

## Supporting Information

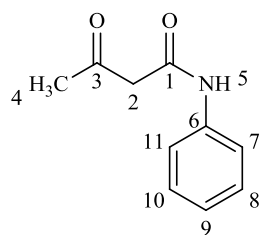
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### Synthesis of novel impurities in 2-(2-(4-fluorophenyl)-2-oxo-1-phenylethyl)-4-methyl-3-oxo-N-phenylpentanamide; an atorvastatin intermediate

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3-oxo-*N*-phenylbutanamide

22

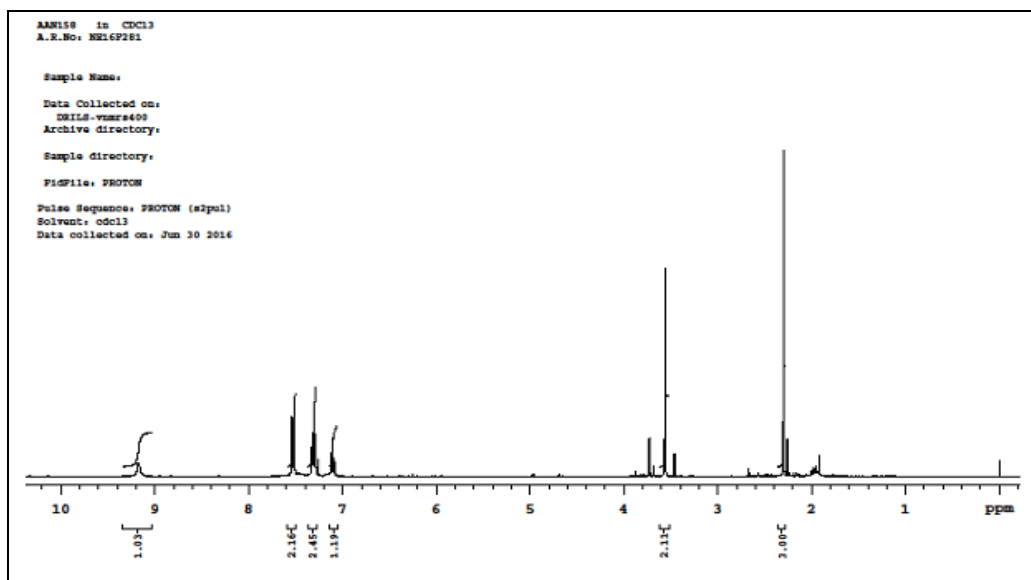
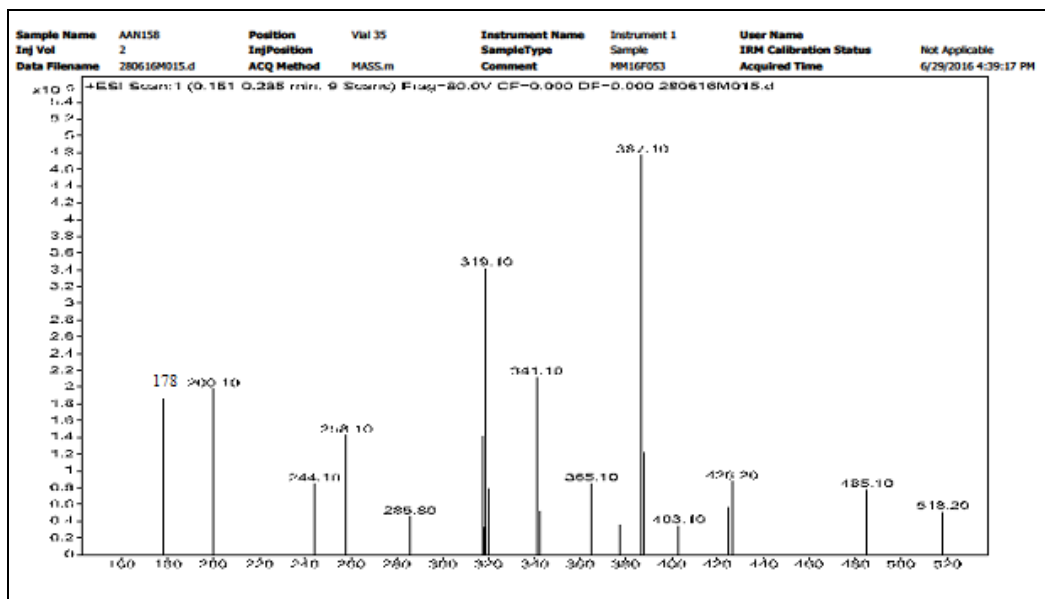
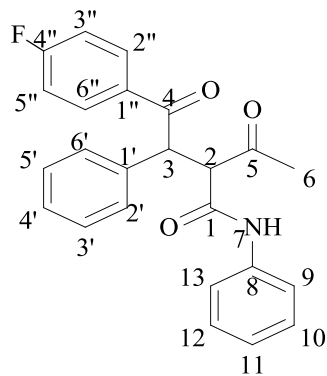


