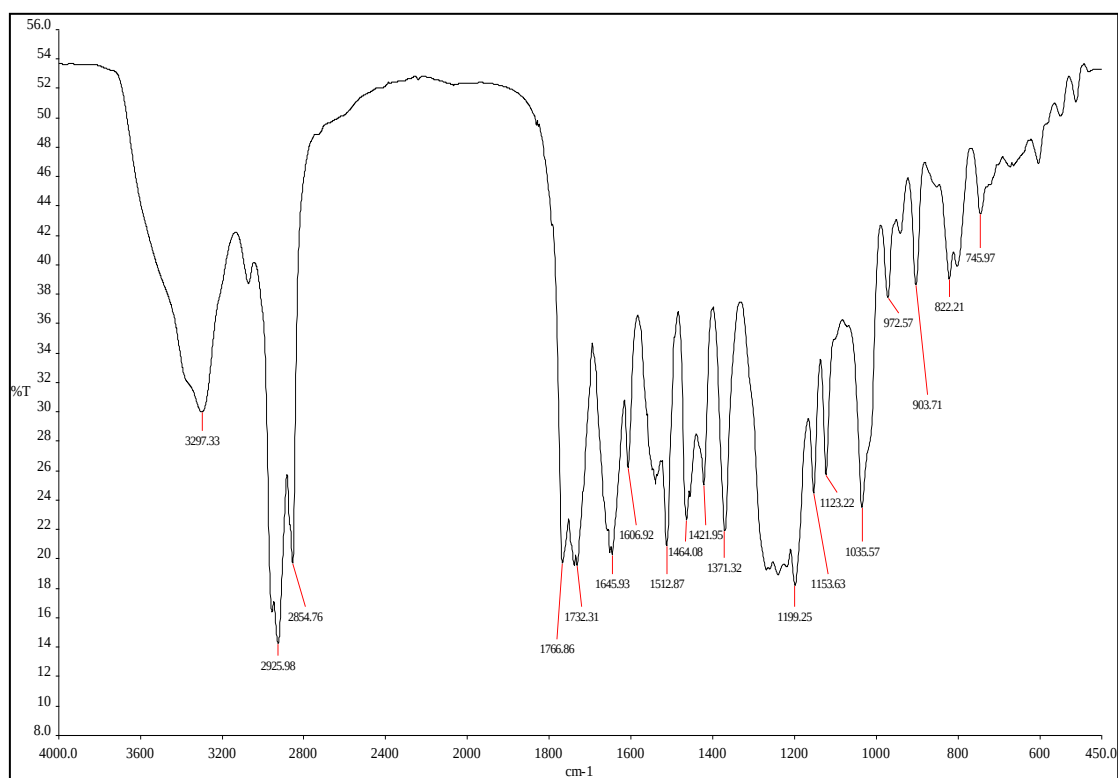


Figure S15: IR spectrum of 9-(4-acetoxy-3-methoxybenzylamino)-2-methyl-9-oxononan-4-yl acetate (7)

