

Supporting Information

Effects of Sulfane Sulfur Content in Benzyl Polysulfides on Thiol-Triggered H₂S Release and Cell Proliferation

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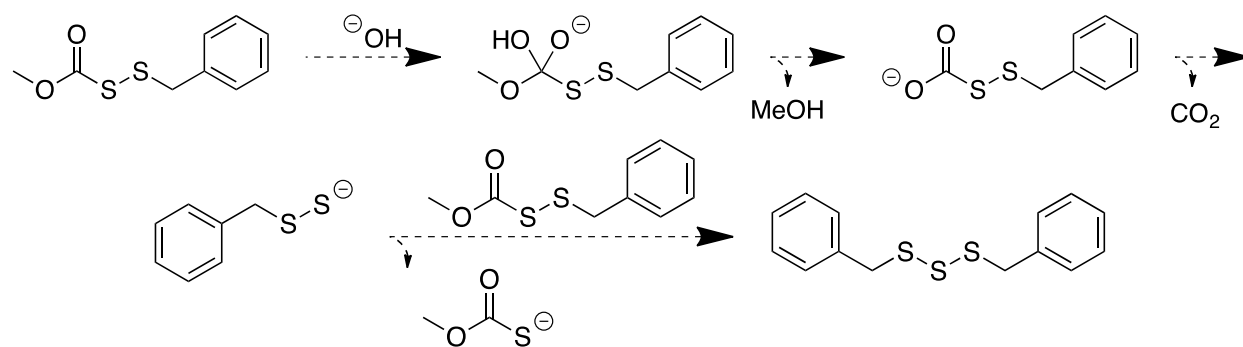
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Scheme S1. Proposed reaction mechanism for trisulfide synthesis via hydroxide-mediated decomposition of sulfenyl thiocarbonates.

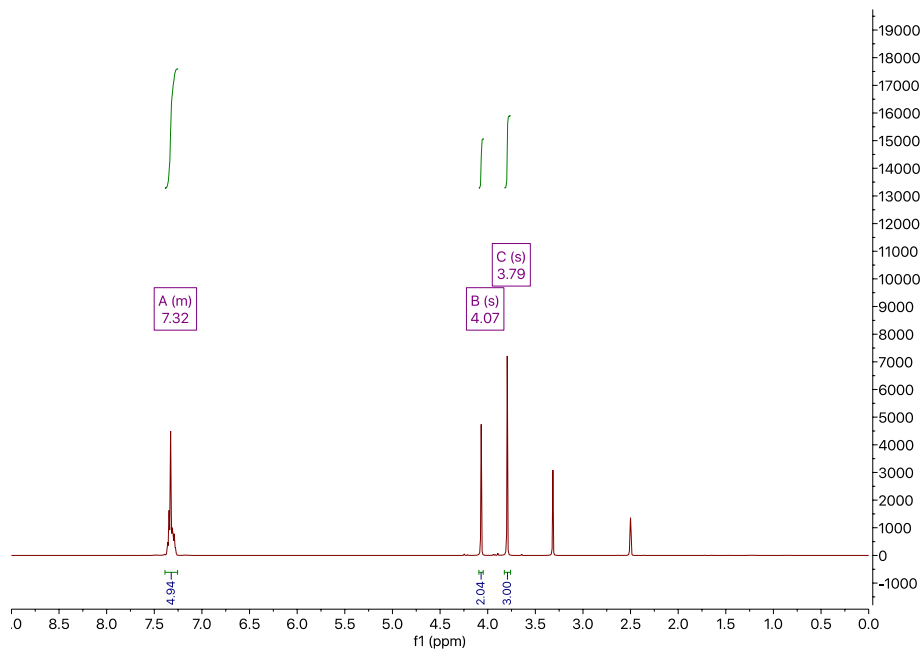


Figure S1. ^1H NMR (500 MHz, DMSO-d_6) spectrum of SS-benzyl *O*-methyl carbonodithioperoxoate)

