

## SUPPLEMENTARY MATERIAL

### Insecticidal activity of a novel fatty acid amide derivative from *Streptomyces* species against *Helicoverpa armigera*

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#### Abstract

*Helicoverpa armigera*, an important pest causes serious damage to grain legumes. The main objective this study was to isolate and identify the metabolite against *H. armigera* from a previously characterized *Streptomyces* sp. CAI-155. The culture filtrate of CAI-155 was extracted using Diaion HP-20 and the active fractions were fractionated on Silica and C18 column chromatography. The C18 active fraction was further fractionated on Silica gel 60 F<sub>254</sub> thin layer chromatography (TLC). The most active fraction (R<sub>f</sub> 0.64) purified from TLC led to the identification of a novel metabolite *N*-(1-(2,2-dimethyl-5-undecyl-1,3-dioxolan-4-yl)-2-hydroxyethyl)stearamide by spectral studies. The purified metabolite showed 70–78% mortality in 2<sup>nd</sup> instar *H. armigera* by diet impregnation assay, detached leaf assay and greenhouse assay. The LD<sub>50</sub> and LD<sub>90</sub> values of the purified metabolite were 627 ppm and 2276 ppm, respectively. Hence, this novel metabolite can be exploited for pest management in future.

#### Keywords

*Helicoverpa armigera*; *Streptomyces*; Biological control; Pest management;

**Figure captions**

**Figure S1.** Larvicidal activity of Diaion HP-20 fractions against 2<sup>nd</sup> instar larvae of *H. armigera*

**Figure S2.** Larvicidal activity of silica gel column fractions against 2<sup>nd</sup> instar larvae of *H. armigera*

**Figure S3.** Larvicidal activity of C18 column fractions against 2<sup>nd</sup> instar larvae of *H. armigera*

**Figure S4.** Thin layer chromatogram of the most active C18 column fraction (F4(5) fraction) (A) and the larvicidal activity of TLC compounds against 2<sup>nd</sup> instar larvae of *H. armigera* (B)

**Figure S5.** <sup>1</sup>H-NMR spectrum of Compound 1

**Figure S6.** <sup>13</sup>C-NMR spectrum of Compound 1

**Figure S7.** COSY spectrum of Compound 1

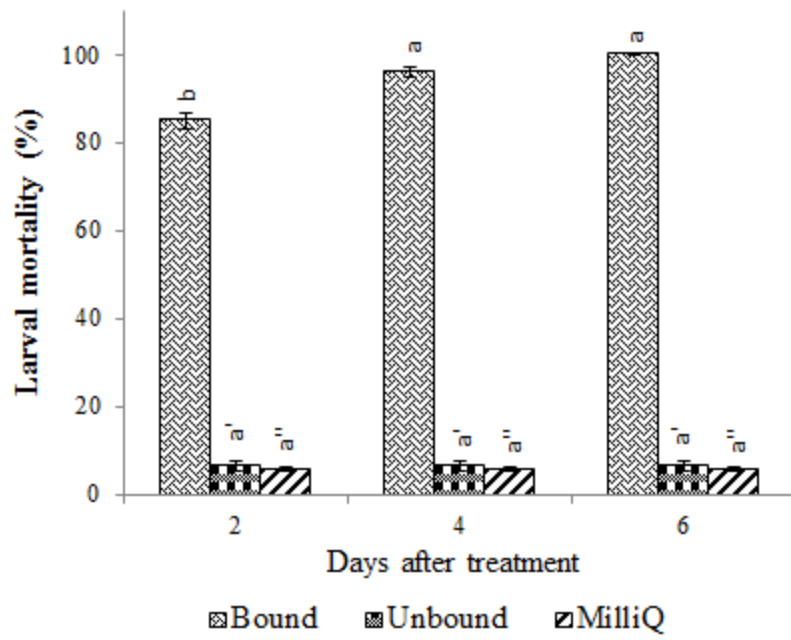
**Figure S8.** NOESY spectrum of Compound 1