Figure S1.  $^1\text{H}$  NMR spectrum of compound 22

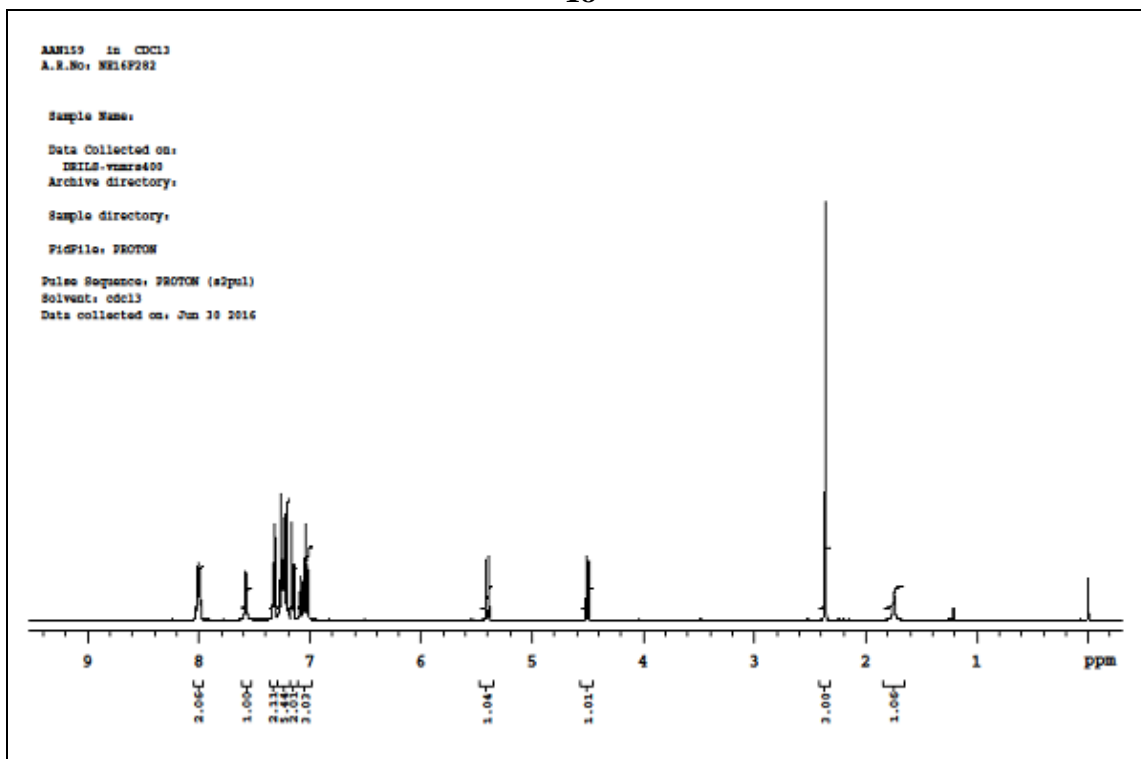


**Figure S2.** ESI-MS spectrum of compound **22**



2-acetyl-4-(4''-fluorophenyl)-4-oxo-*N*,3-diphenylbutanamide