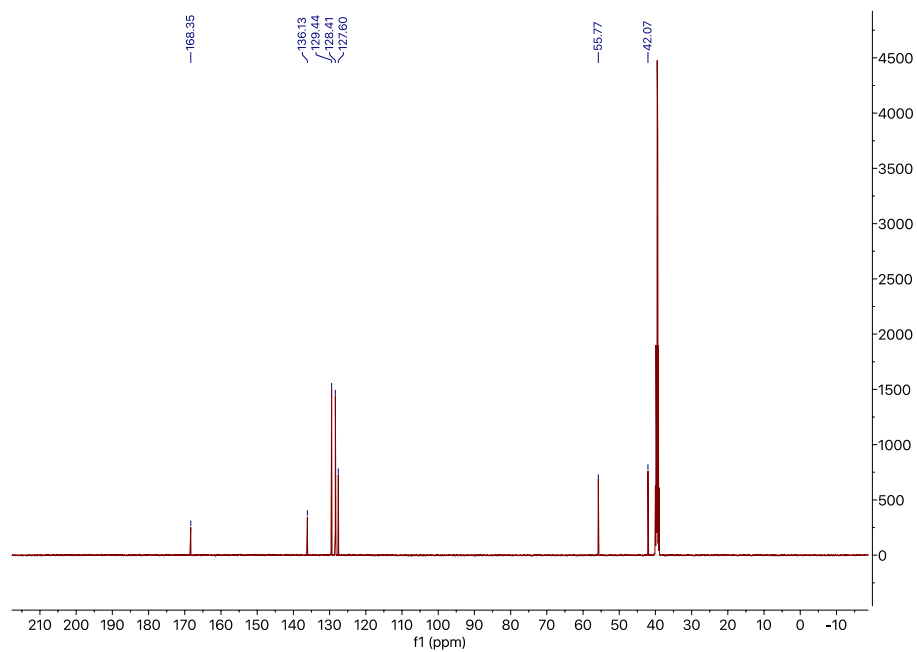


Figure S2. $^{13}\text{C}\{^1\text{H}\}$ NMR (126 MHz, DMSO-d_6) spectrum of SS-benzyl *O*-methyl carbonodithioperoxoate)