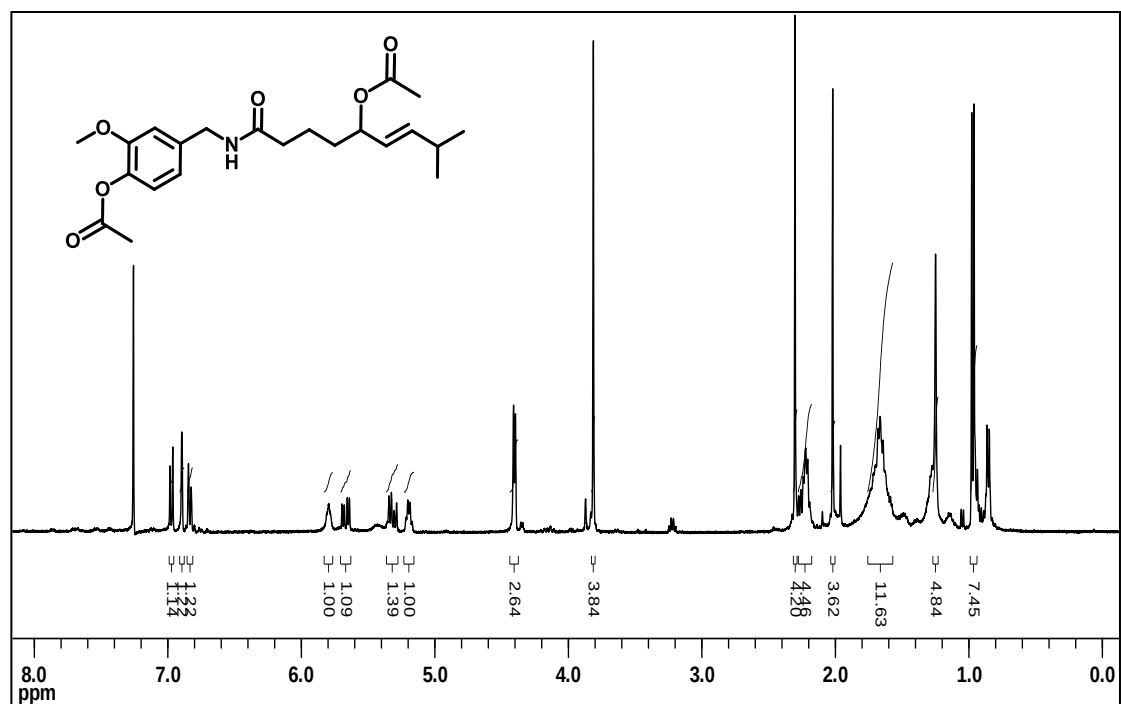


Figure S16: ¹H NMR spectrum of 9-(4-acetoxy-3-methoxybenzylamino)-2-methyl-9-oxononan-4-yl acetate (7)

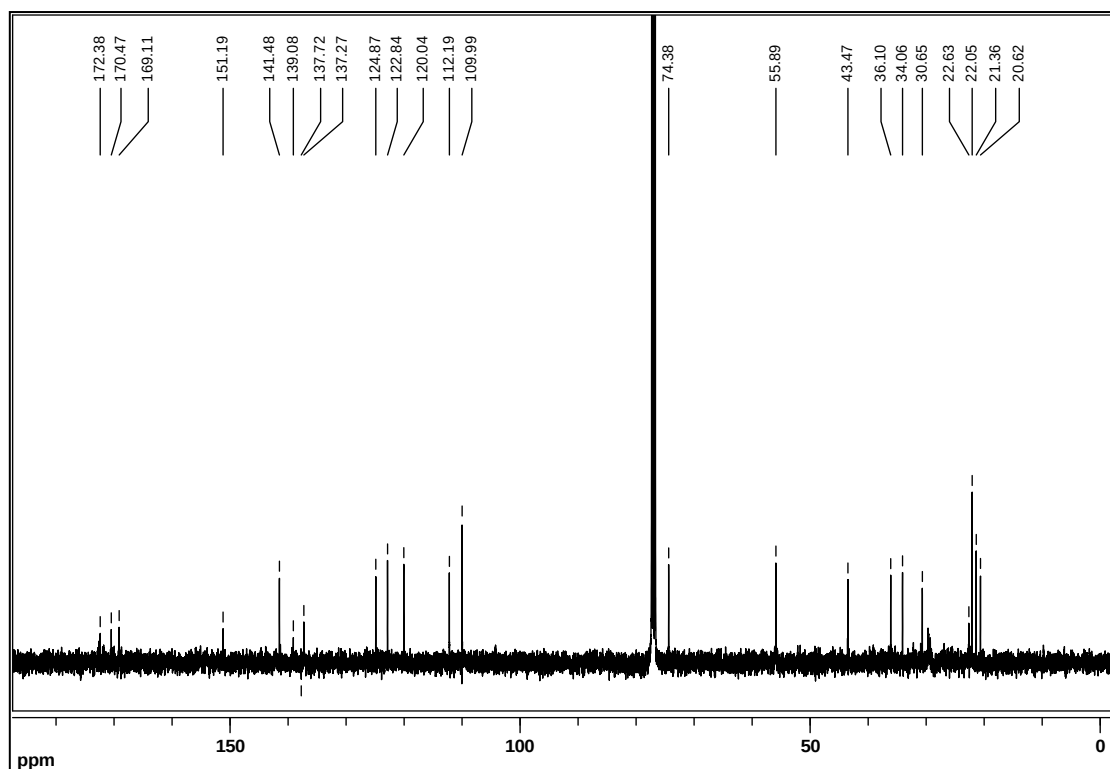


Figure S17: ¹³C NMR spectrum of 9-(4-acetoxy-3-methoxybenzylamino)-2-methyl-9-oxononan-4-yl acetate (7)