**18**



**Figure S3.**  $^1\text{H}$  NMR spectrum of compound **18**

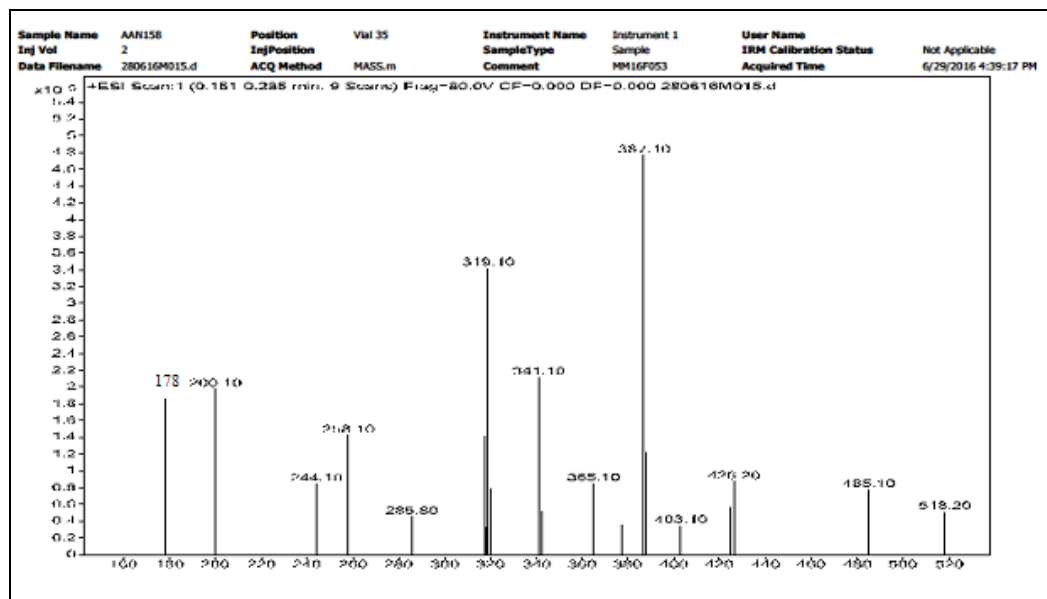


Figure S4. ESI-MS spectrum of compound 18

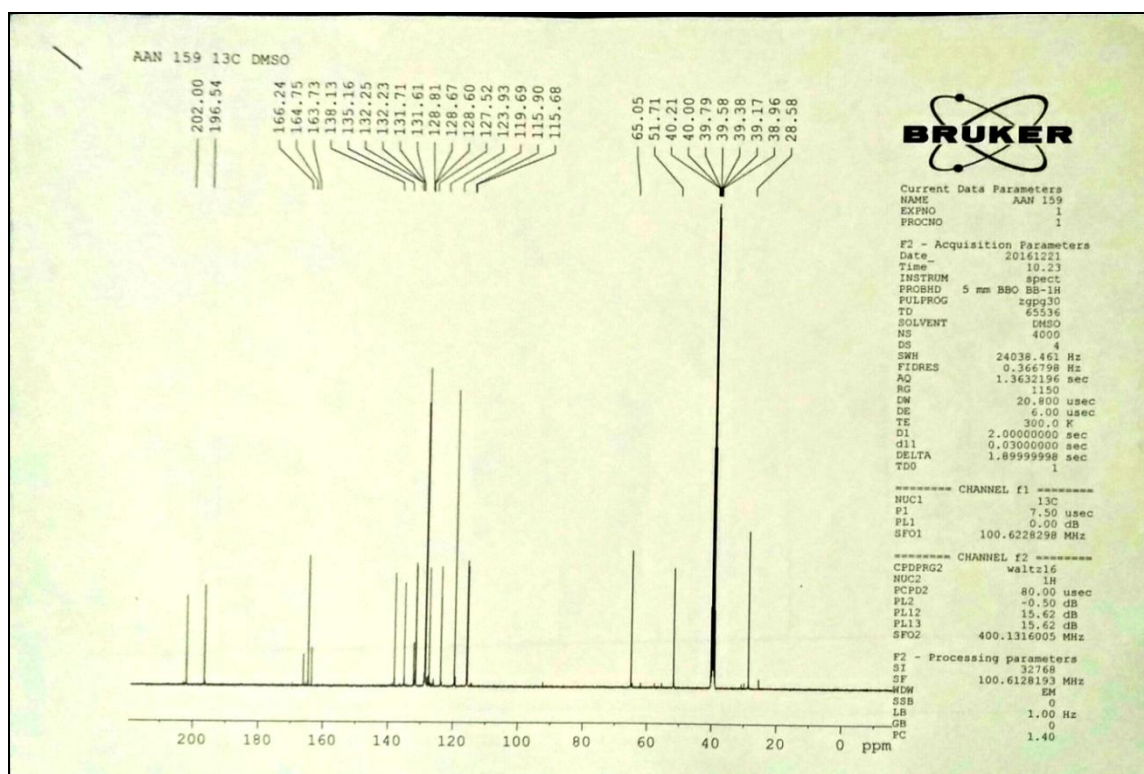
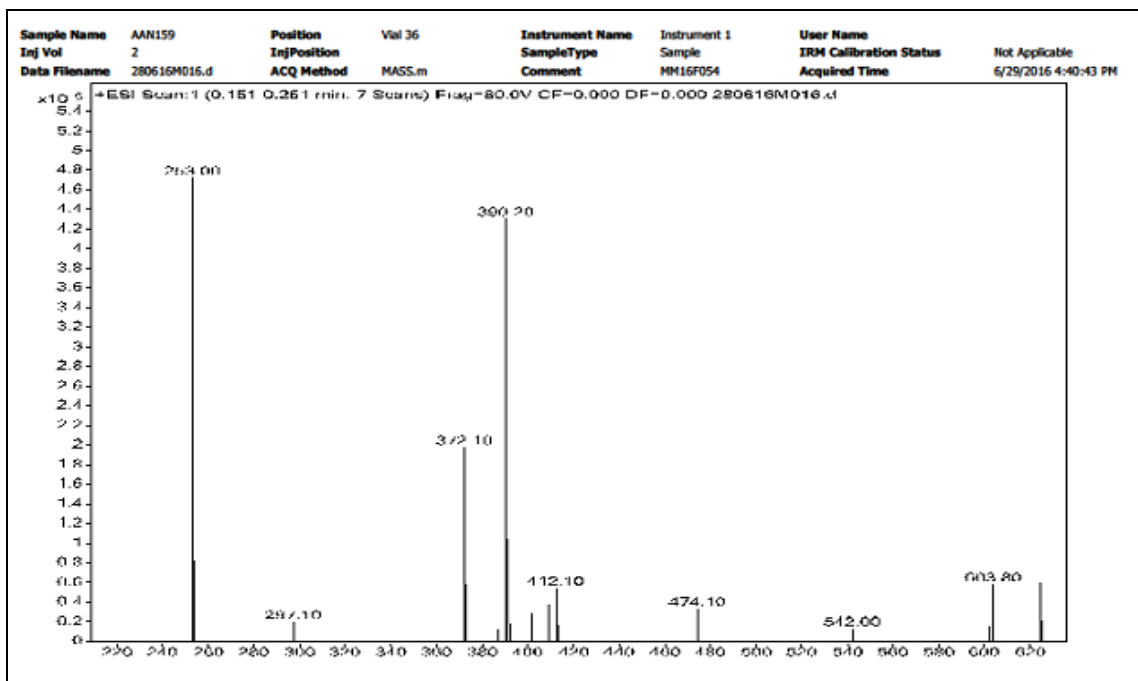


