

Supporting Information

The structural determinants for α_1 -adrenergic/serotonin receptors activity among phenylpiperazine-hydantoin derivatives.

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† Equal contribution

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1. ¹H and ¹³C NMR spectra for final compounds

Figure S1. (Z)-3-(2-hydroxy-3-(4-(2-methoxyphenyl)piperazin-1-yl)propyl)-5-(3-methoxybenzylidene)imidazolidine-2,4-dione (**4**)

^1H NMR (500 MHz, DMSO- d_6)

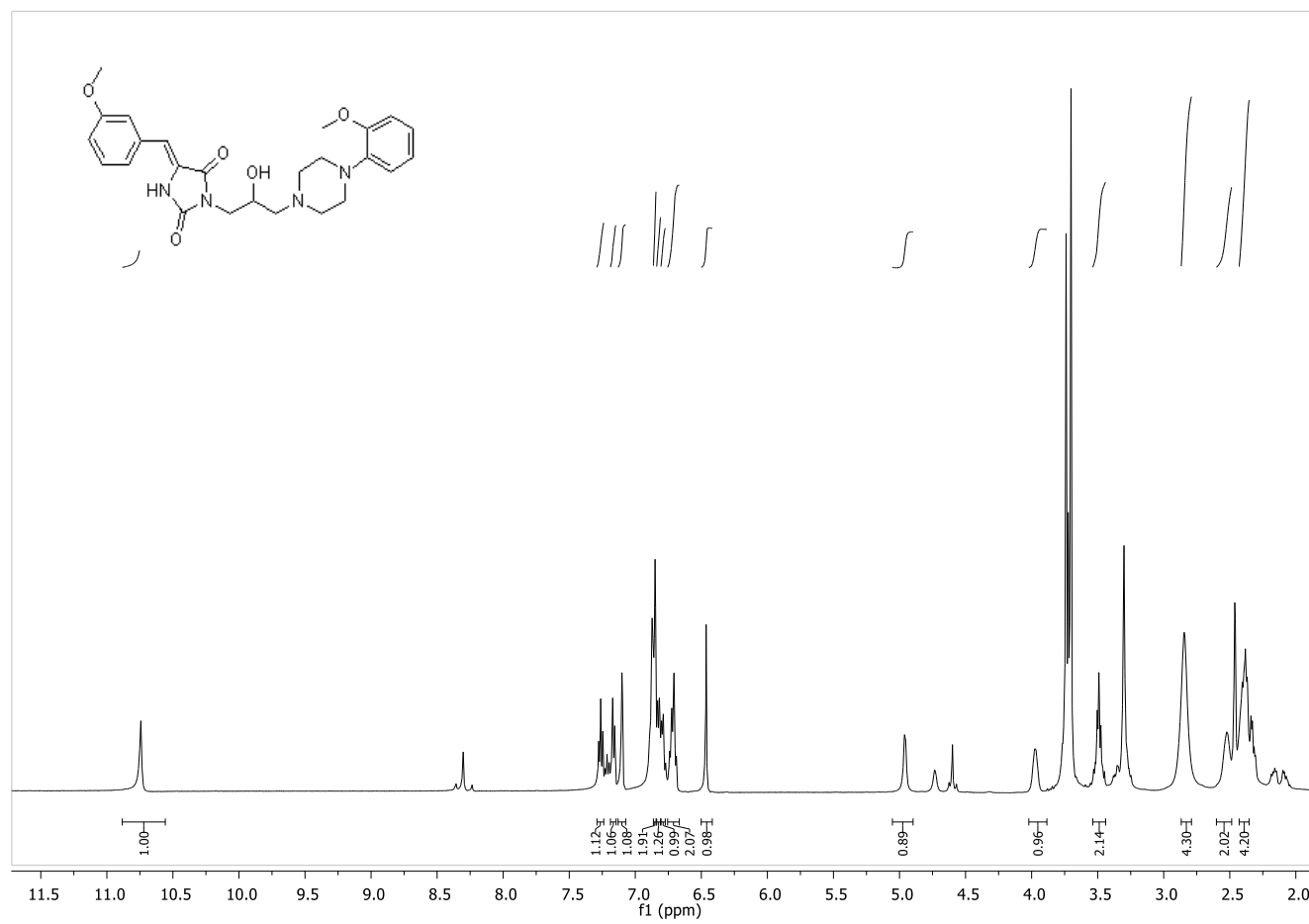


Figure S2. AD09 (Z)-3-(3-(4-(2-ethoxyphenyl)piperazin-1-yl)-2-hydroxypropyl)-5-(3-methoxybenzylidene)imidazolidine-2,4-dione (**5**)

^1H NMR (500 MHz, DMSO- d_6)

