Supplementary material

A novel approach to the synthesis of 1,3,4-thiadiazole-2-amine derivatives

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5-Phenyl-1,3,4-thiadiazol-2-amine (1a)

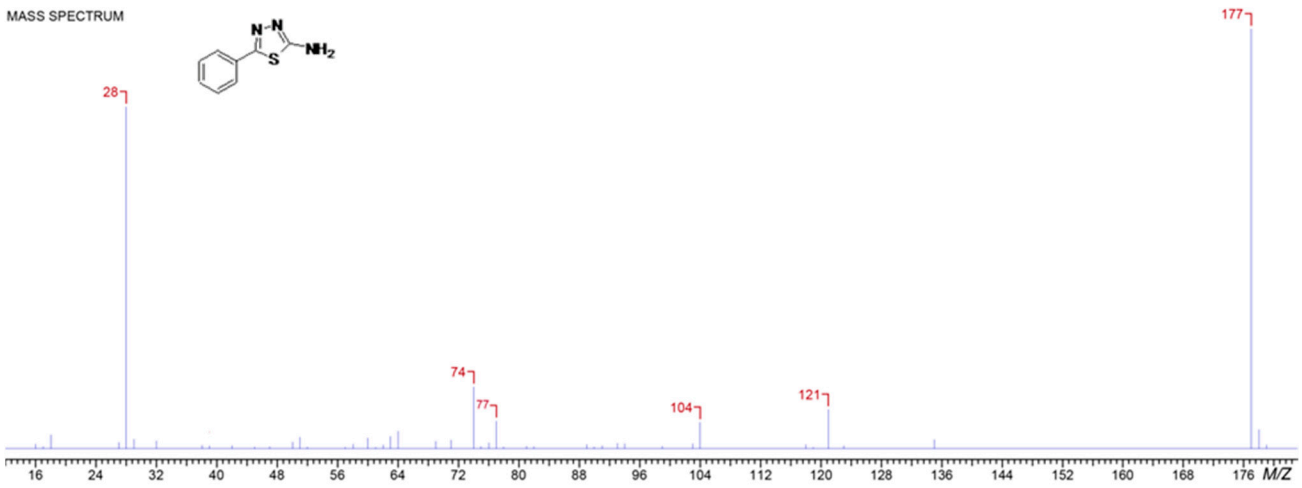


Figure S1. Mass spectrum of 5-phenyl-1,3,4-thiadiazol-2-amine (**1a**).

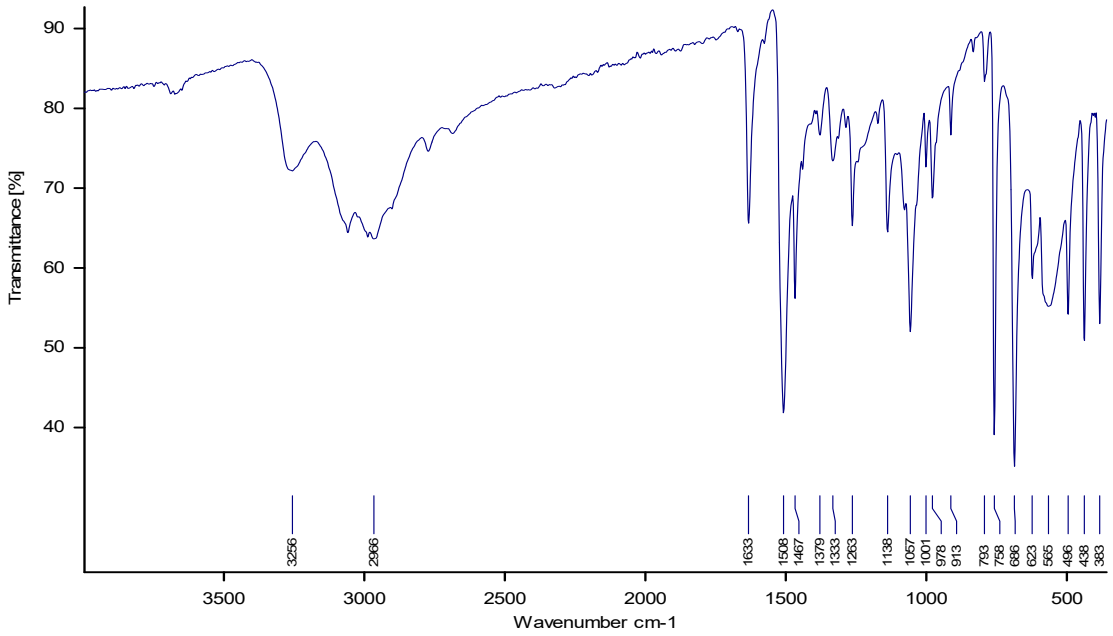


Figure S2. IR spectrum of 5-phenyl-1,3,4-thiadiazol-2-amine (**1a**).