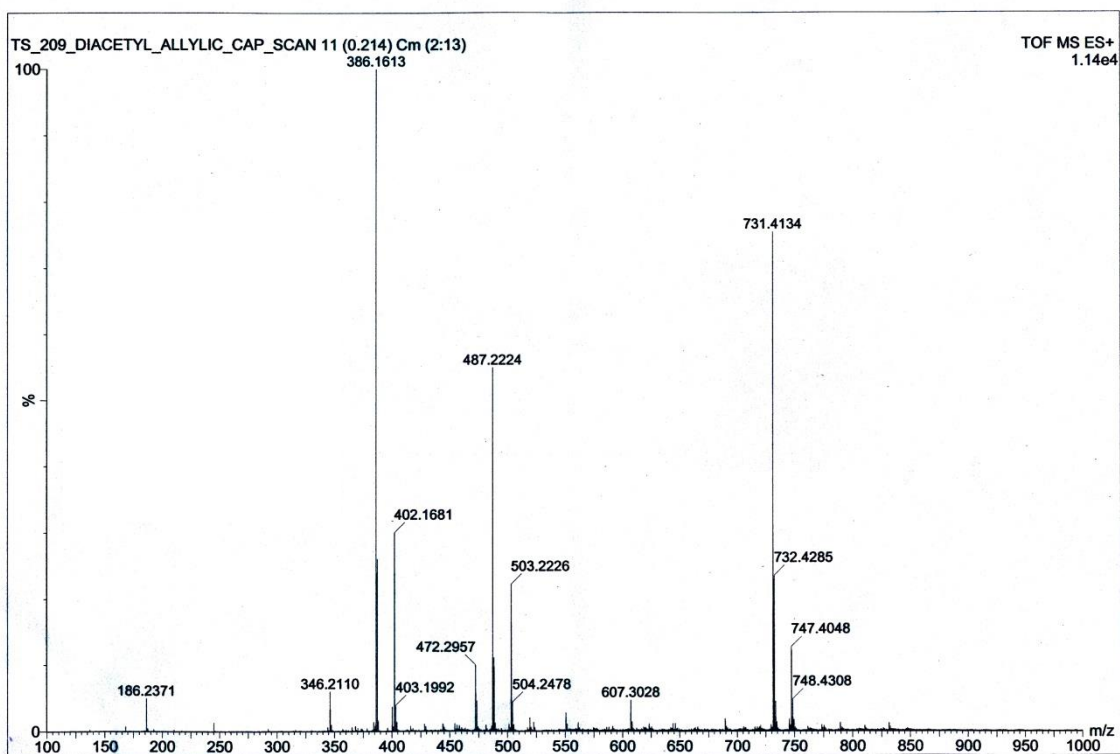


Figure S18: Mass spectrum of 9-(4-acetoxy-3-methoxybenzylamino)-2-methyl-9-oxononan-4-yl acetate (7)