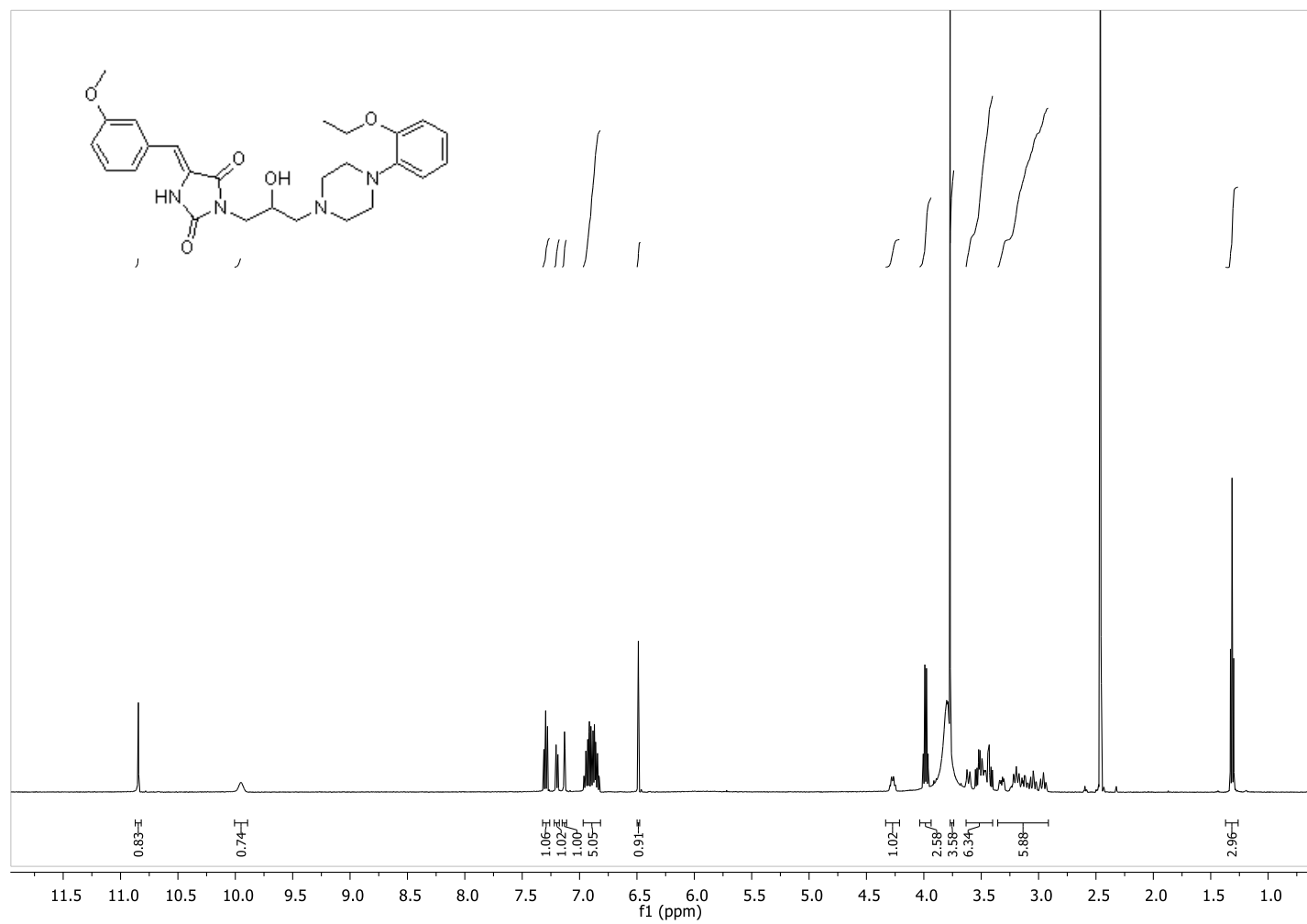


Figure S3. AD15 (Z)-3-(2-hydroxy-3-(4-(2-methoxyphenyl)piperazin-1-yl)propyl)-5-(4-methoxybenzylidene)imidazolidine-2,4-dione (**6**)

^1H NMR (500 MHz, DMSO- d_6)