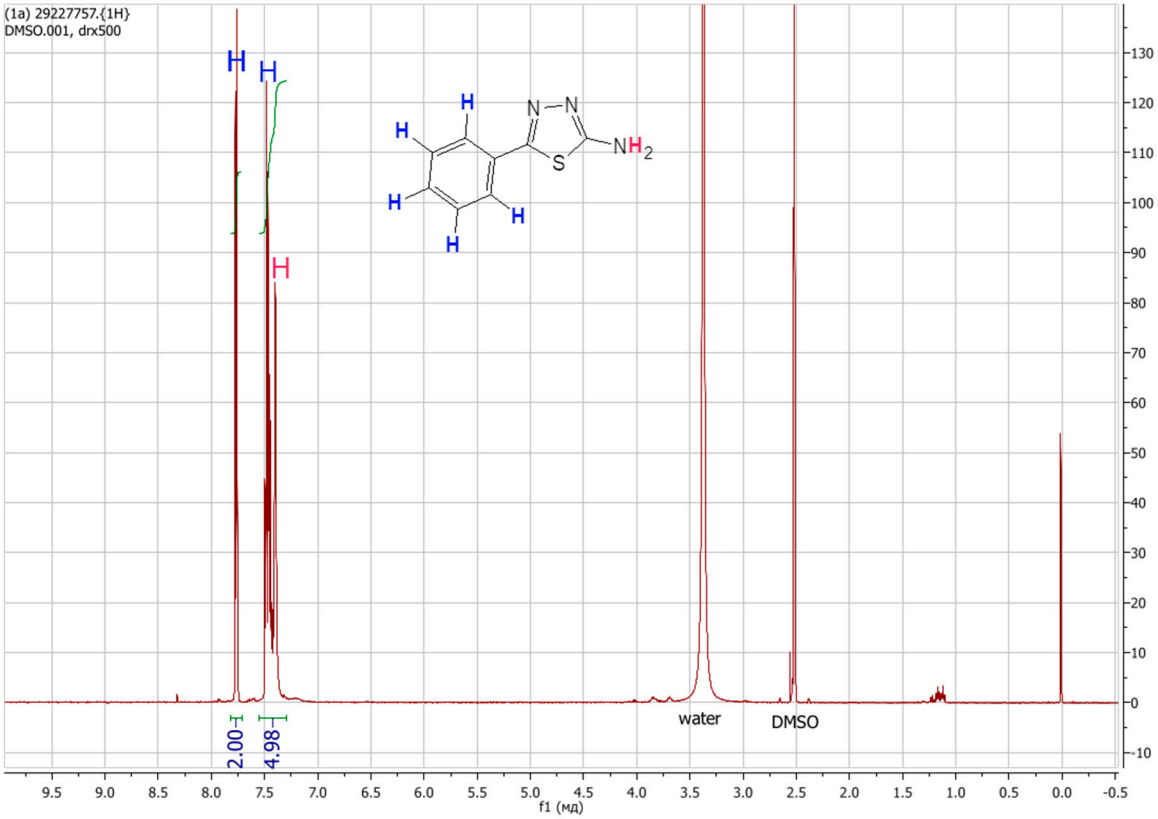


Figure S3. ^{1}H NMR spectrum (DMSO-d_6) of 5-phenyl-1,3,4-thiadiazol-2-amine (**1a**).

5-(2-Phenylethyl)-1,3,4-thiadiazol-2-amine (1b)

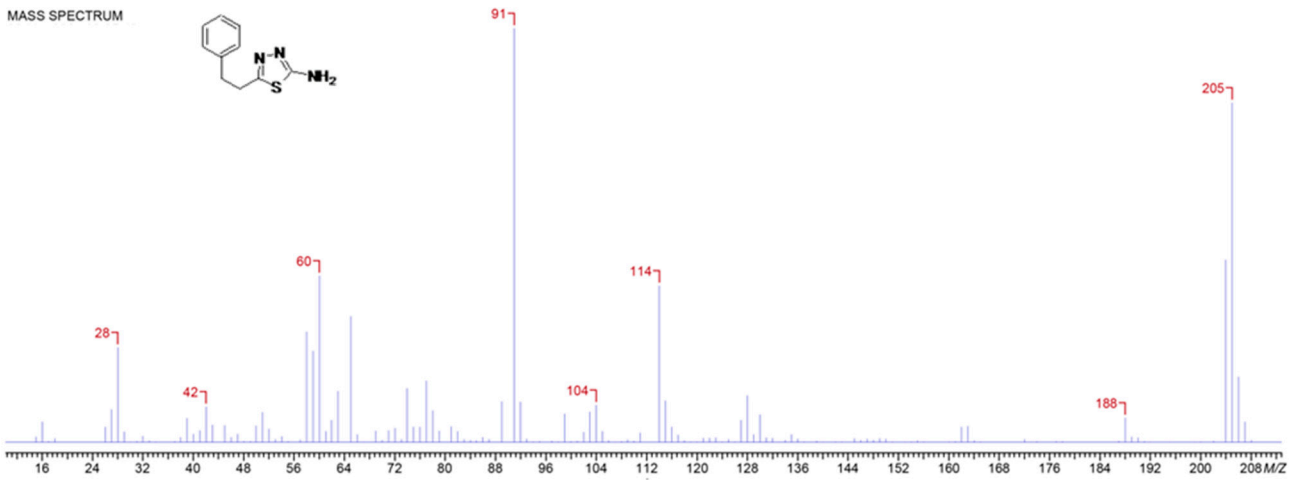


Figure S4. Mass spectrum of 5-(2-phenylethyl)-1,3,4-thiadiazol-2-amine (**1b**).