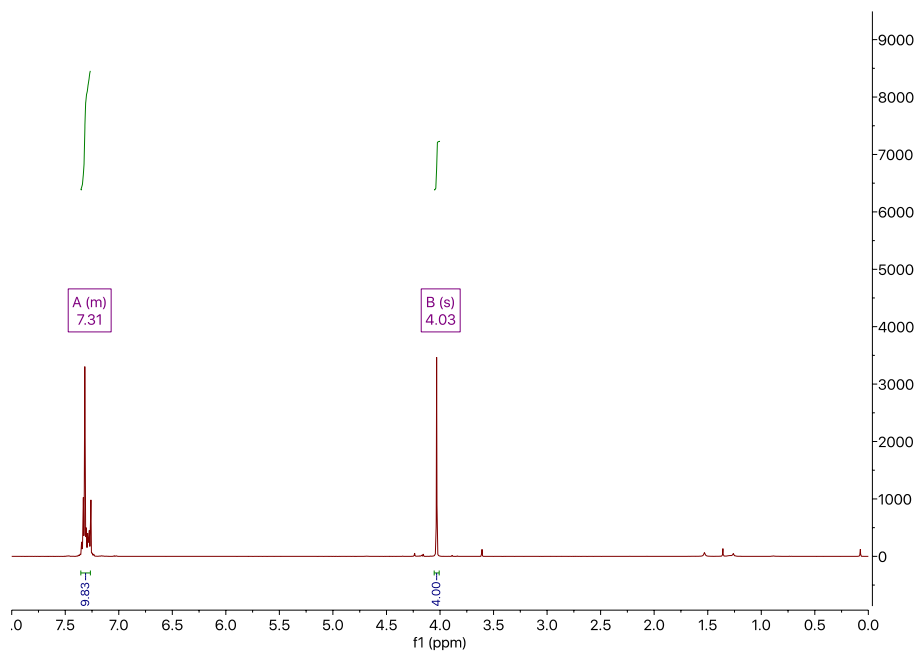


Figure S3. ^1H NMR (500 MHz, CDCl_3) spectrum of Bn_2S_3

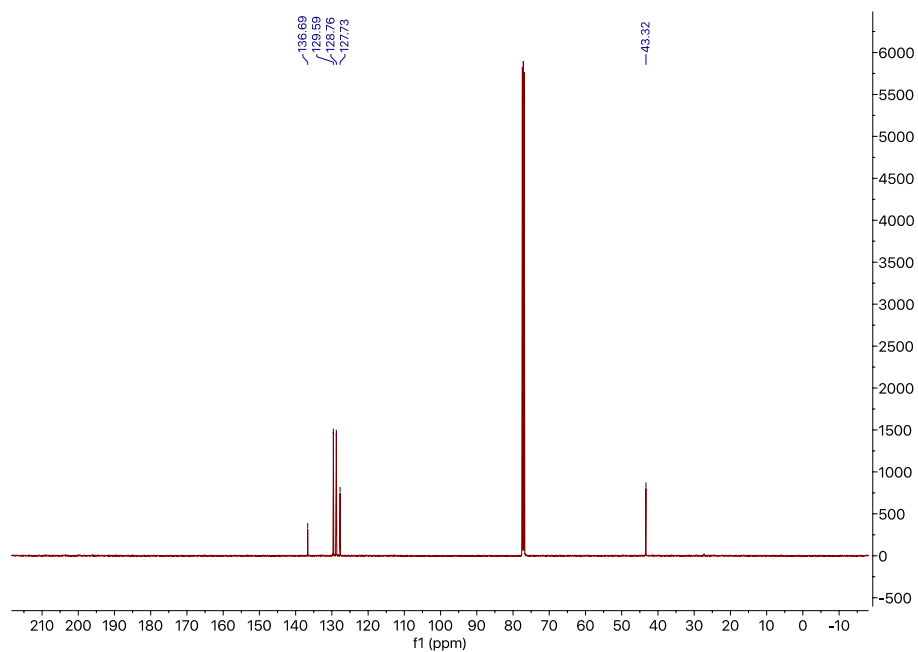


Figure S4. $^{13}\text{C}\{^1\text{H}\}$ NMR (126 MHz, CDCl_3) spectrum of Bn_2S_3