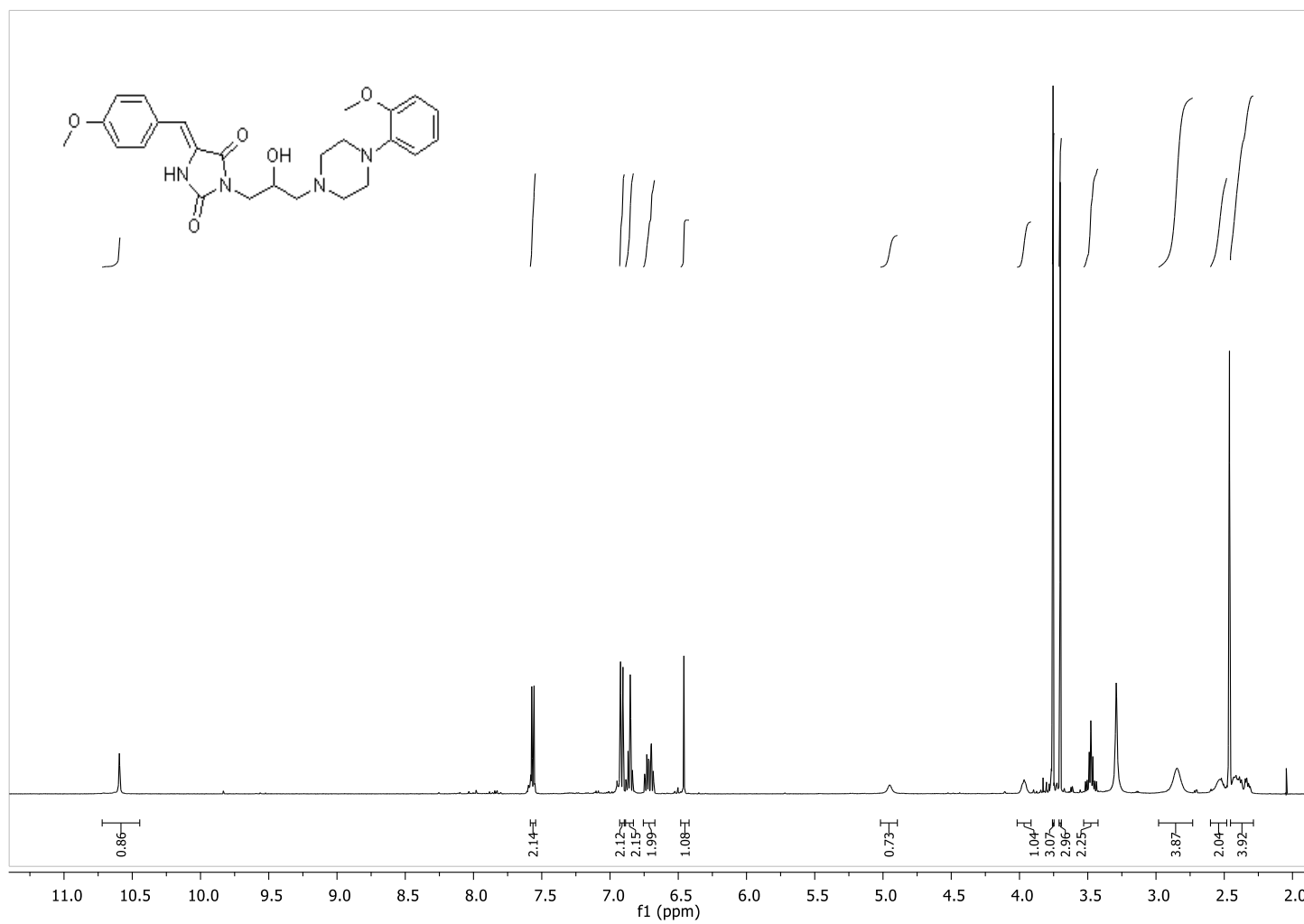
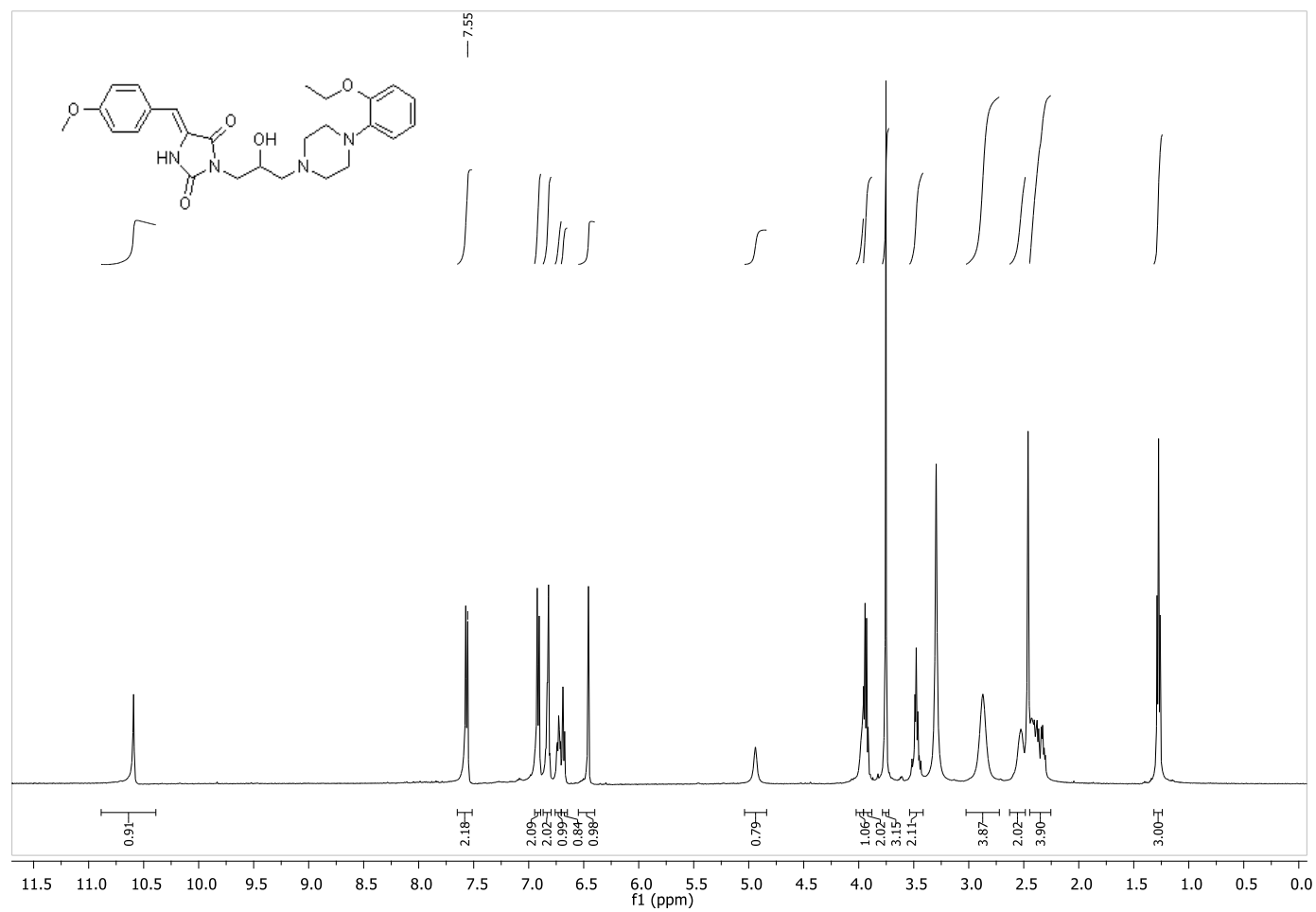


Figure S4.. AD13 (Z)-3-(3-(4-(2-ethoxyphenyl)piperazin-1-yl)-2-hydroxypropyl)-5-(4-methoxybenzylidene)imidazolidine-2,4-dione (**7**)

^1H NMR (500 MHz, DMSO- d_6)



^{13}C NMR (125 MHz, DMSO- d_6)