Figure S5.  $^{13}\text{C}$  NMR spectrum of compound 18



**Figure S6.** ESI-MS spectrum of compound **18**

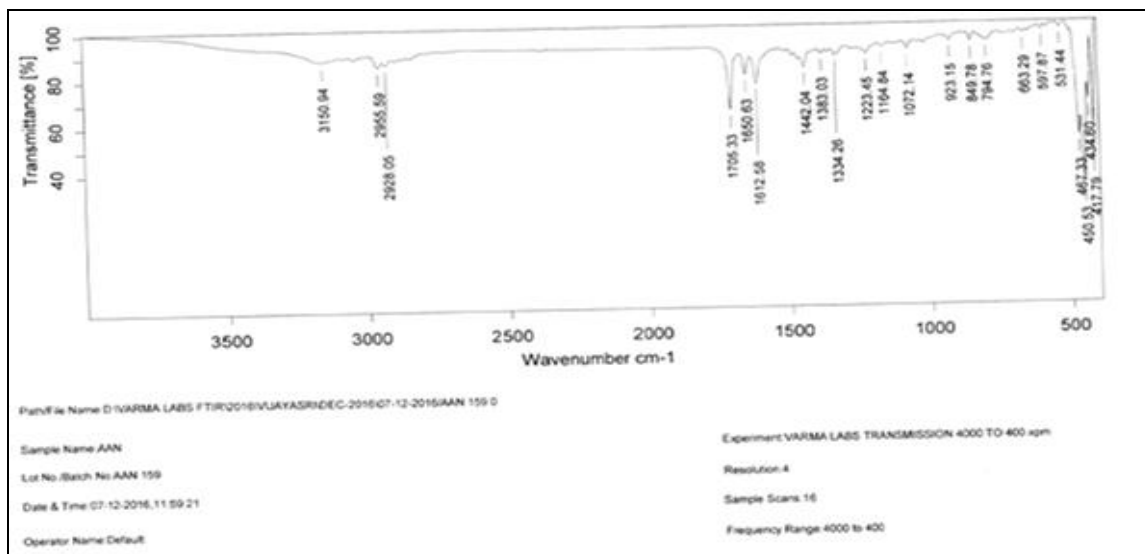
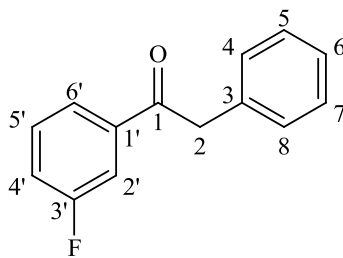
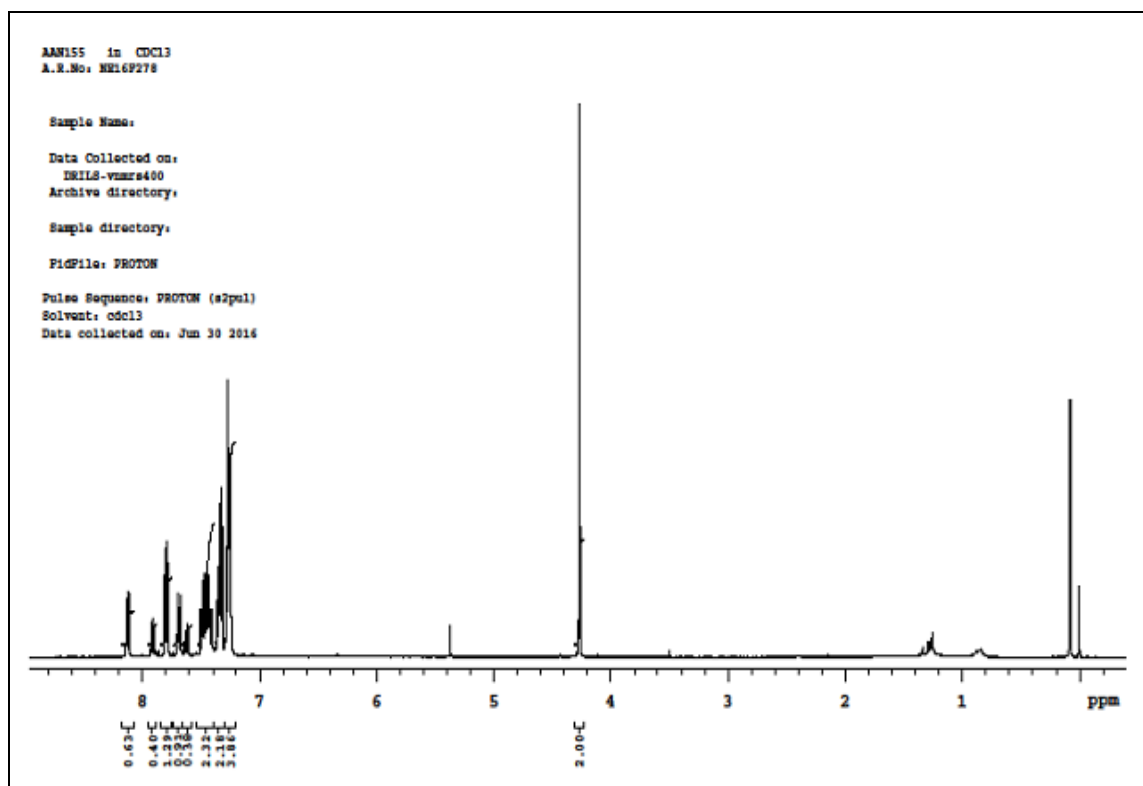