**Figure S9.** HMBC spectrum of Compound 1

**Figure S10.** HSQC spectrum of Compound 1

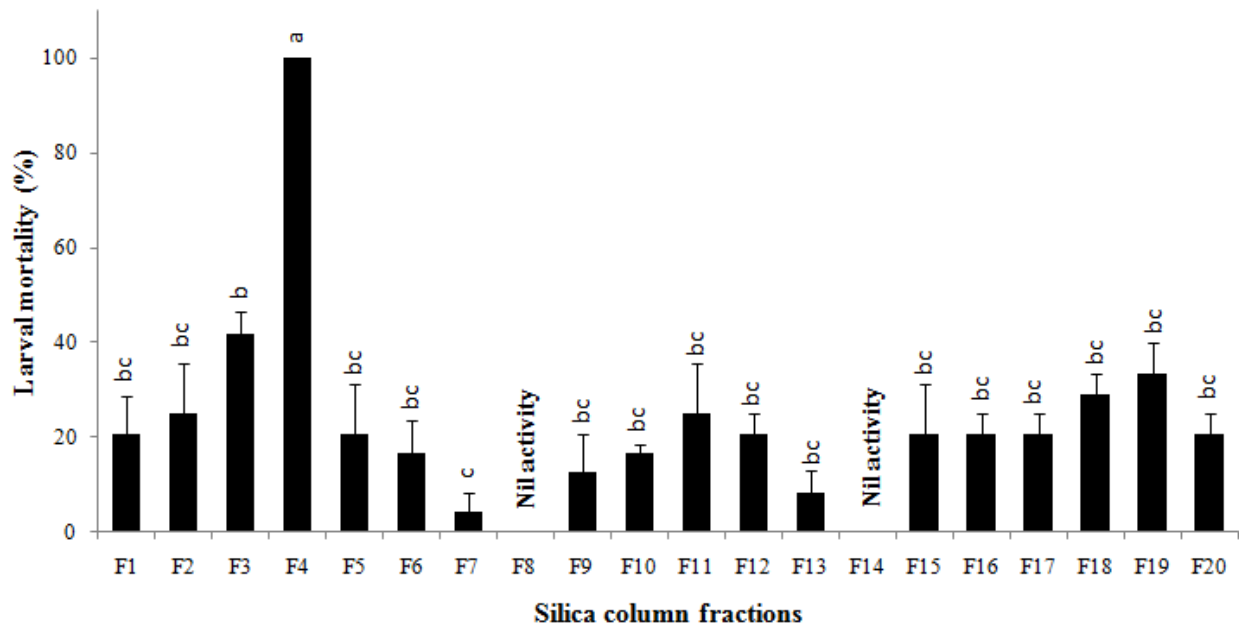
**Figure S11.** [EI \(70eV\) mass spectrum of 1, with a McLafferty rearrangement scheme showing the formation of fragment m/z 283.3.](#)

Figure S1.