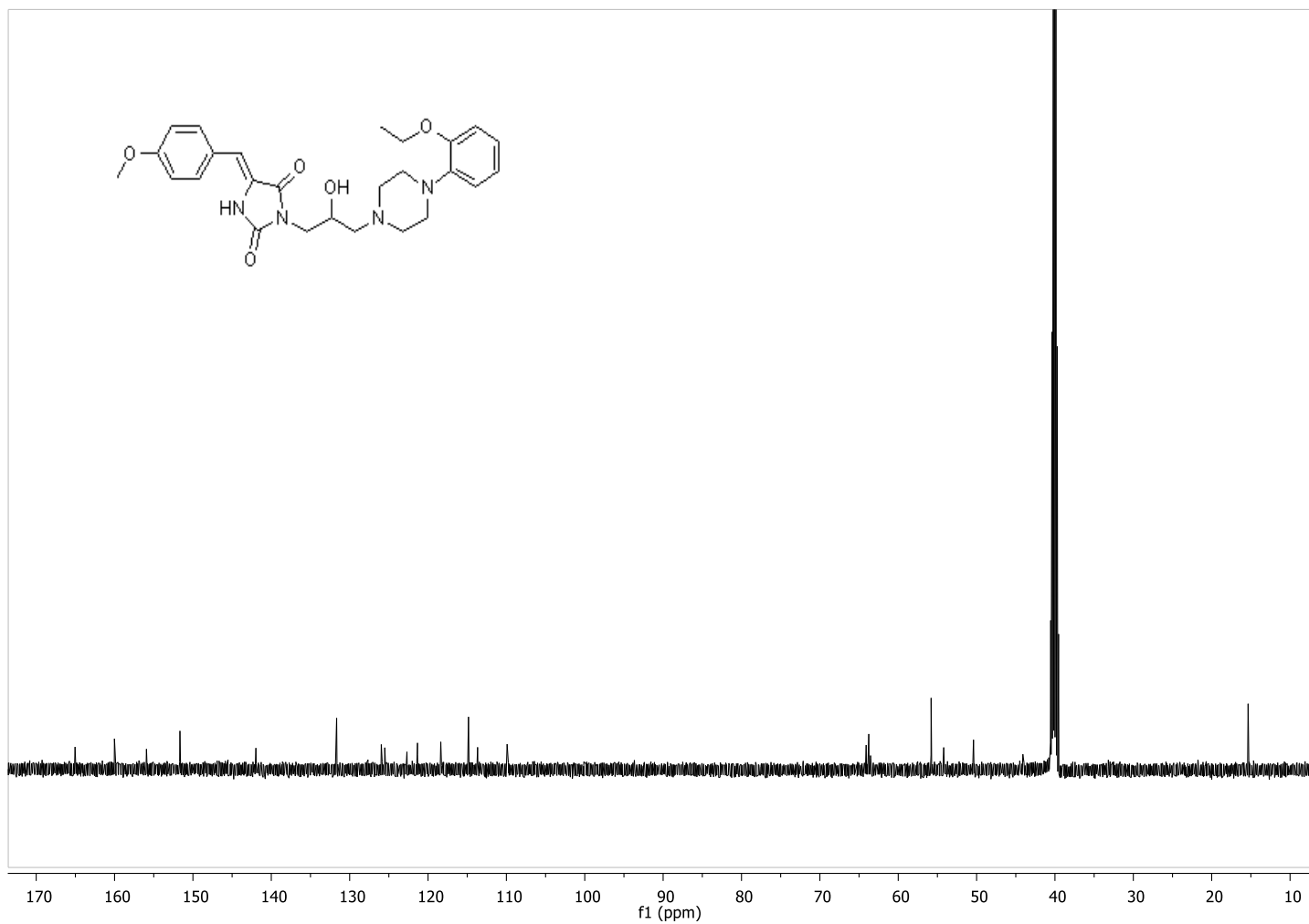
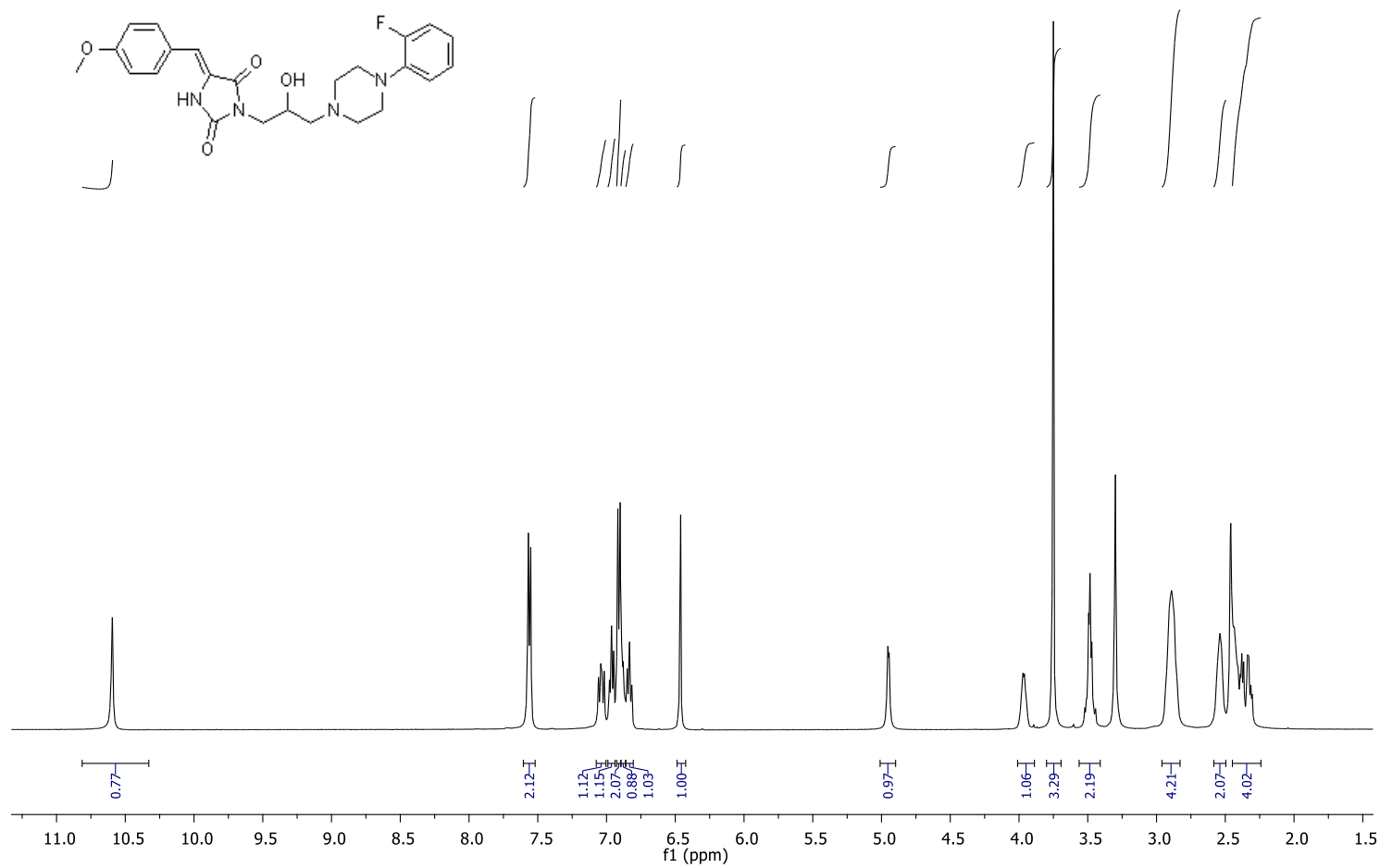