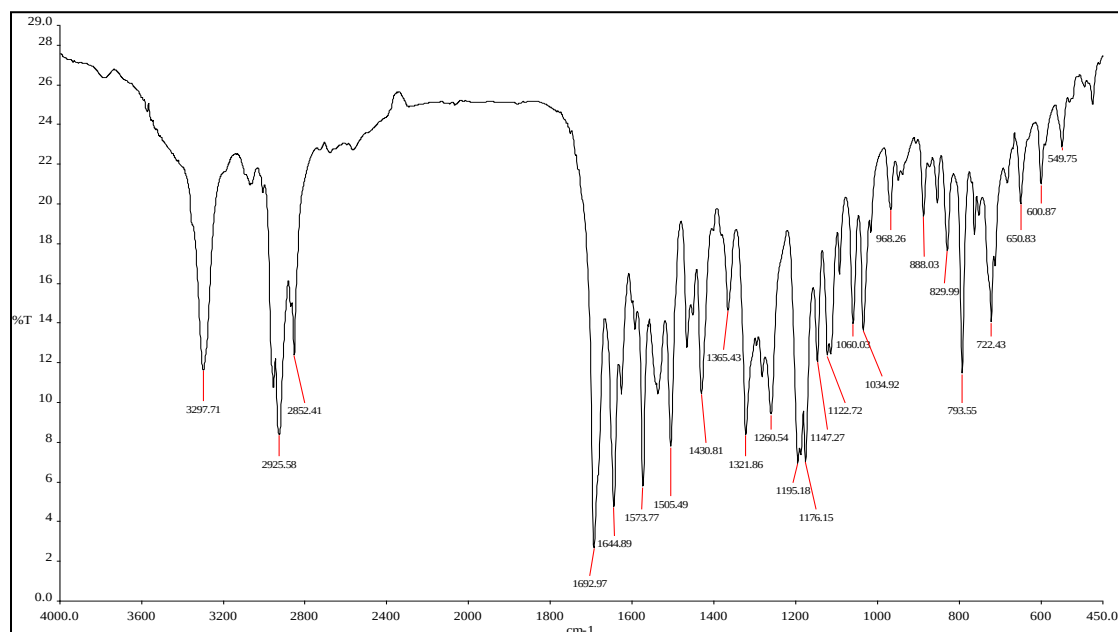


Figure S19: IR spectrum of (*E*)-*N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnon-6-enamide (**8**) and *N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnonanamide (**9**)

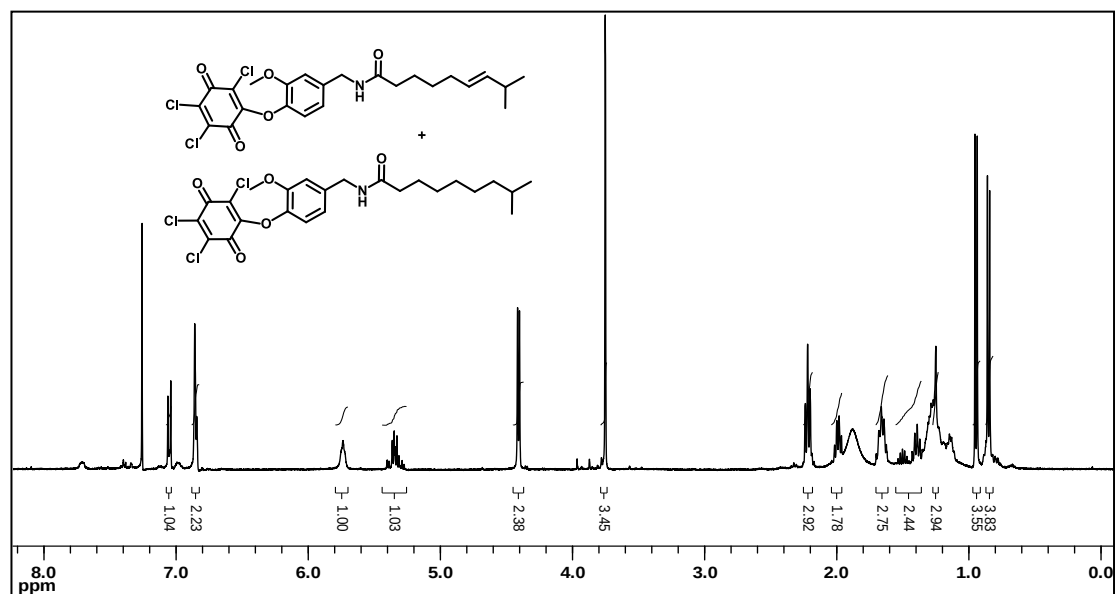


Figure S20: ^1H NMR spectrum of (*E*)-*N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnon-6-enamide (**8**) and *N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnonanamide (**9**)