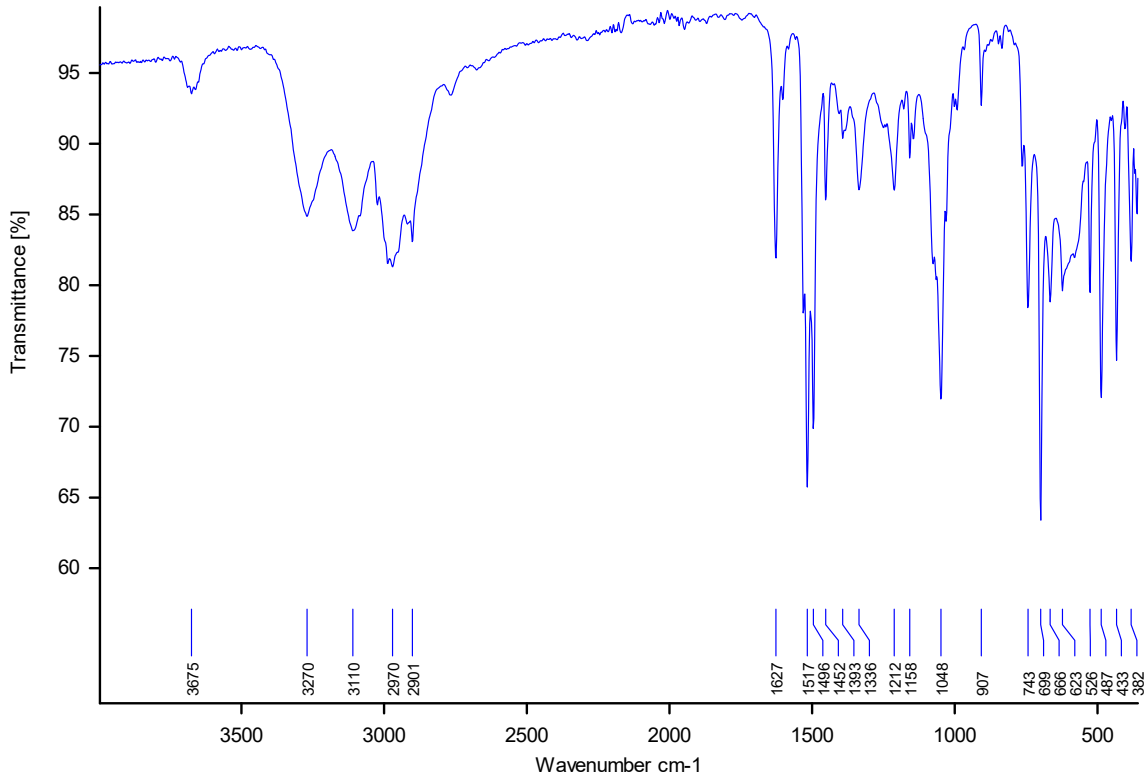
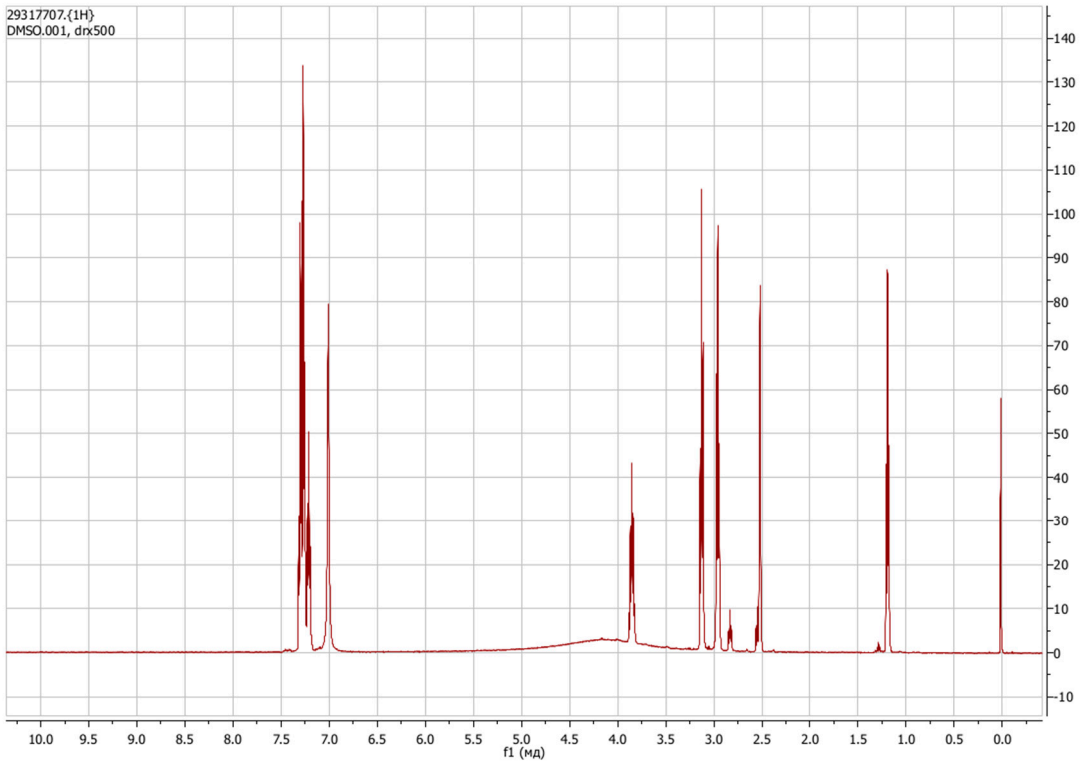
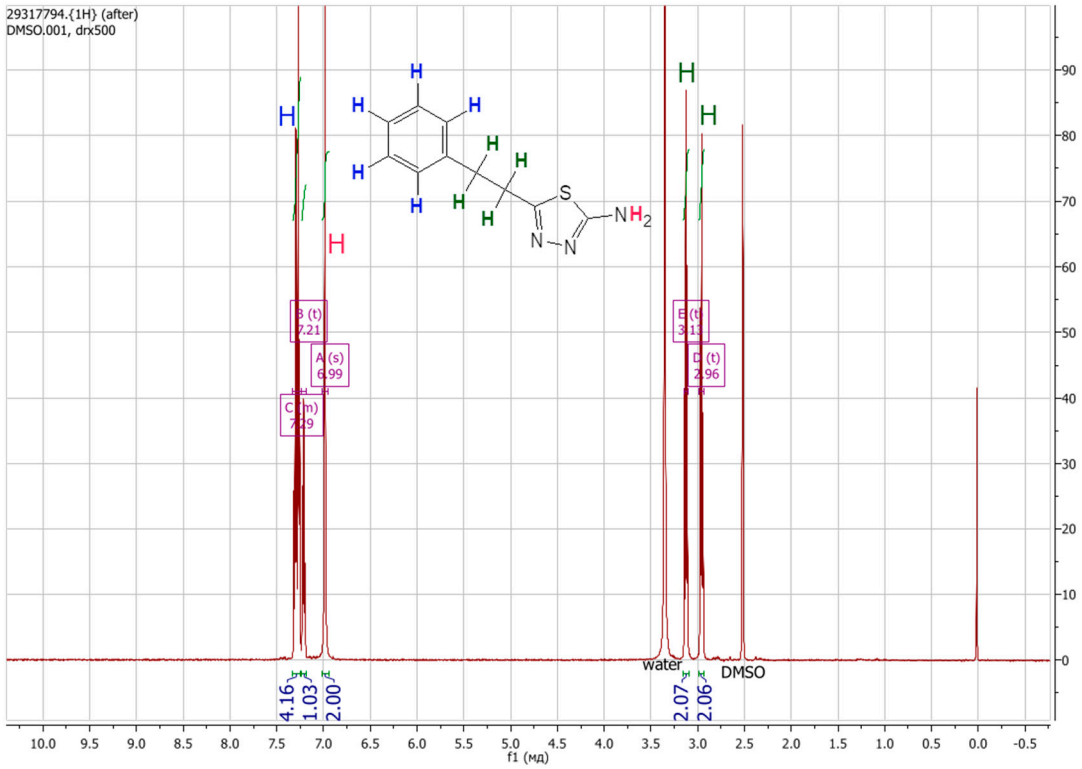


Figure S5. IR spectrum of 5-(2-phenylethyl)-1,3,4-thiadiazol-2-amine (**1b**).



(a)



(b)

Figure S6. ^{1}H NMR spectrum (DMSO-d_6) of 5-(2-phenylethyl)-1,3,4-thiadiazol-2-amine (**1b**) before (a) and after (b) the treatment by hydrochloric acid solution.