Figure S7. IR spectrum of compound 18



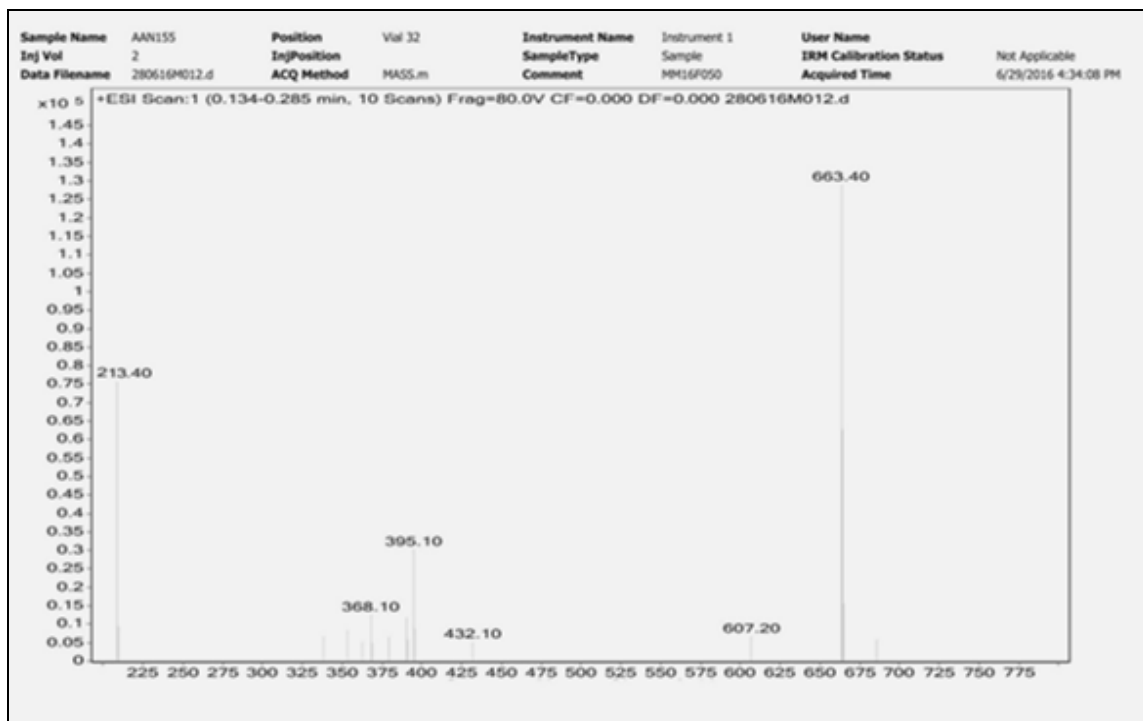
1-(3'-fluorophenyl)-2-phenylethanone

**28**

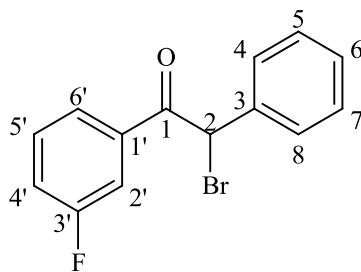