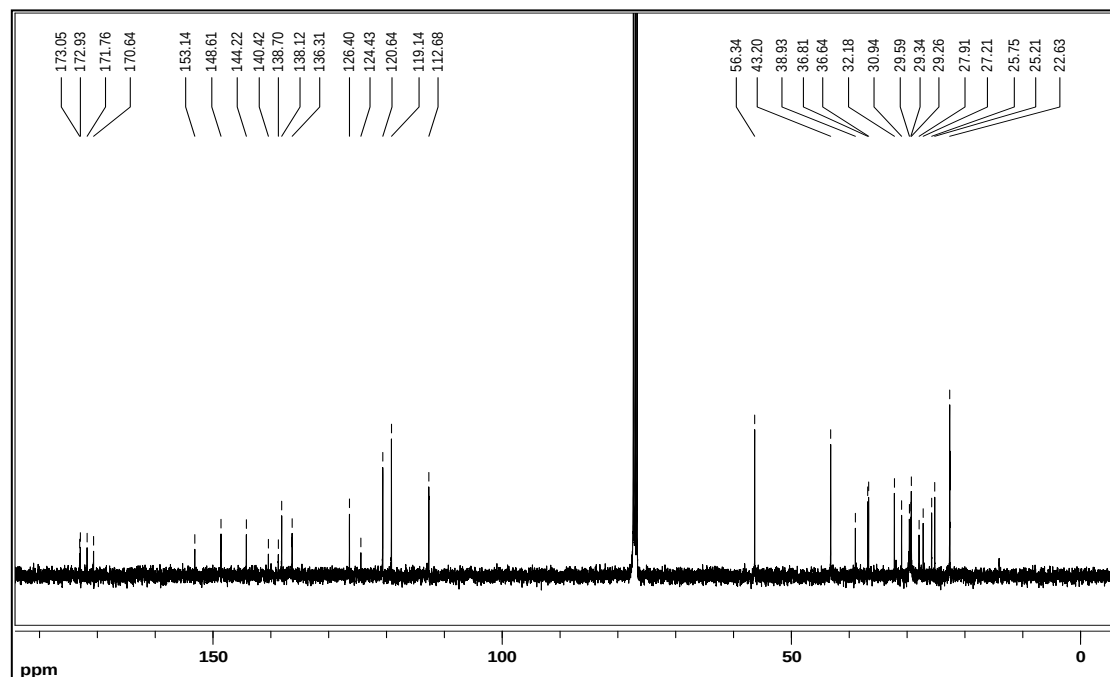


Figure S21: ¹³C NMR spectrum of (*E*)-*N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnon-6-enamide (**8**) and *N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnonanamide (**9**)

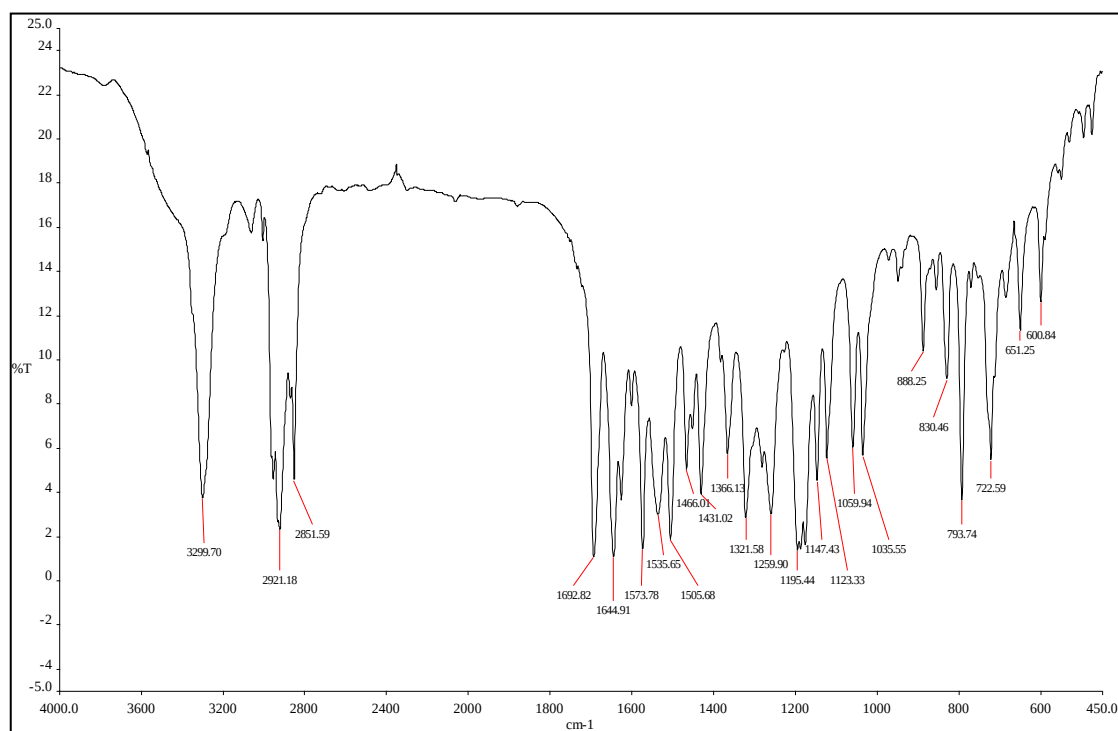


Figure S22: IR spectrum of *N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnonanamide (**9**)