5-(Phenoxymethyl)-1,3,4-thiadiazol-2-amine (1c)

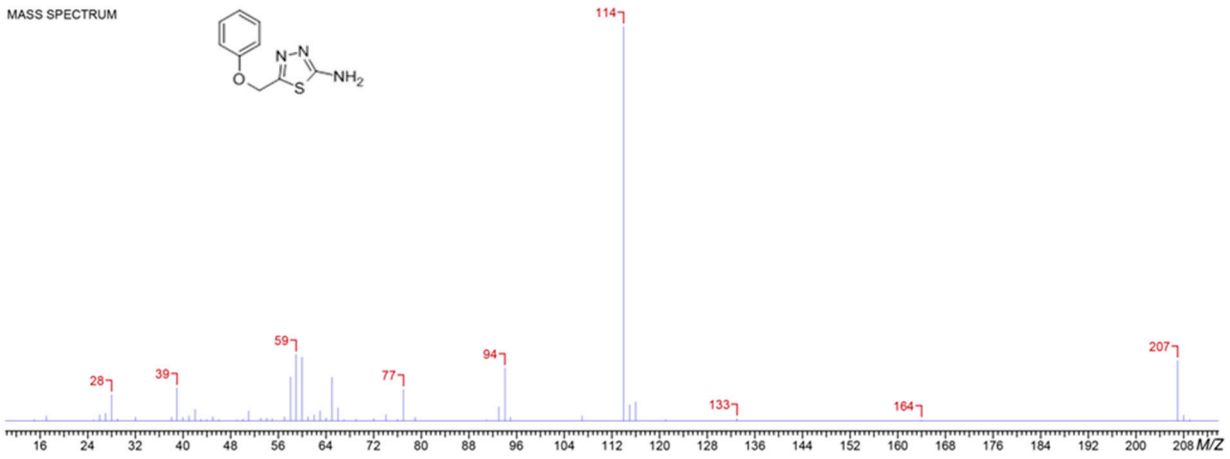


Figure S7. Mass spectrum of 5-(phenoxymethyl)-1,3,4-thiadiazol-2-amine (**1c**).

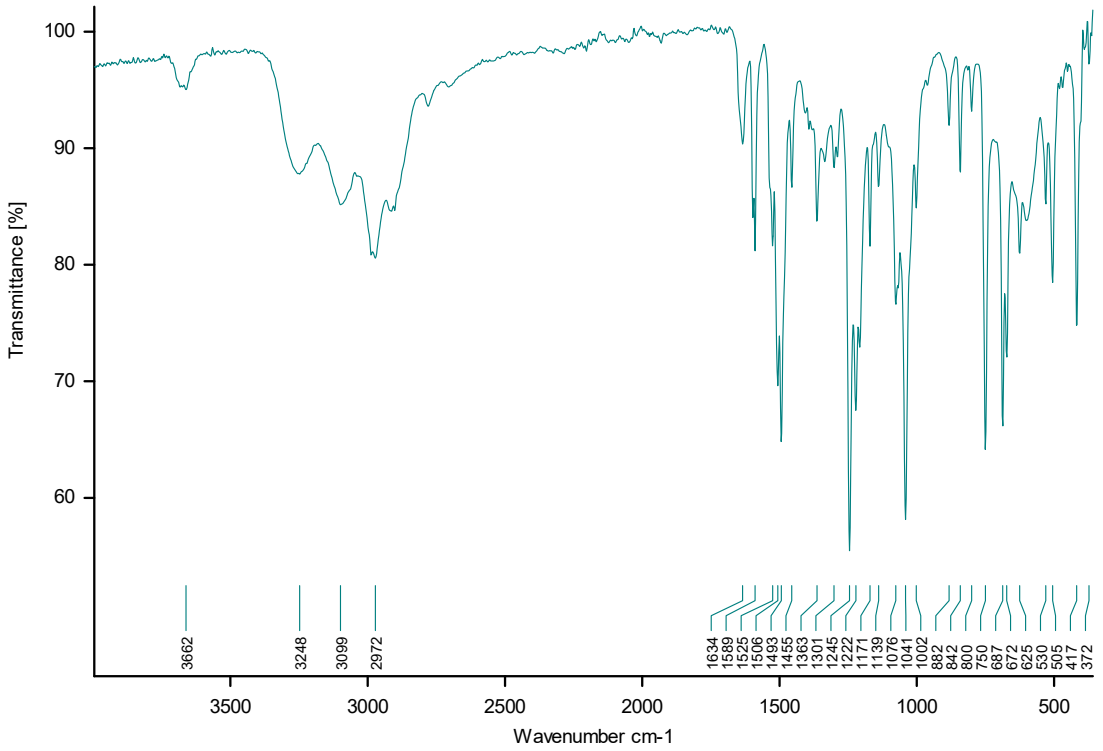


Figure S8. IR spectrum of 5-(phenoxymethyl)-1,3,4-thiadiazol-2-amine (**1c**).