**Figure S8.**  $^1\text{H}$  NMR spectrum of compound **28**

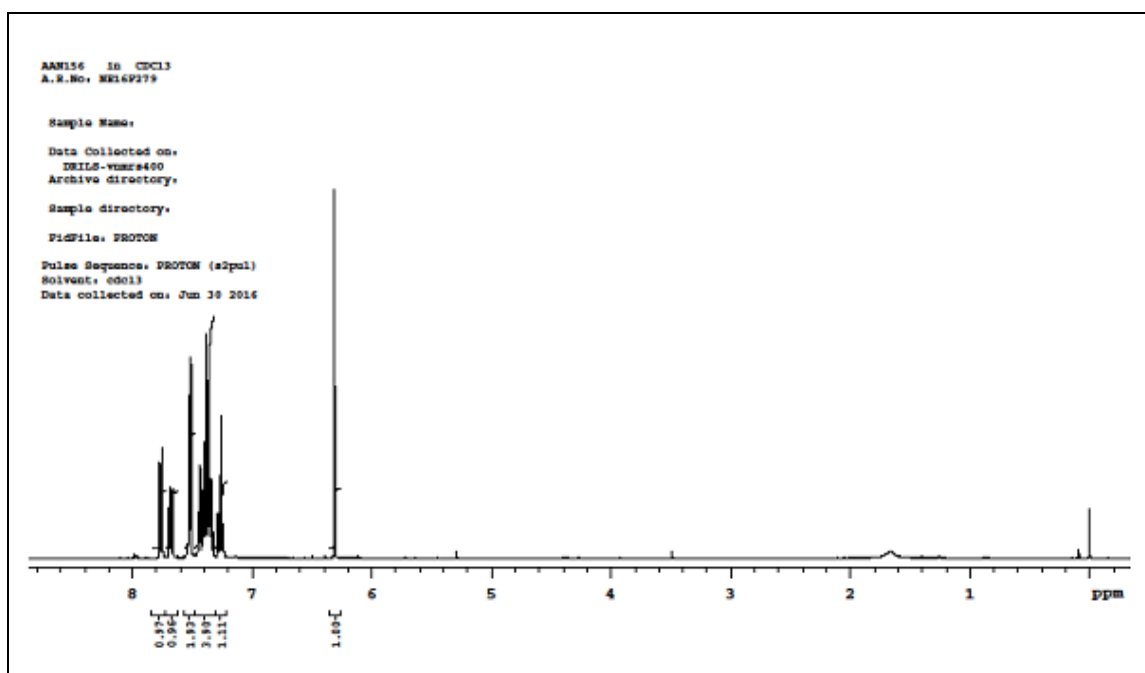




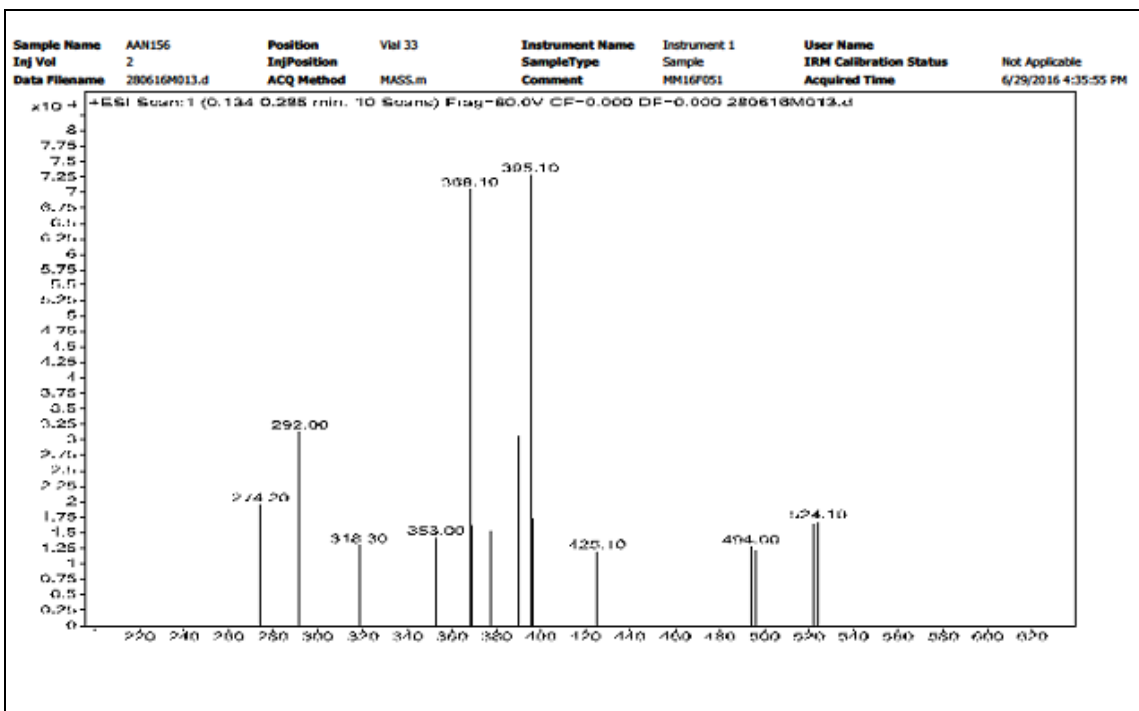
**Figure S9.** ESI\_MS spectrum of compound **28**