Figure S5. AD38 (Z)-3-(3-(4-(2-fluorophenyl)piperazin-1-yl)-2-hydroxypropyl)-5-(4-methoxybenzylidene)imidazolidine-2,4-dione (**8**)

^1H NMR (500 MHz, DMSO- d_6)



^{13}C NMR (125 MHz, DMSO- d_6)

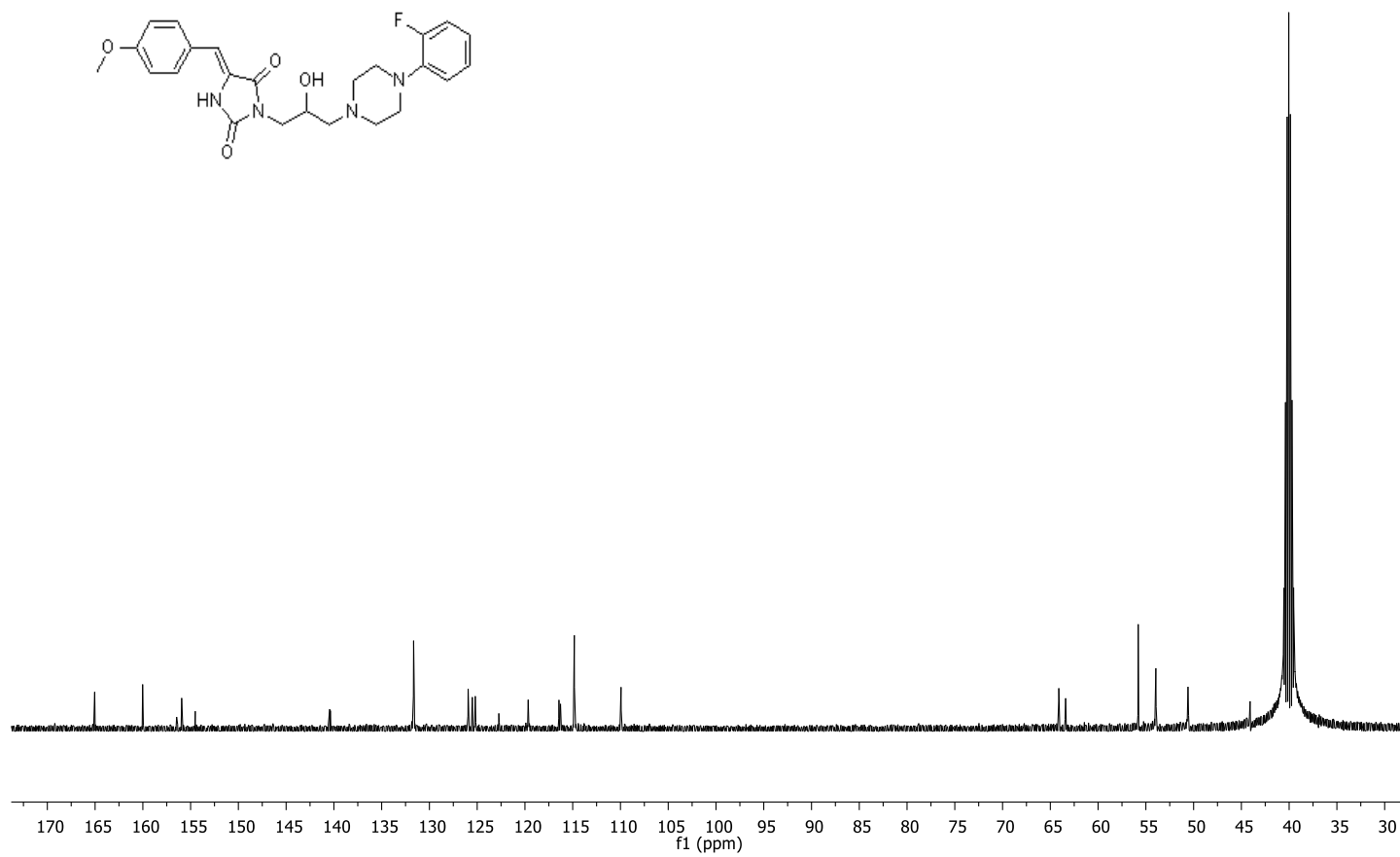


Figure S6. /AD34 (*Z*)-3-(3-(4-(2-ethoxyphenyl)piperazin-1-yl)-2-hydroxypropyl)-5-(3,4,5-trimethoxybenzylidene)imidazolidine-2,4-dione (**9**)

¹H NMR (500 MHz, DMSO-d₆)