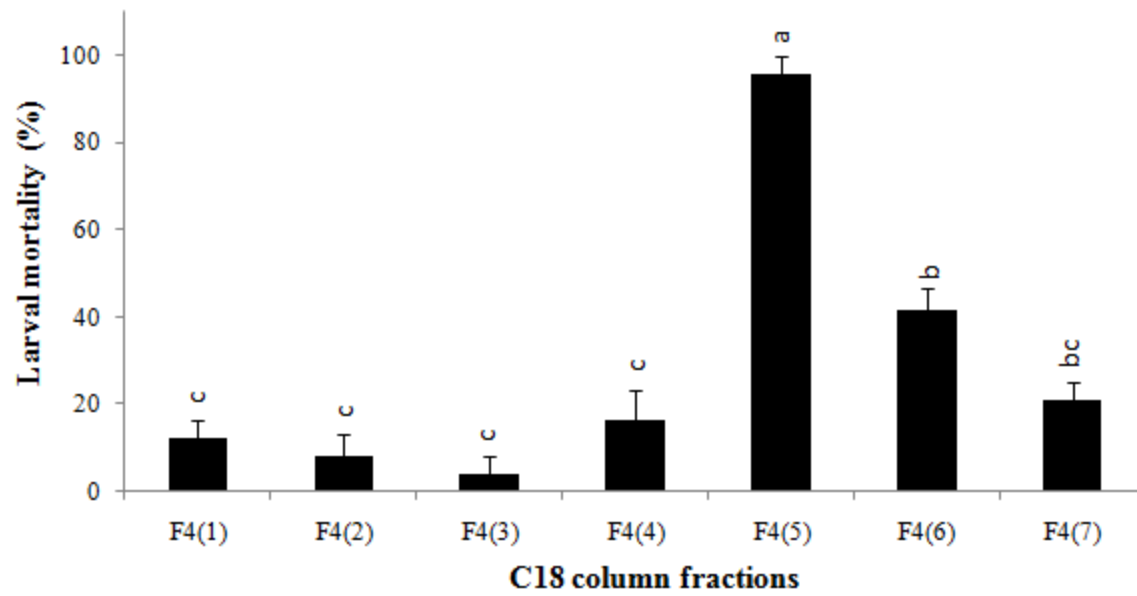
Each bar depicts the mean of triplicate determinations; Error bars indicate the standard error; Lower case letters of a-b, a' and a'' indicates the significant difference for larval mortality on 2, 4 and 6 days after treatments (DAT), respectively ( $p < 0.05$ )

Figure S2.



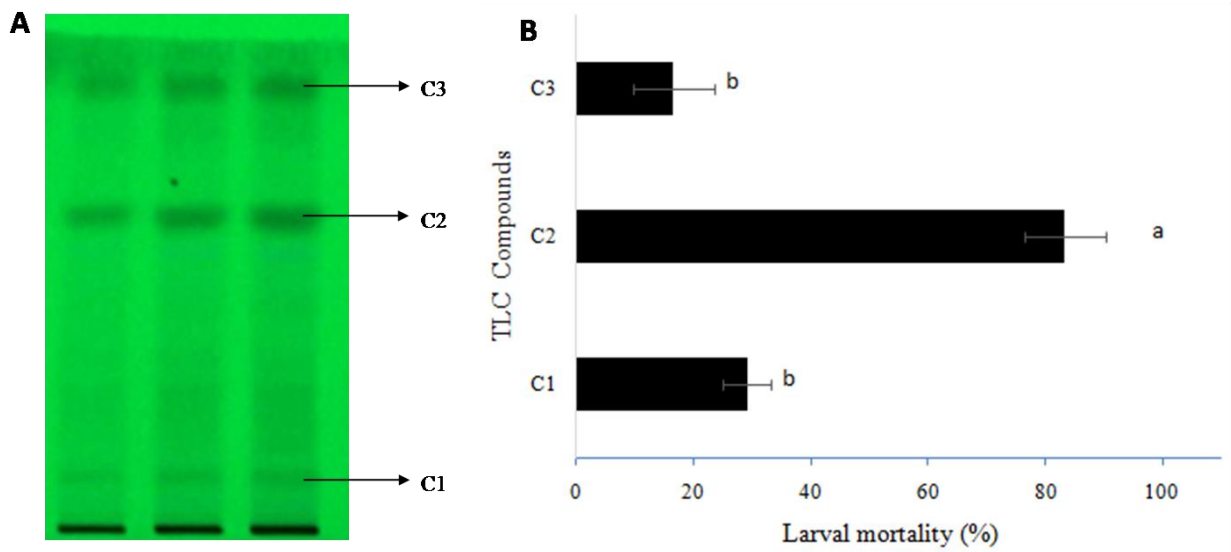
Each bar depicts the mean of triplicate determinations; Error bars indicate the standard error; Lower case letters a-c indicates the significant difference between the fractions ( $p < 0.05$ )

Figure S3.



Each bar depicts the mean of triplicate determinations; Error bars indicate the standard error; Lower case letters a-c indicates the significant difference between the fractions ( $p < 0.05$ )

Figure S4.