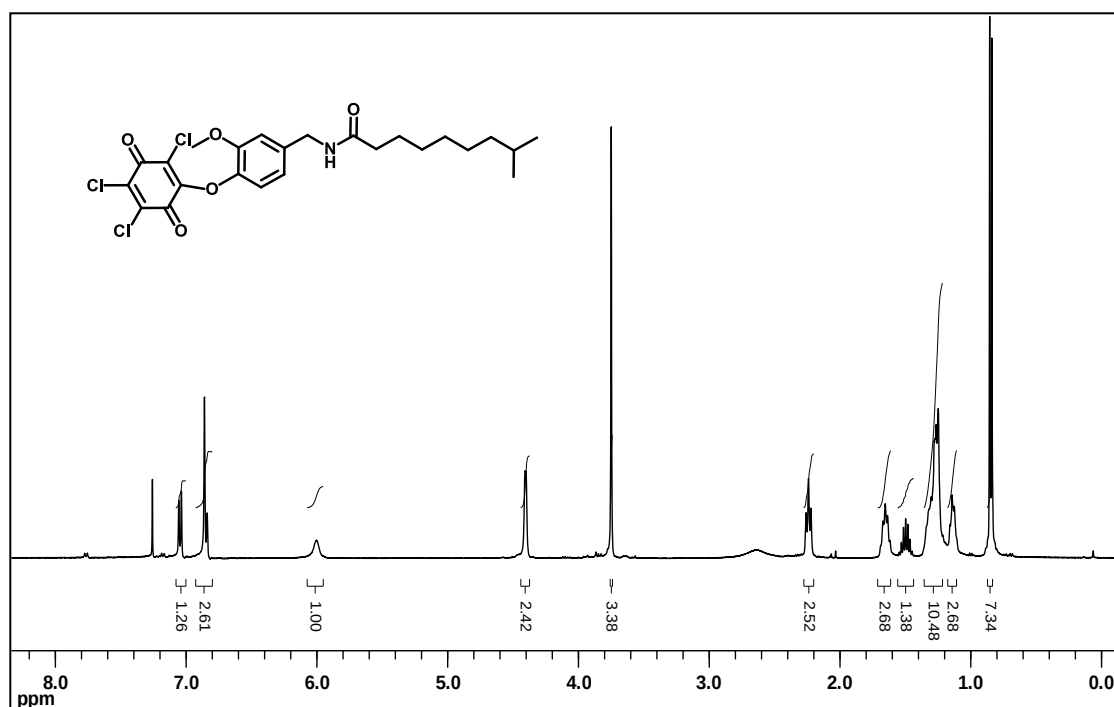


Figure S23: ¹H NMR spectrum of *N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnonanamide (**9**)