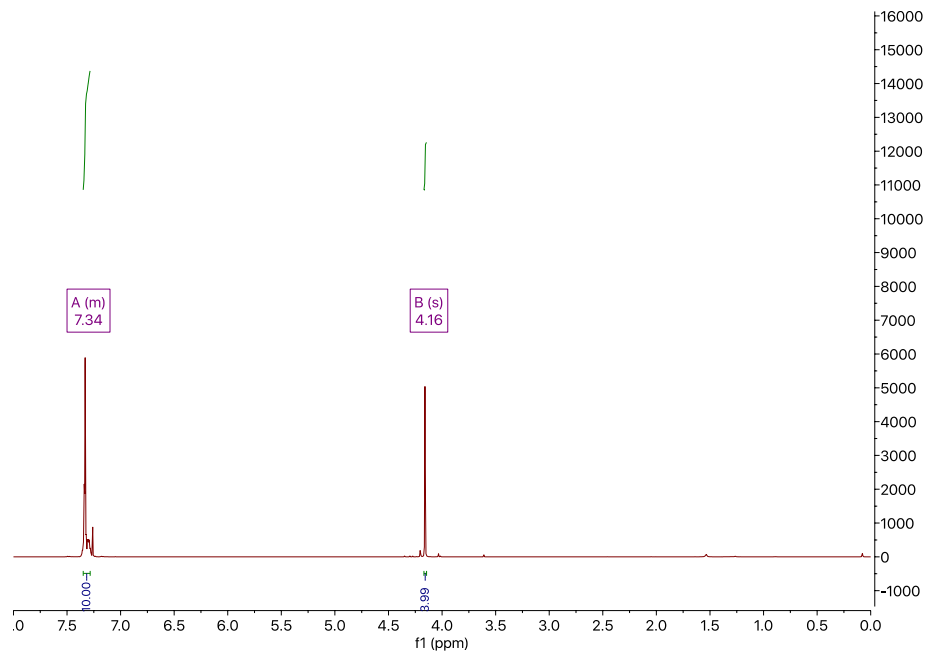


Figure S5. ^1H NMR (500 MHz, CDCl_3) spectrum of Bn_2S_4

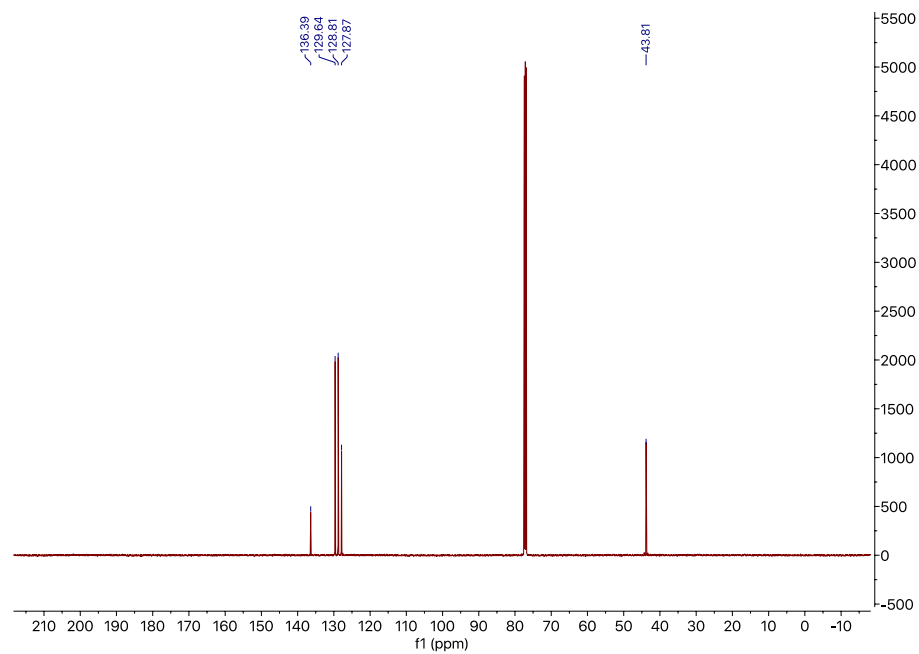


Figure S6. $^{13}\text{C}\{^1\text{H}\}$ NMR (126 MHz, CDCl_3) spectrum of Bn_2S_4

