

## *Supporting information*

# **Synthesis of $\gamma$ -glutamyl derivatives of sulfur-containing amino acids in a multigram scale *via* a two-steps, one-pot procedure**

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### **Contents:**

<sup>1</sup>H NMR spectrum of crude compound **12** **Fig. S1**

APT NMR spectrum of crude compound **12** **Fig. S2**

HSQC NMR spectrum of crude compound **12** **Fig. S3**

HMBC NMR spectrum of crude compound **12** **Fig. S4**

Colorimetric assay for hydrazine **Fig. S5**



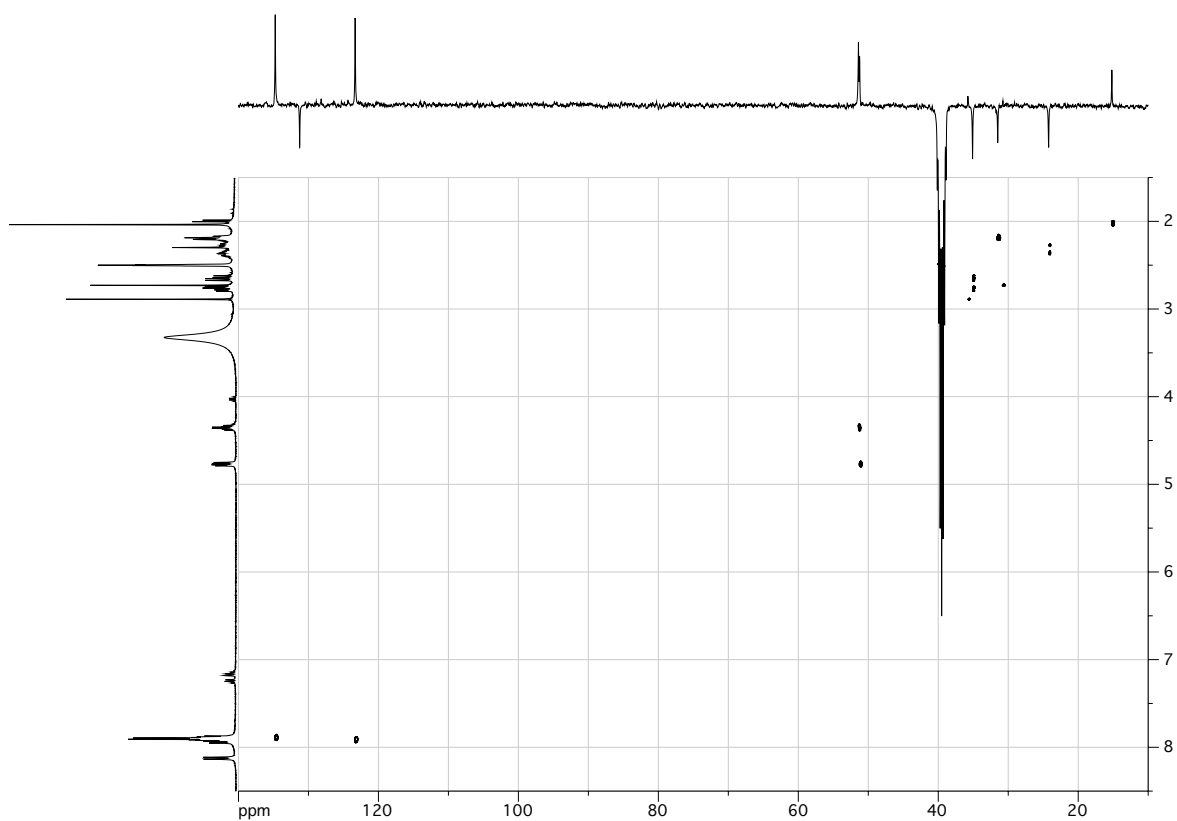


Fig. S3. HSQC NMR spectrum of crude *N*-phtaloyl- $\gamma$ -L-glutamyl-S-methyl-L-cysteine **12** (DMSO d6).