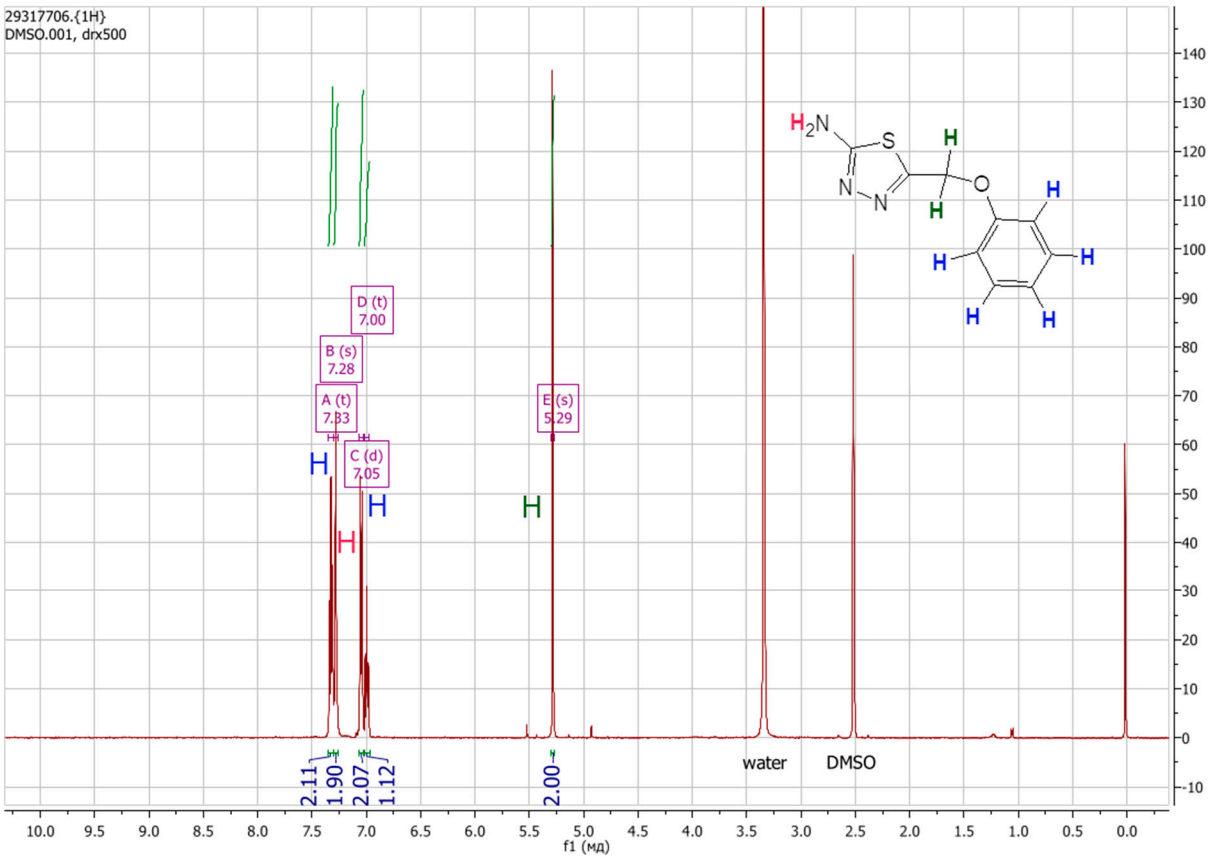


Figure S9. ^{1}H NMR spectrum (DMSO-d_6) of 5-(phenoxymethyl)-1,3,4-thiadiazol-2-amine (**1c**).

5-[(Naphthalen-2-yl)methyl]-1,3,4-thiadiazol-2-amine (1d)

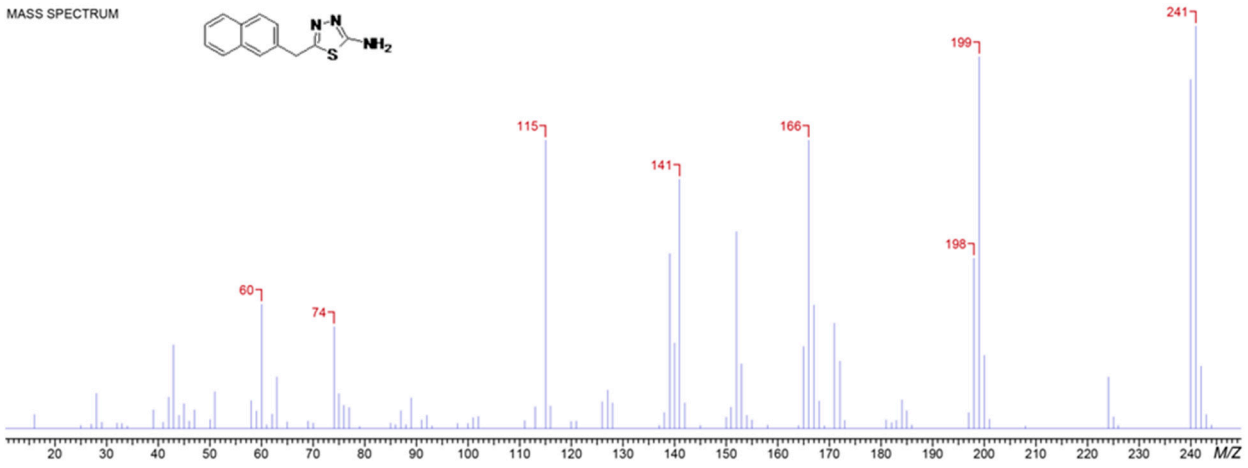


Figure S10. Mass spectrum of 5-[(naphthalen-2-yl)methyl]-1,3,4-thiadiazol-2-amine (**1d**)

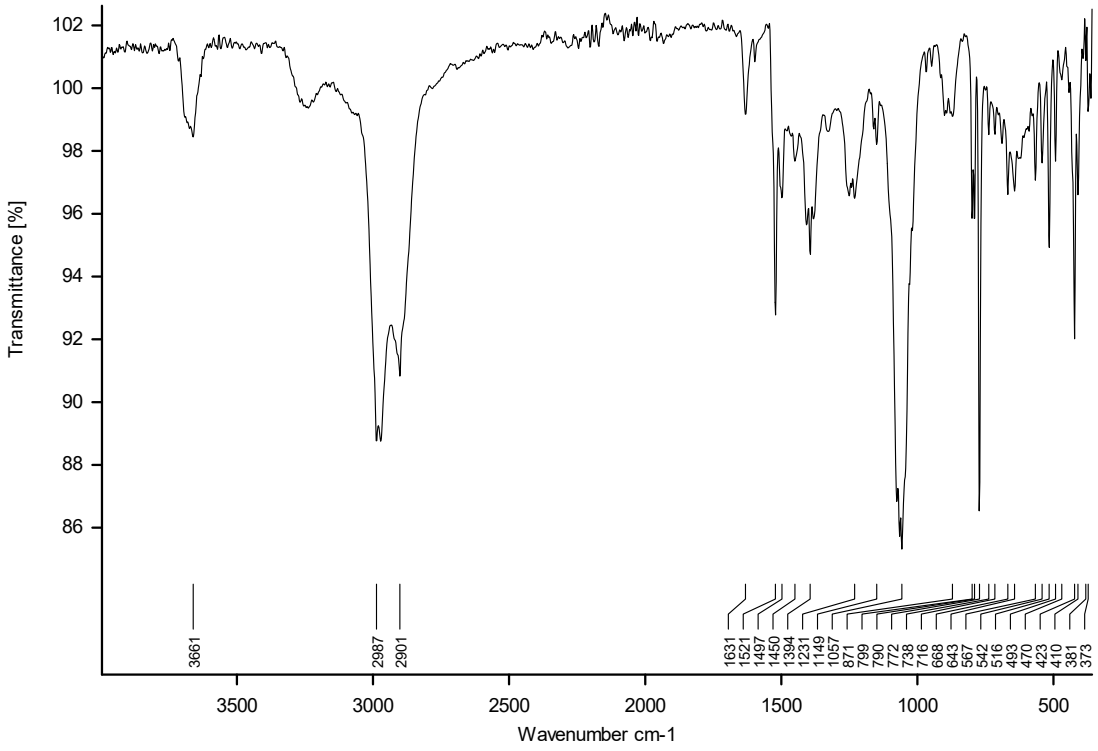


Figure S11. IR spectrum of 5-[(naphthalen-2-yl)methyl]-1,3,4-thiadiazol-2-amine (**1d**)