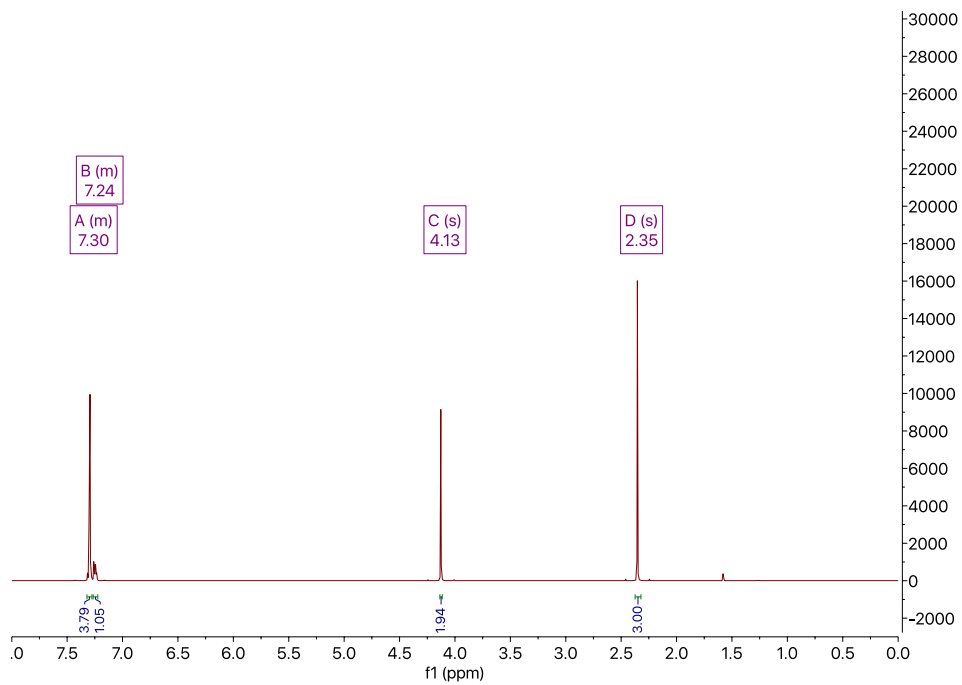


Figure S7. ^1H NMR (600 MHz, CDCl_3) spectrum of *S*-benzyl ethanethioate

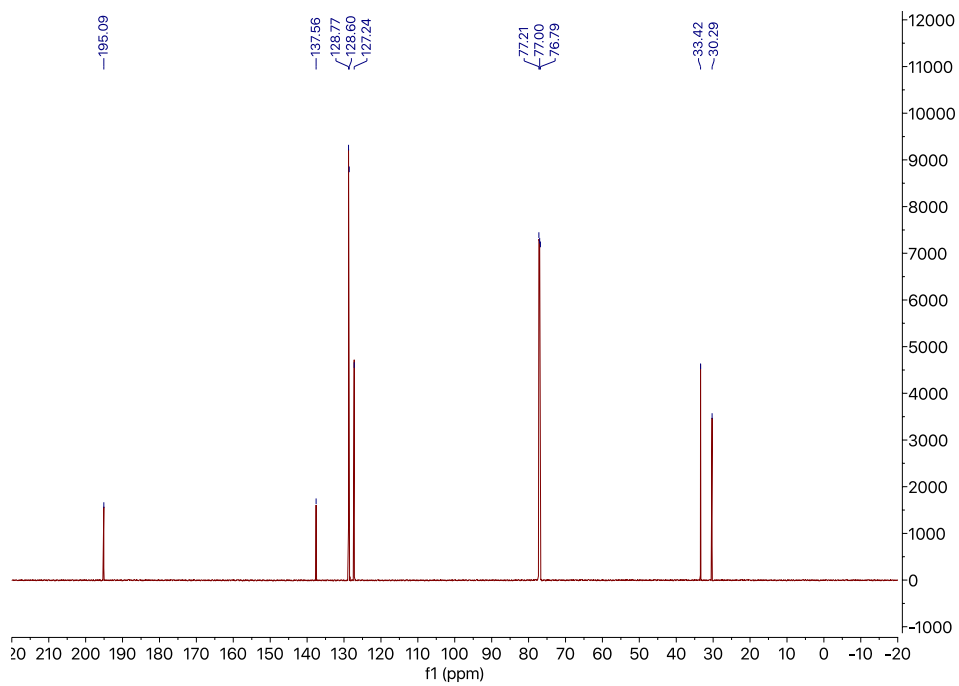


Figure S8. ^{13}C $\{^1\text{H}\}$ NMR (126 MHz, CDCl_3) spectrum of *S*-benzyl ethanethioate