2-bromo-1-(3'-fluorophenyl)-2-phenylethanone  
**29**



**Figure S10.**  $^1\text{H}$  NMR spectrum of compound **29**



**Figure S11.** ESI\_MS spectrum of compound 29



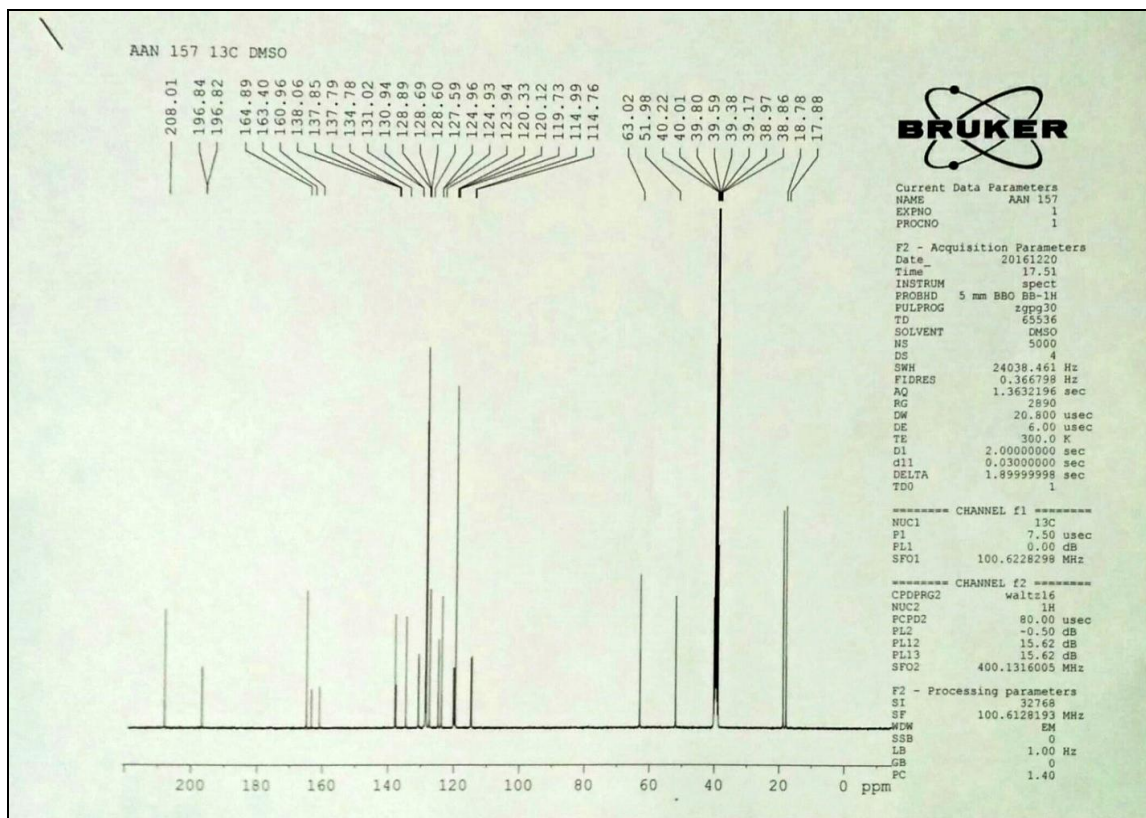