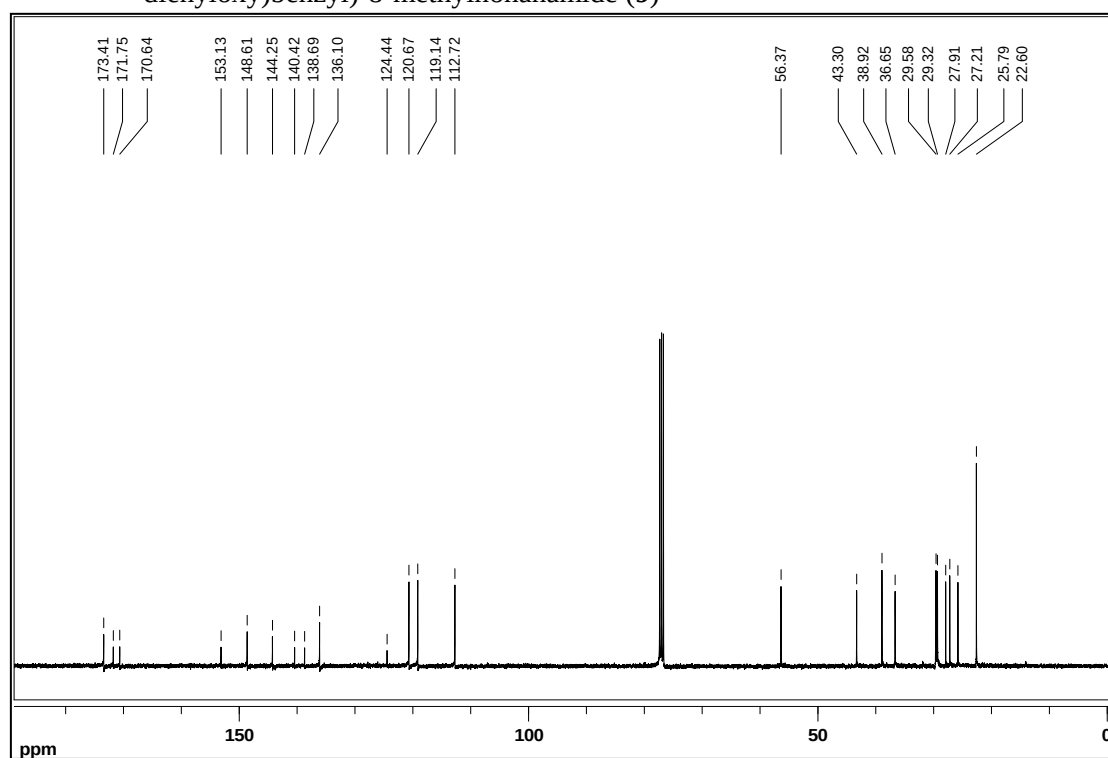


Figure S24: ¹³C NMR spectrum of *N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnonanamide (**9**)

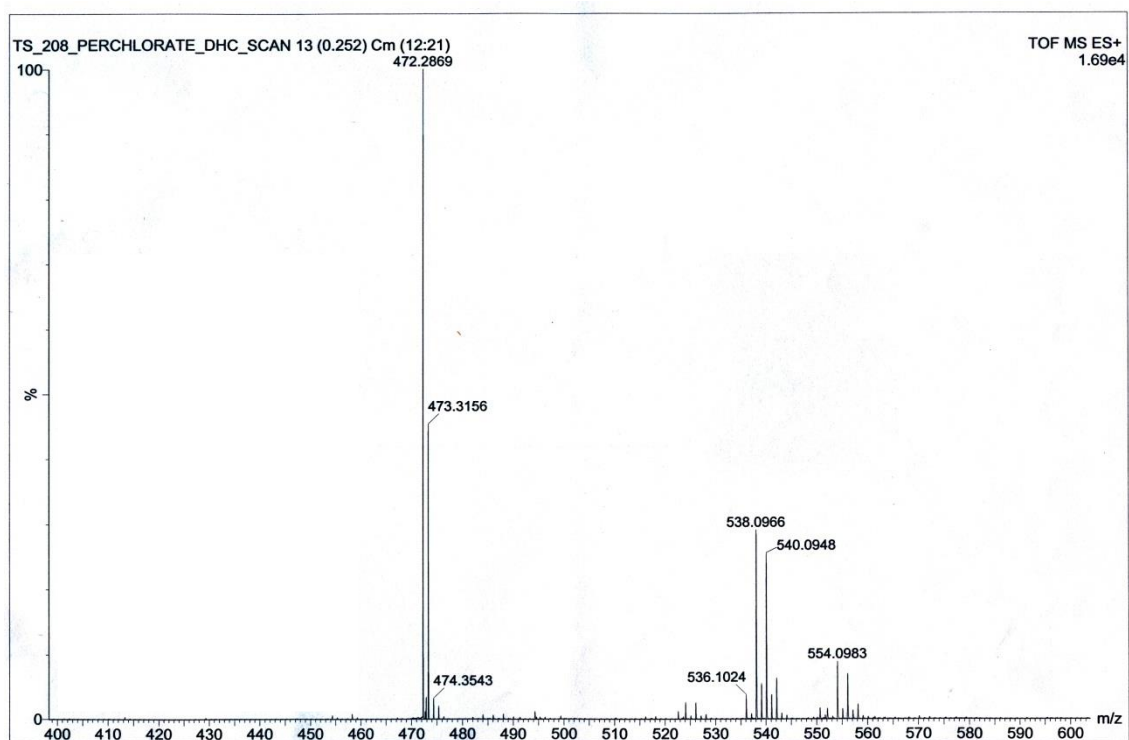


Figure S25: Mass spectrum of *N*-(3-methoxy-4-(2,4,5-trichloro-3,6-dioxocyclohexa-1,4-dienyloxy)benzyl)-8-methylnonanamide (**9**)