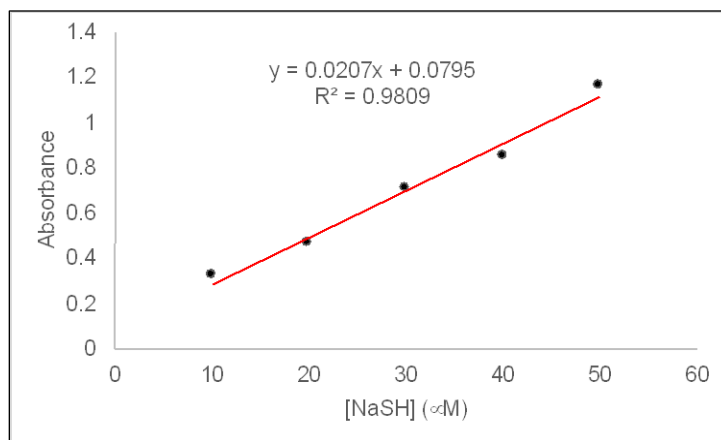


Figure S9. MBA calibration curve generated using known concentrations of NaSH in the presence of 500 μM cysteine.

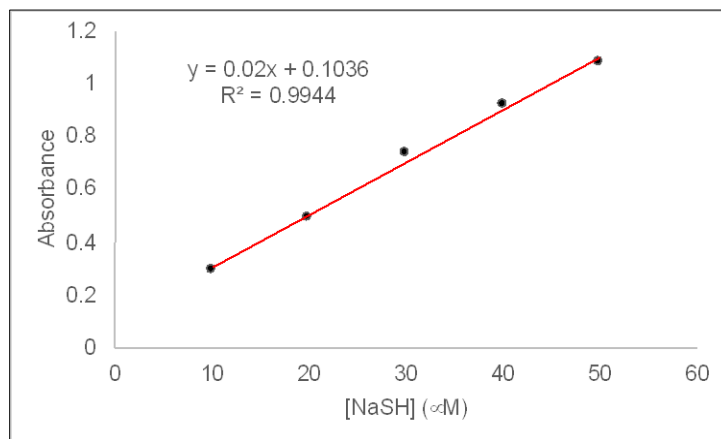


Figure S10. MBA calibration curve generated using known concentrations of NaSH in the presence of 500 μM GSH.

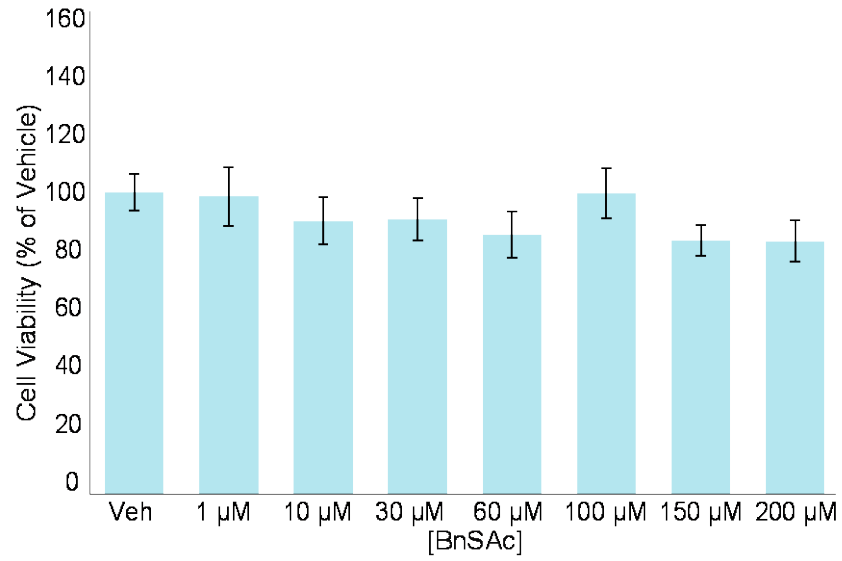


Figure S11. Pooled average of cell proliferation data under **BnSAc** treatment. (n=2)