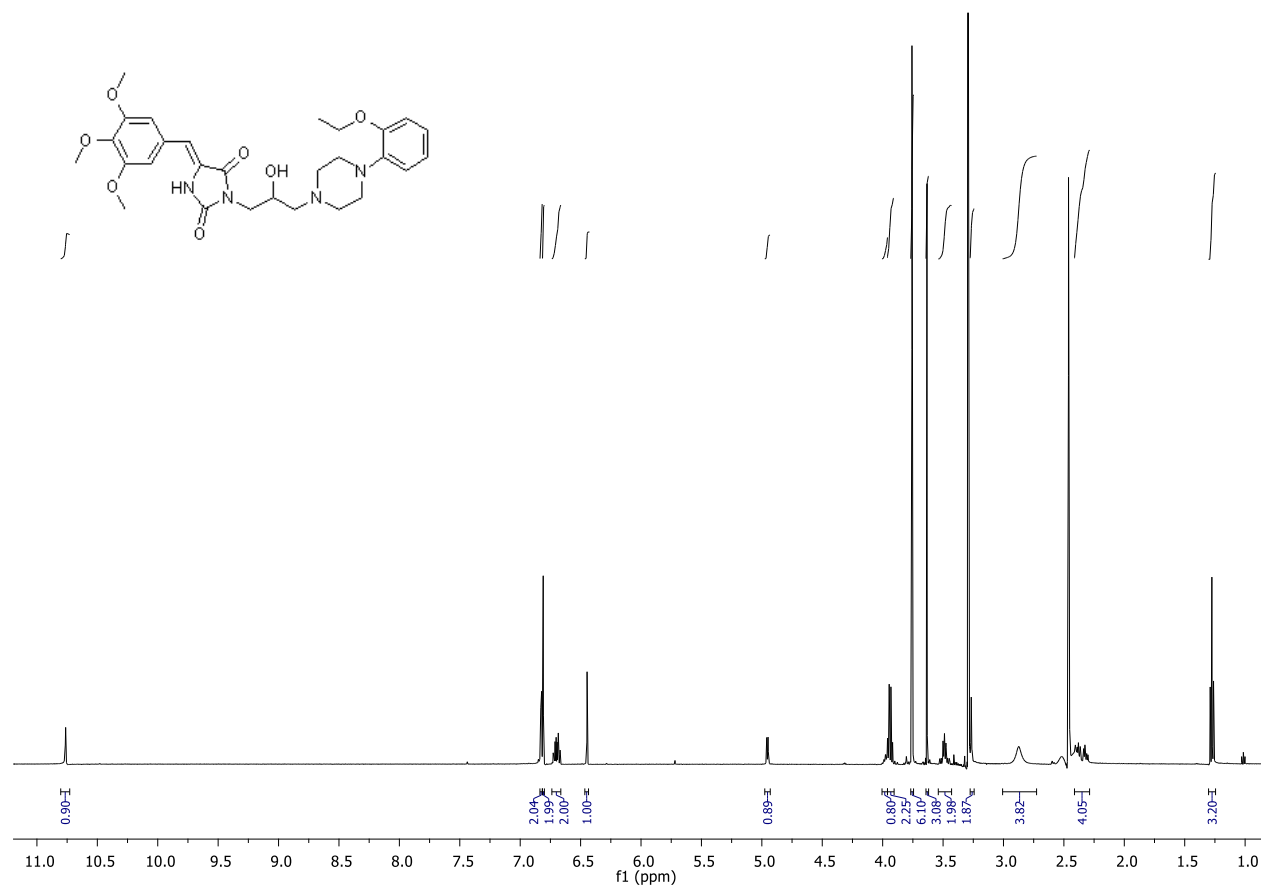


Figure S7. AD42 *(Z)*-3-(3-(4-(2-chlorophenyl)piperazin-1-yl)propyl)-5-(3-methoxybenzylidene)imidazolidine-2,4-dione (**11**)

¹H NMR (500 MHz, DMSO-d₆)

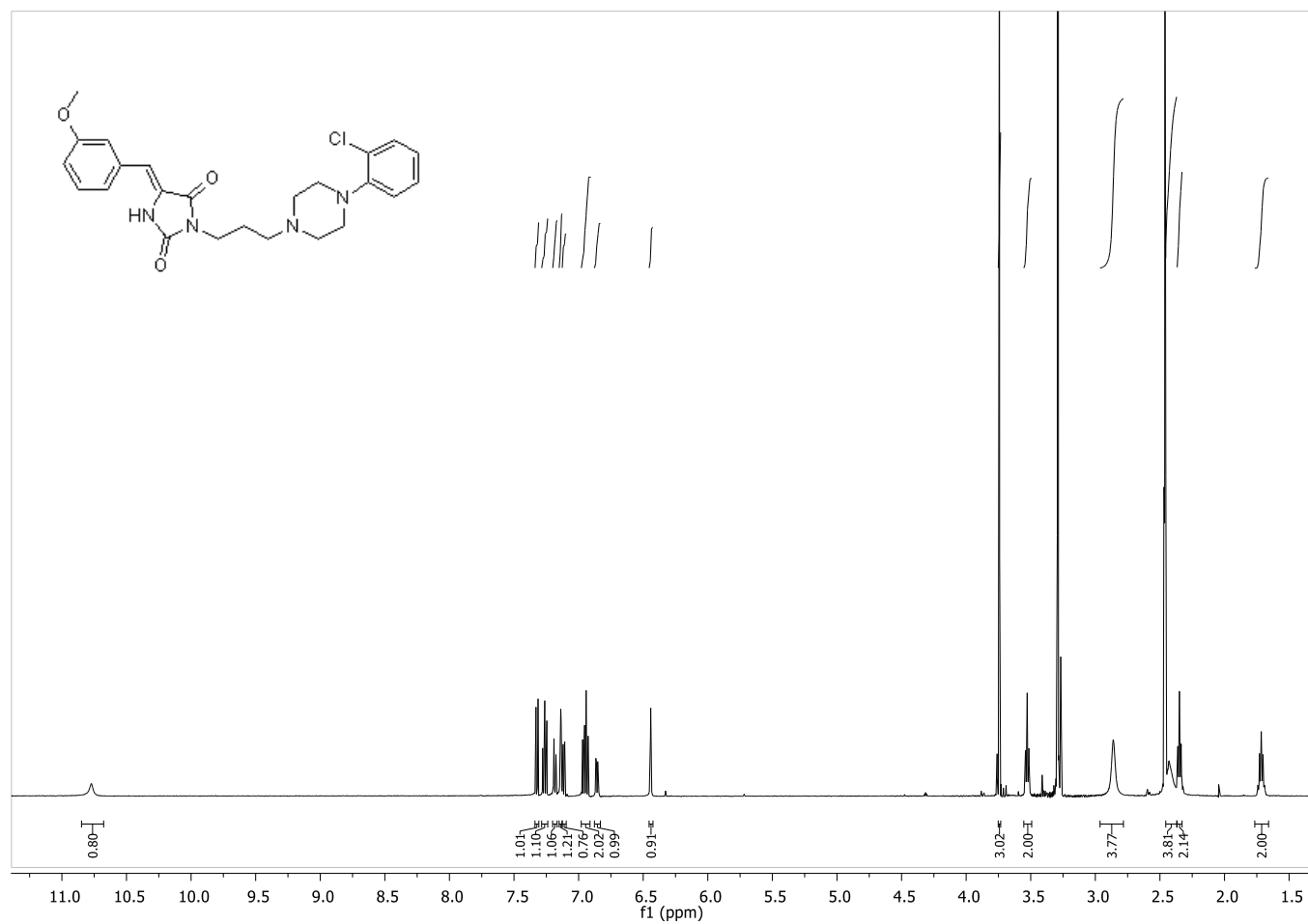


Figure S8. AD26 *(Z)*-5-(4-methoxybenzylidene)-3-(3-(4-(2-methoxyphenyl)piperazin-1-yl)propyl)imidazolidine-2,4-dione (**12**)