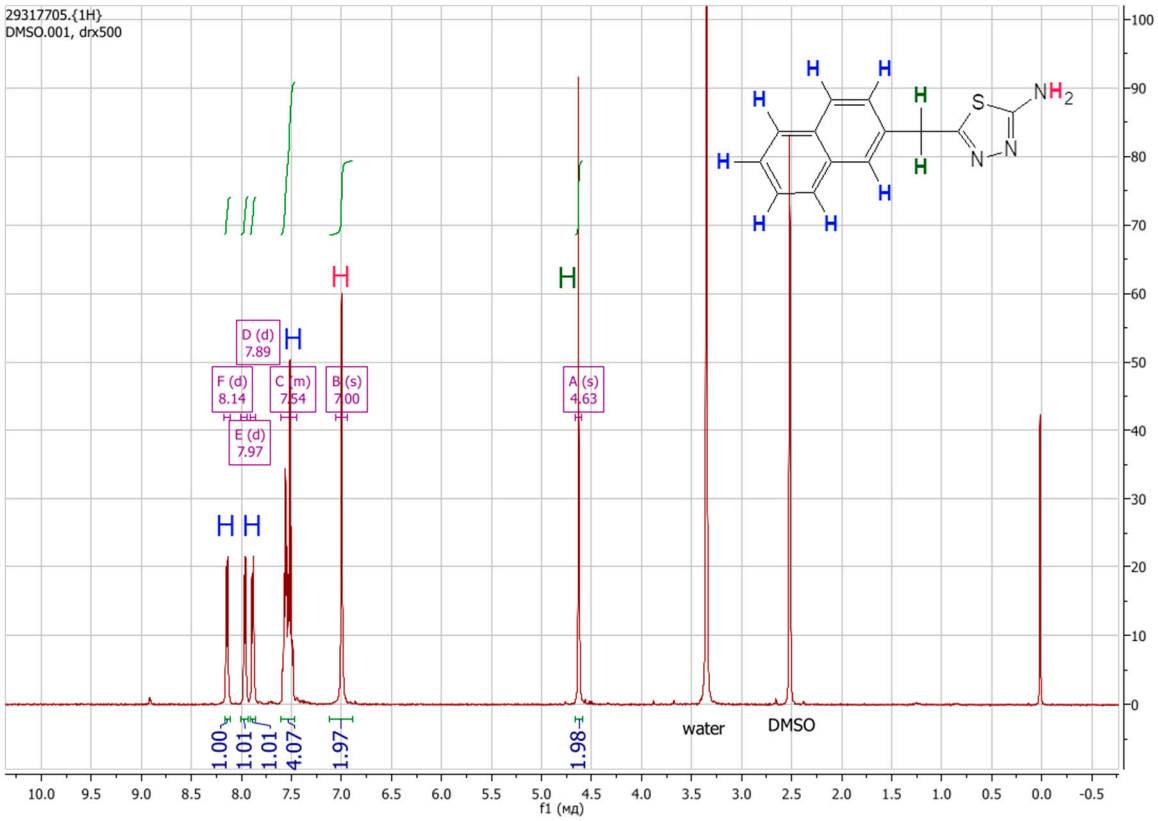


Figure S12. ^{1}H NMR spectrum (DMSO-d_6) of 5-[(naphthalen-2-yl)methyl]-1,3,4-thiadiazol-2-amine (**1d**)

5,5'-(Butane-1,4-diyl)di(1,3,4-thiadiazol-2-amine) (1e)

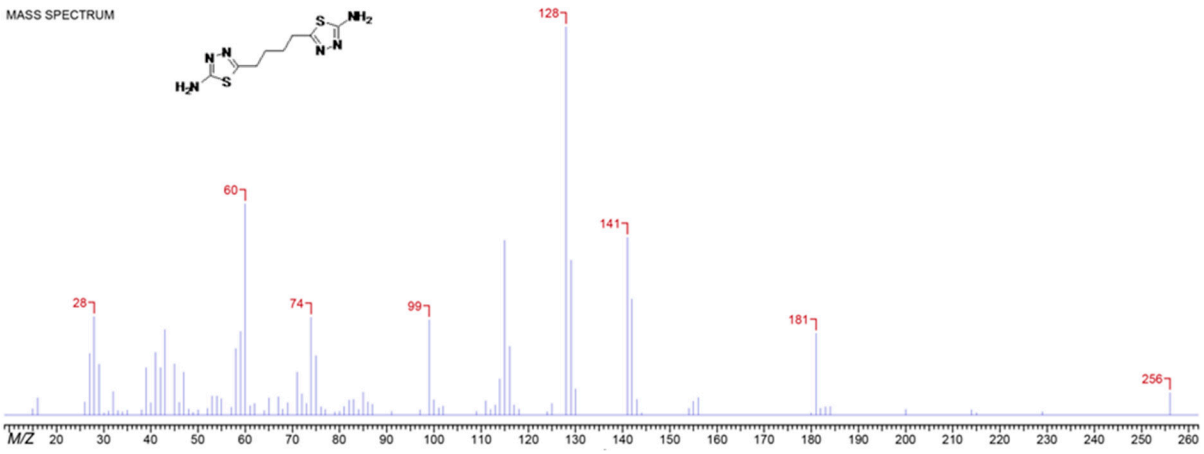


Figure S13. Mass spectrum of 5,5'-(butane-1,4-diyl)di(1,3,4-thiadiazol-2-amine) (**1e**)