Figure S13.  $^{13}\text{C}$  NMR spectrum of compound 19

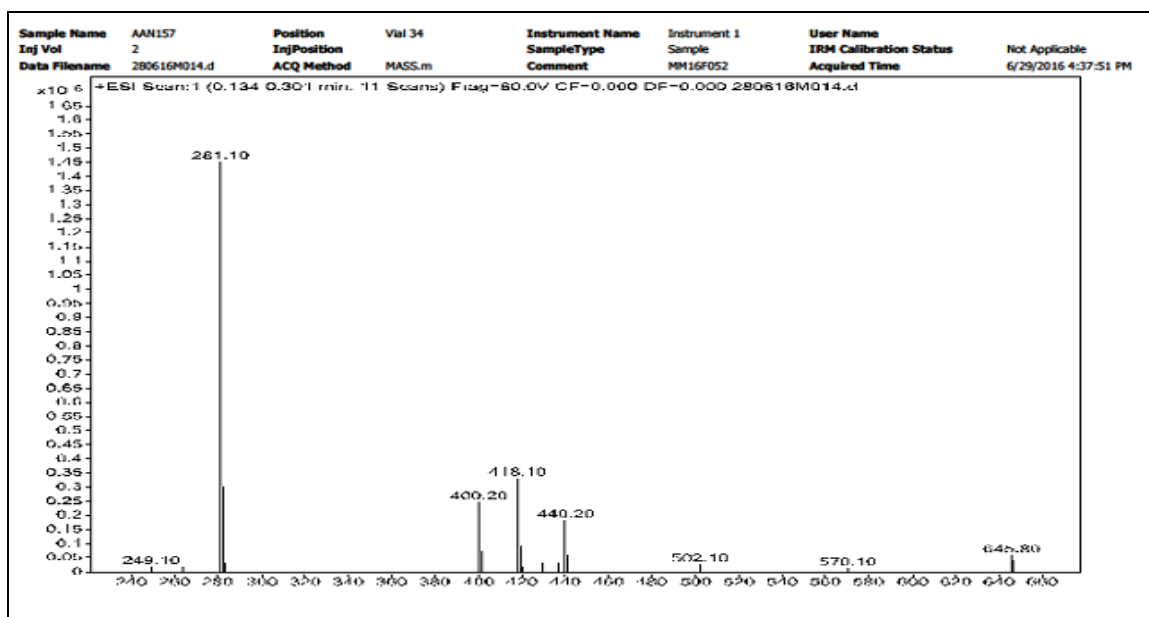


Figure S14. ESI\_MS spectrum of compound 19

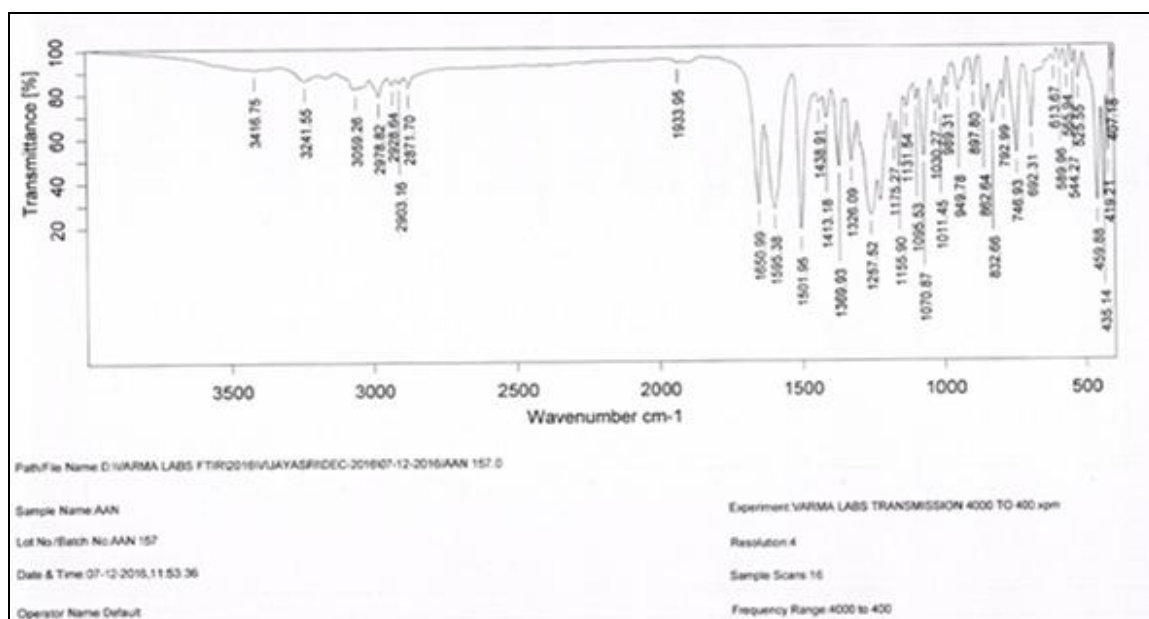


Figure S15. IR S spectrum of compound 19