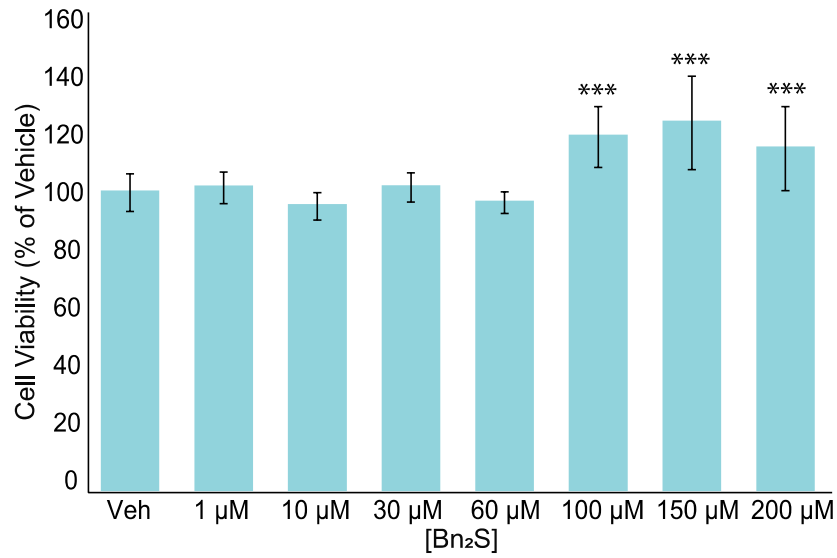


Figure S12. Pooled average of cell proliferation data under **Bn₂S** treatment. (n=4)

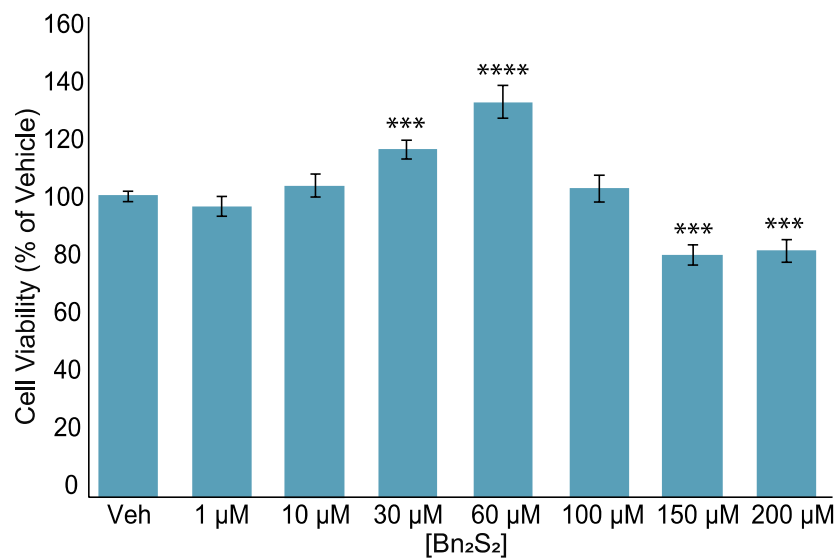


Figure S13. Pooled average of cell proliferation data under Bn_2S_2 treatment. (n=5)

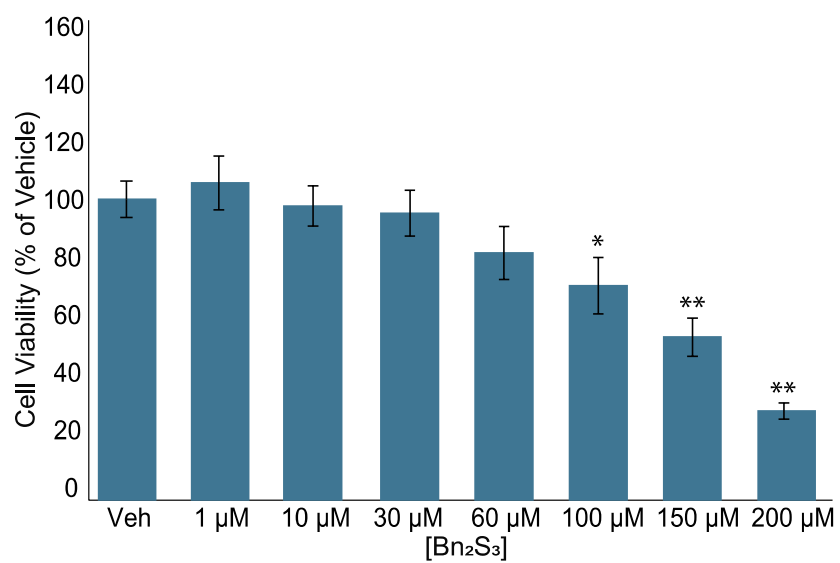


Figure S14. Pooled average of cell proliferation data under Bn_2S_3 treatment. (n=3)