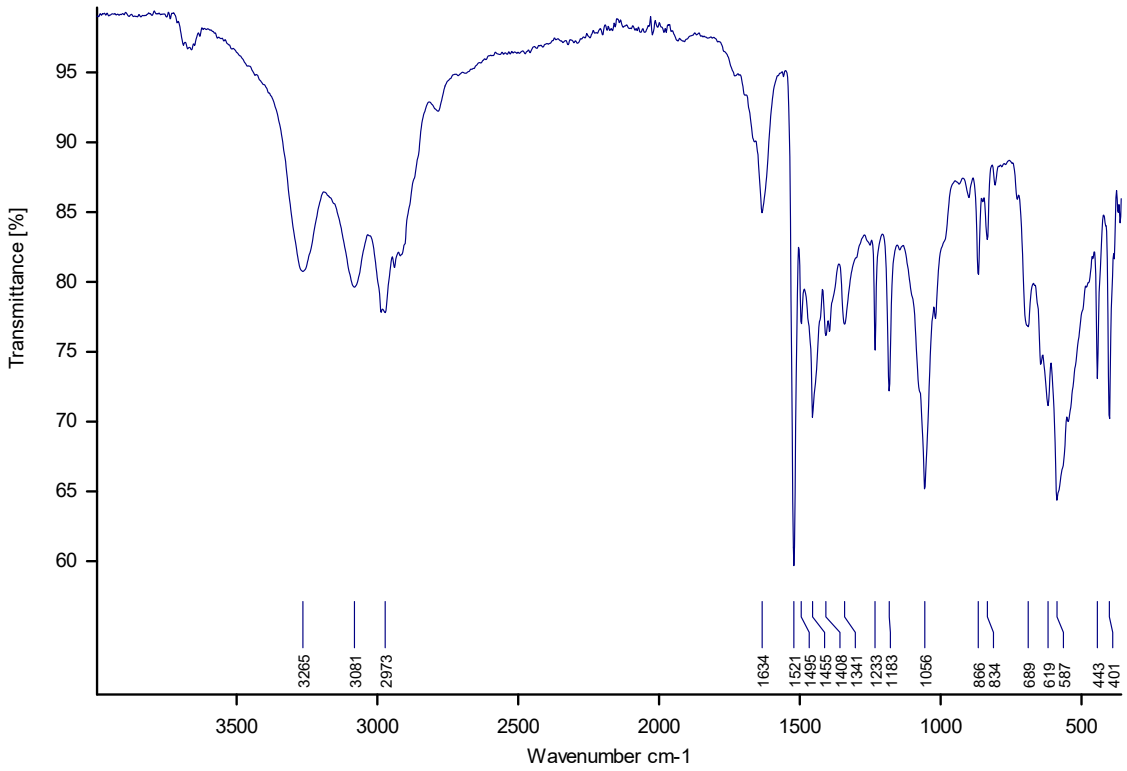


Figure S14. IR spectrum of 5,5'-(butane-1,4-diyl)di(1,3,4-thiadiazol-2-amine) (**1e**)

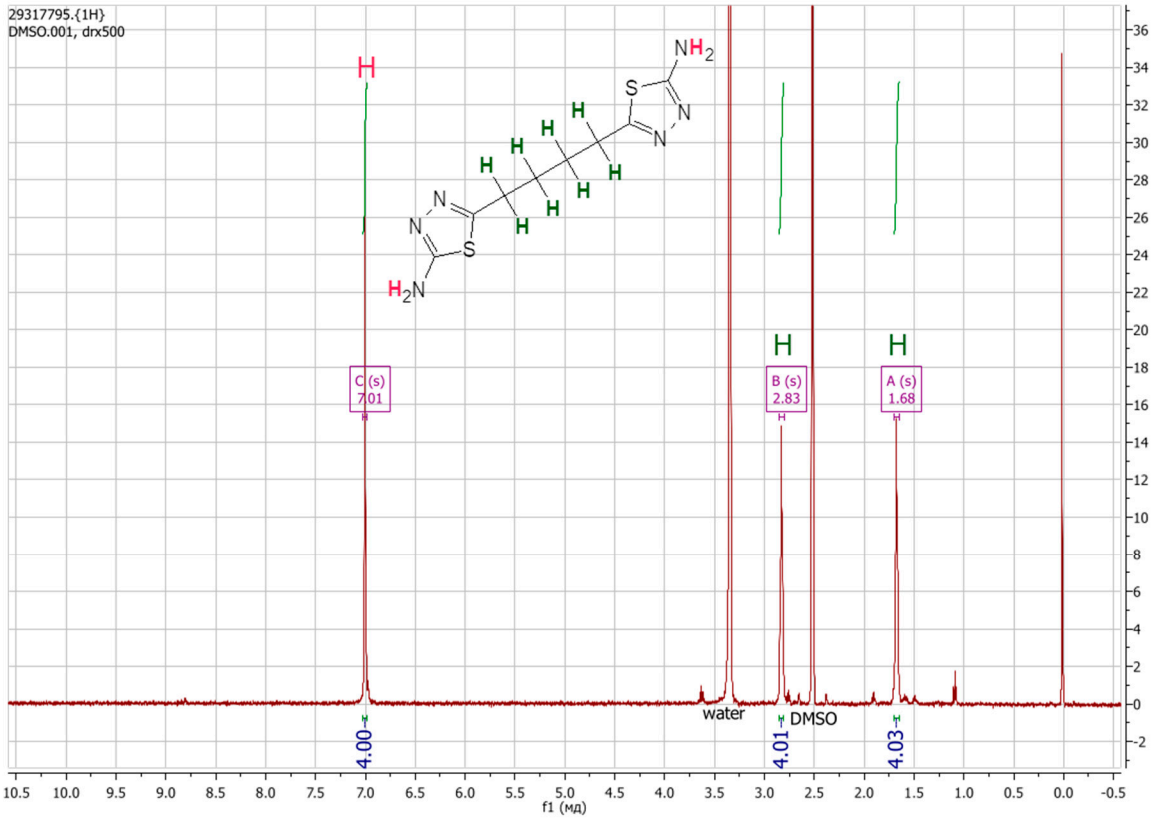


Figure S15. ^{1}H NMR spectrum (DMSO-d_6) of 5,5'-(butane-1,4-diyl)di(1,3,4-thiadiazol-2-amine) (**1e**)