¹H NMR (500 MHz, DMSO-d₆)

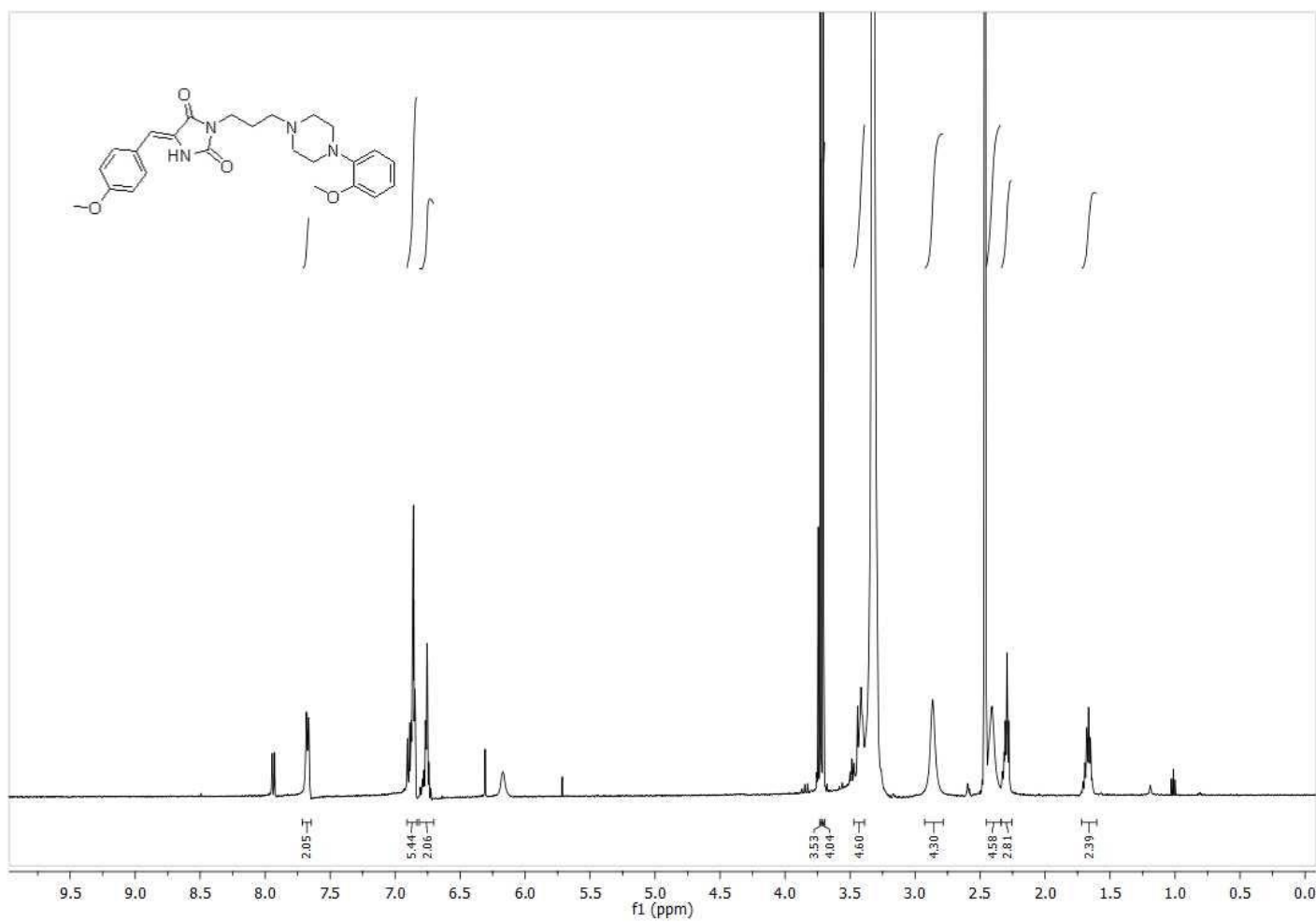


Figure S9. AD30 *(Z)*-3-(3-(4-(2-ethoxyphenyl)piperazin-1-yl)propyl)-5-(4-methoxybenzylidene)imidazolidine-2,4-dione (**13**)

¹H NMR (500 MHz, DMSO-d₆)