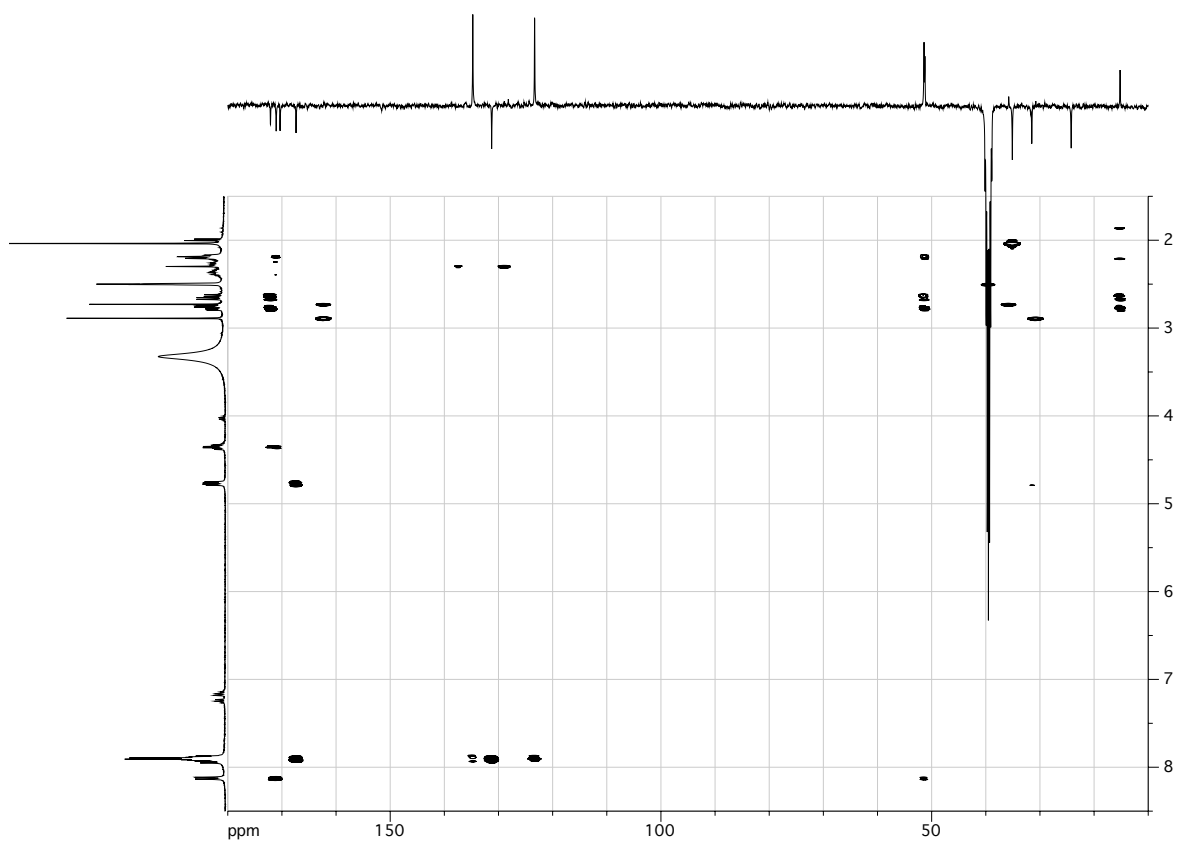


Fig. S4. HMBC NMR spectrum of crude *N*-phtaloyl- $\gamma$ -L-glutamyl-S-methyl-L-cysteine **12** in DMSO d6.

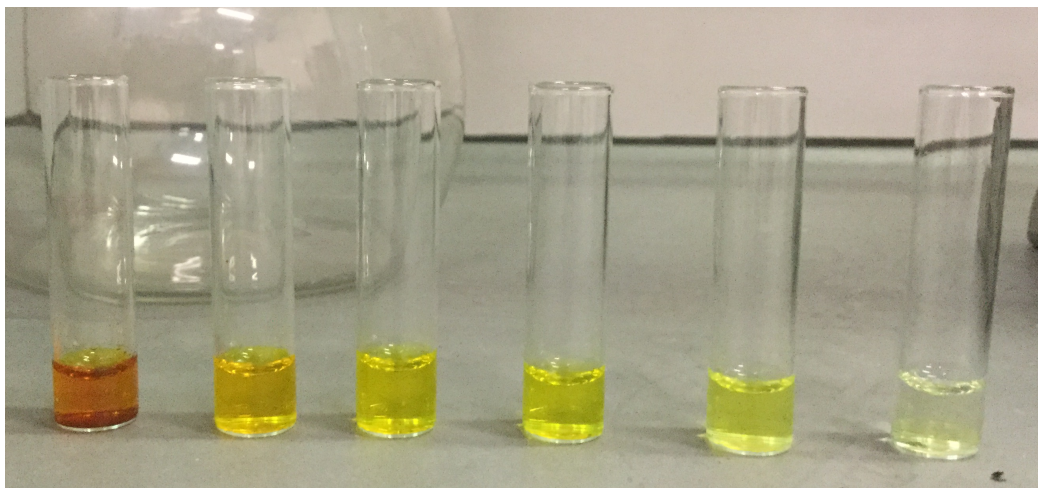


Fig. S5. Colorimetric assay for hydrazine. Complete removal of excess hydrazine from the ion exchange chromatographic column before elution of the desired compounds was accomplished by elution with water until negative test with 4(N,N-dimethylamino)benzaldehyde in 10% HCl solution. From left to right the decreasing amount of hydrazine eluting from the column can be appreciated. Usually removal of hydrazine requires elution with 4-5 column volumes of water.