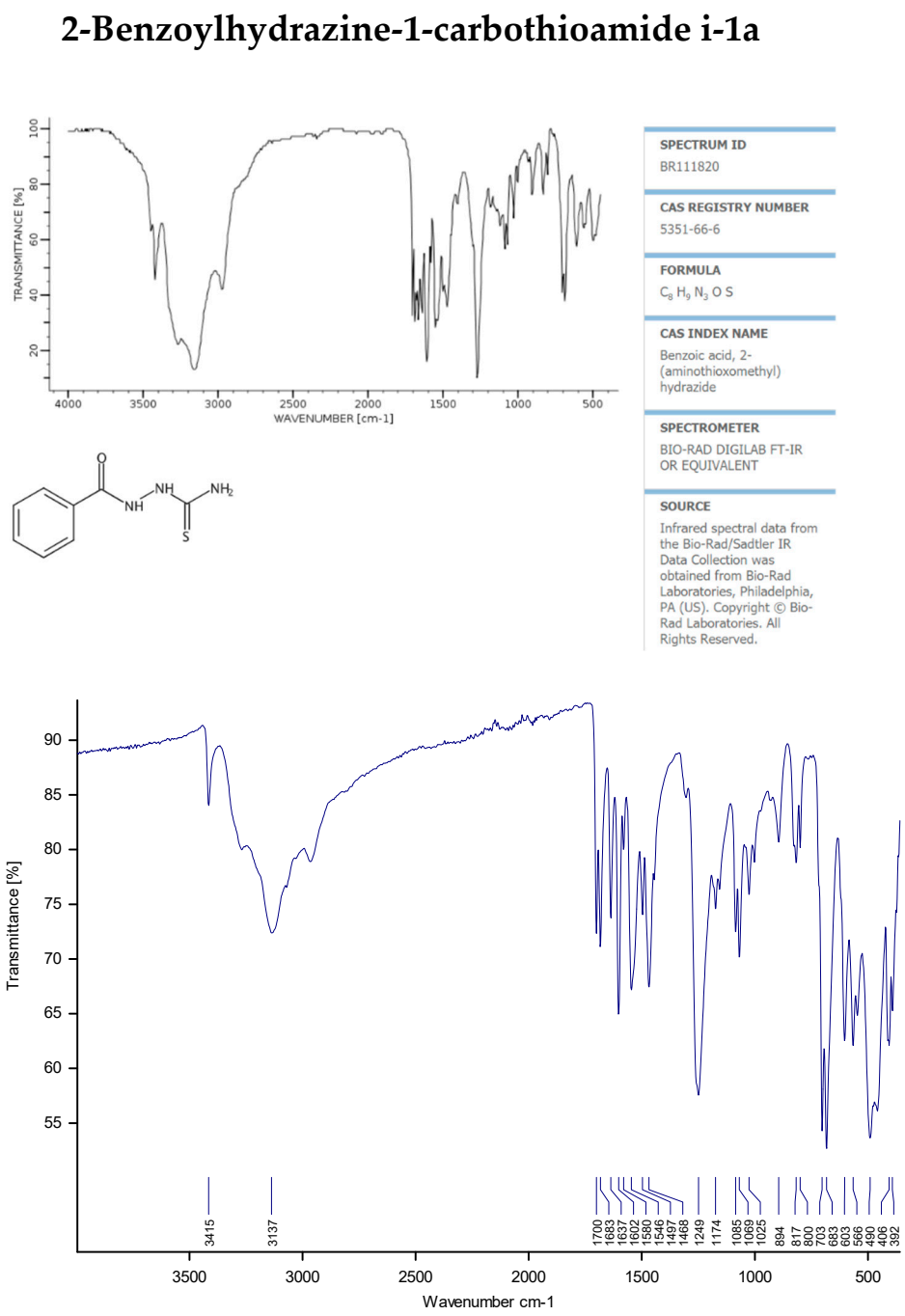


Figure S16. IR spectrum of 2-benzoylhydrazine-1-carbothioamide **(i-1a**) and its comparison with BIO-RAD data base (accessed through the Sci-Finder: https://scifinder.cas.org)

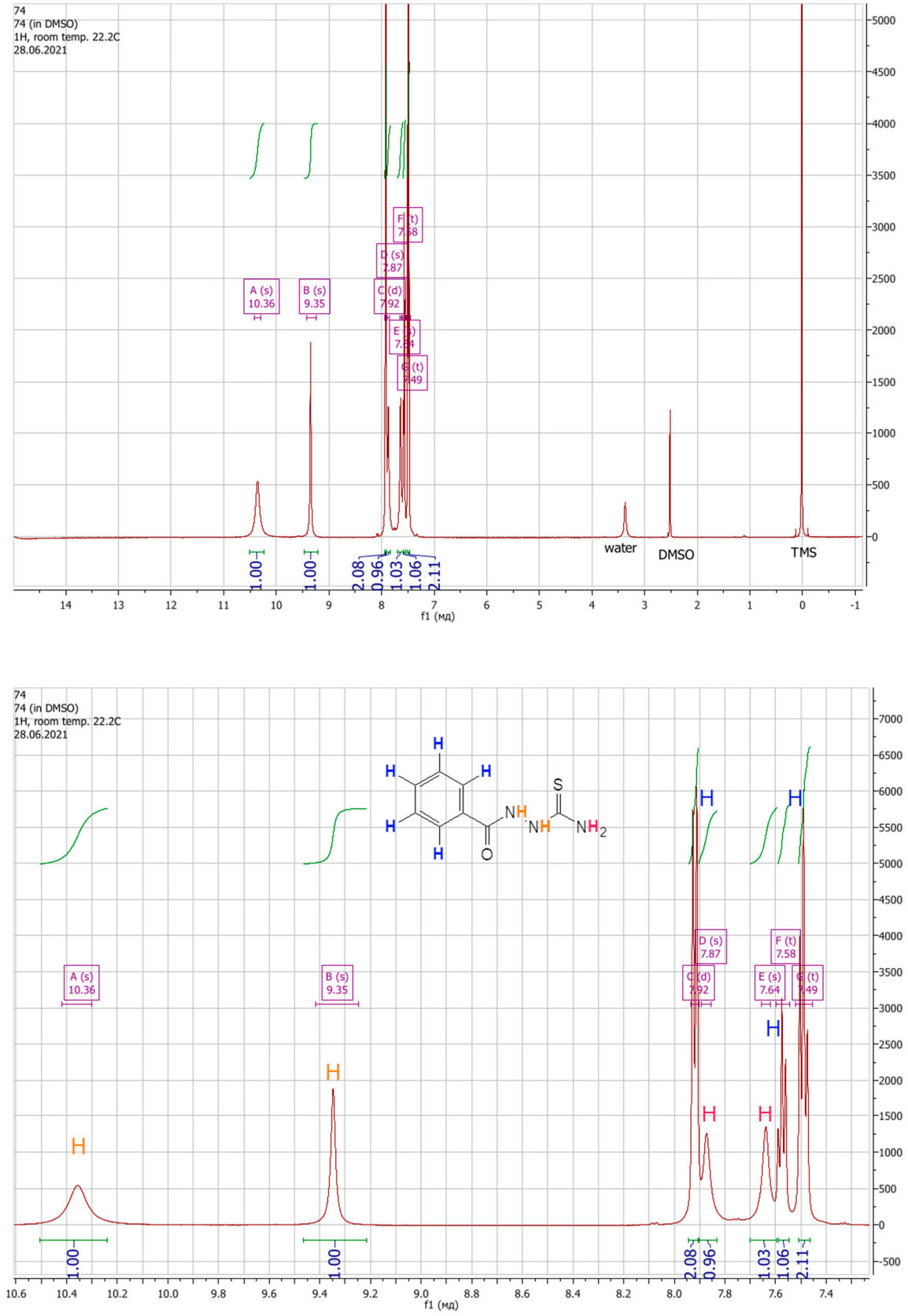


Figure S17. ^{1}H NMR spectrum (DMSO-d_6) of 2-benzoylhydrazine-1-carbothioamide (**i-1a**).