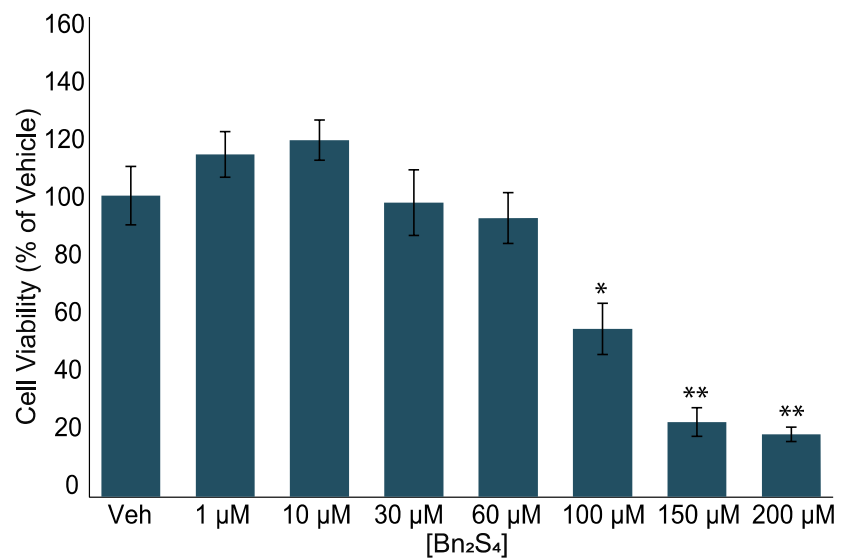


Figure S15. Pooled average of cell proliferation data under **Bn₂S₄** treatment. (n=3)

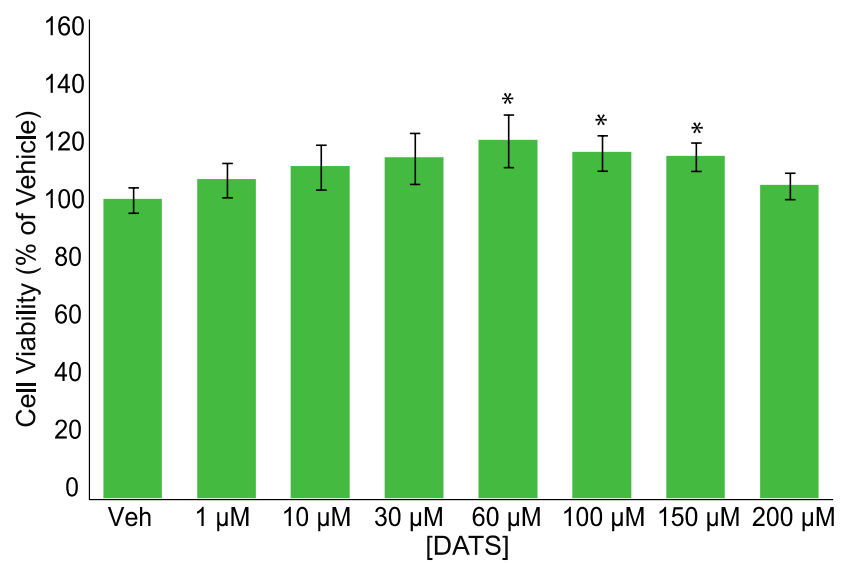


Figure S16. Pooled average of cell proliferation data under **DATS** treatment. (n=4)