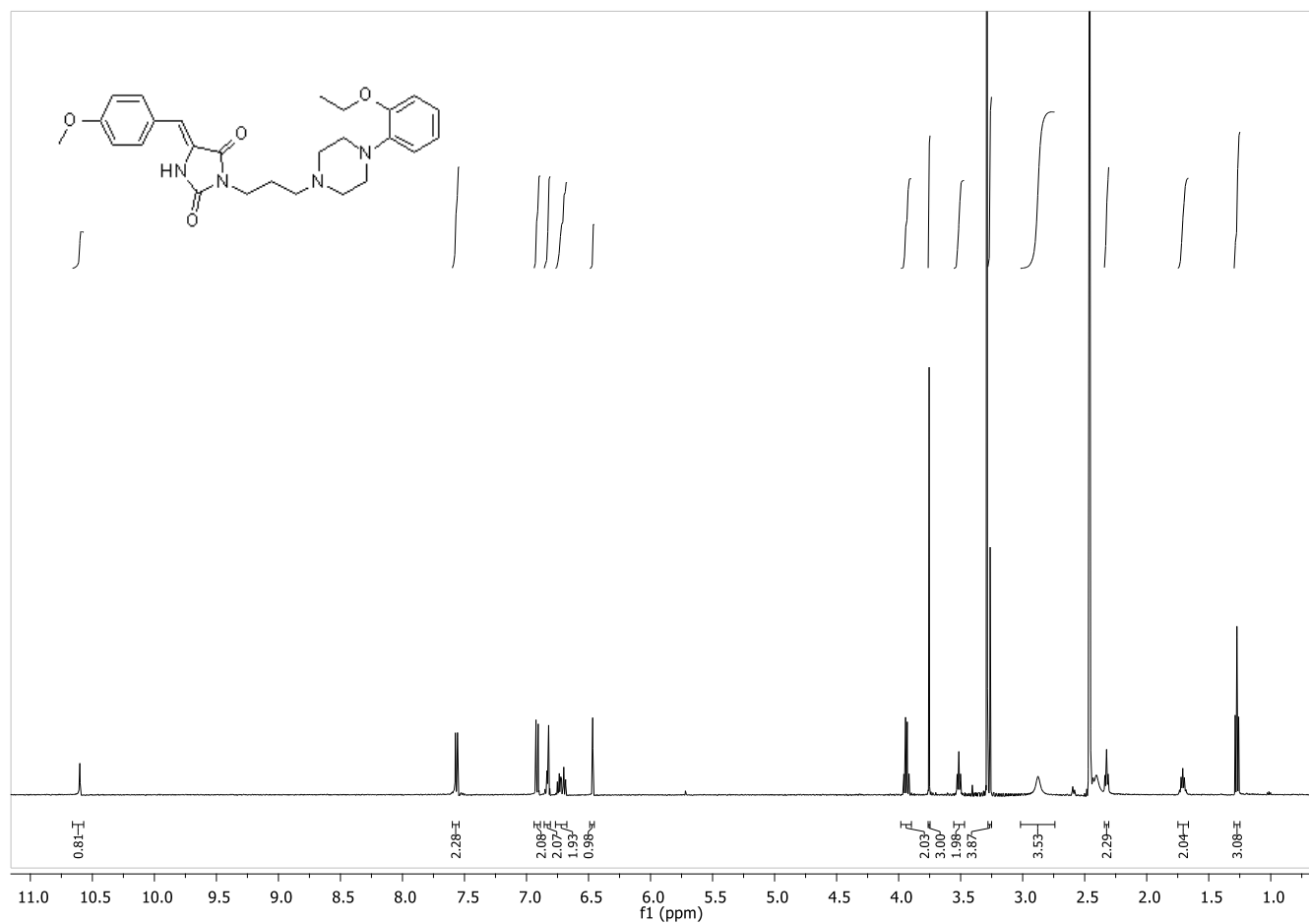


Figure S10. AD28 (Z)-3-(3-(4-(2-methoxyphenyl)piperazin-1-yl)propyl)-5-(3,4,5-trimethoxybenzylidene)imidazolidine-2,4-dione (**15**)

¹H NMR (500 MHz, DMSO-d₆)

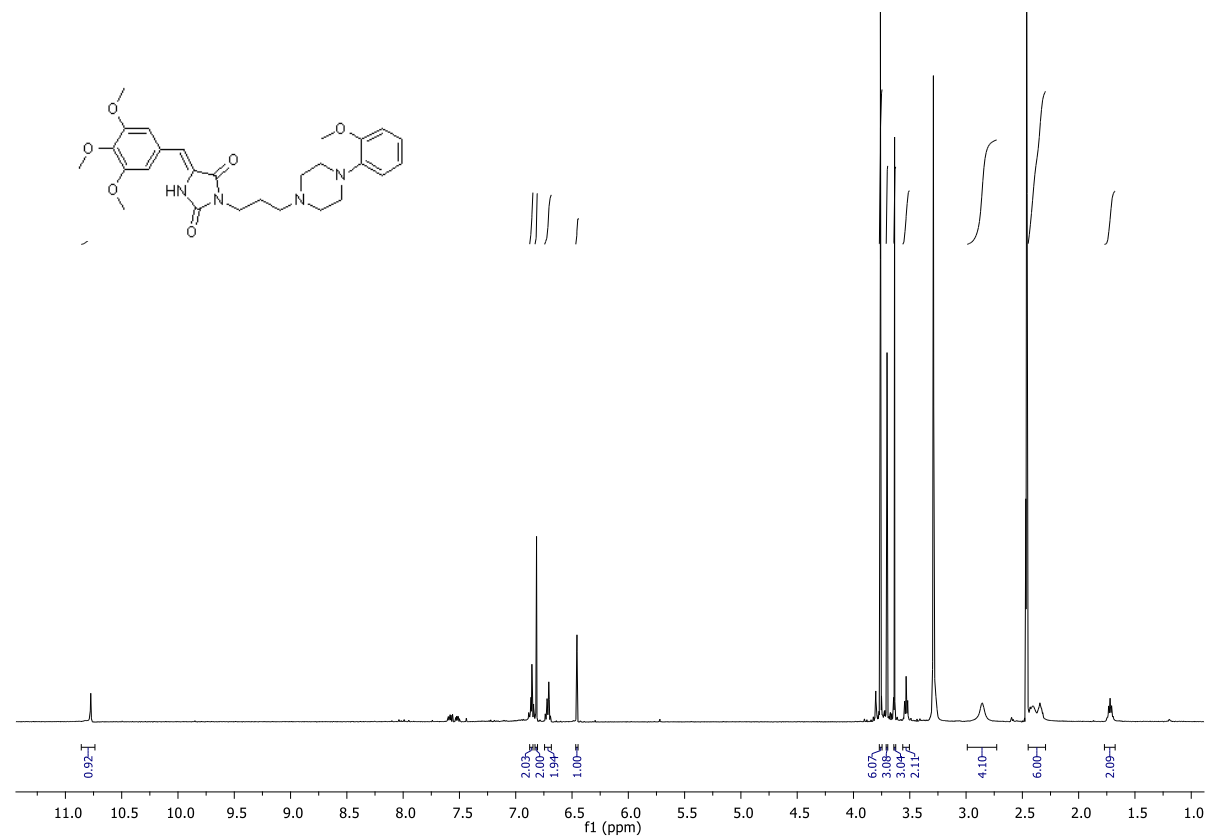


Figure S11. AD33 *(Z)*-3-(3-(4-(2-ethoxyphenyl)piperazin-1-yl)propyl)-5-(3,4,5-trimethoxybenzylidene)imidazolidine-2,4-dione (**16**)

^1H NMR (500 MHz, DMSO- d_6)