Each bar in Figure 4B depicts the mean of triplicate determinations; Error bars indicate the standard error; Lower case letters a-b indicates the significant difference between the compounds ( $p < 0.05$ )

Figure S5.

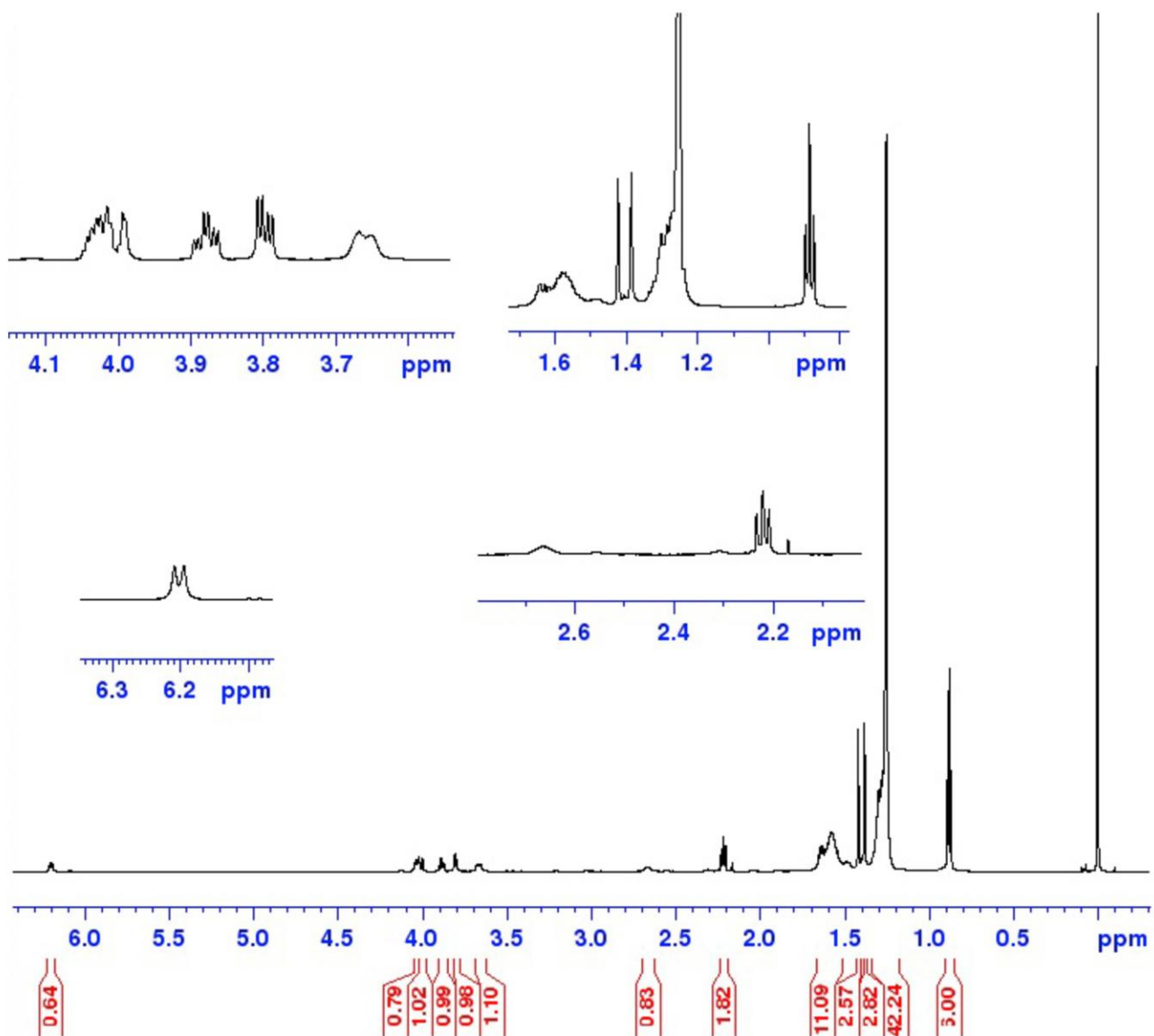


Figure S6.

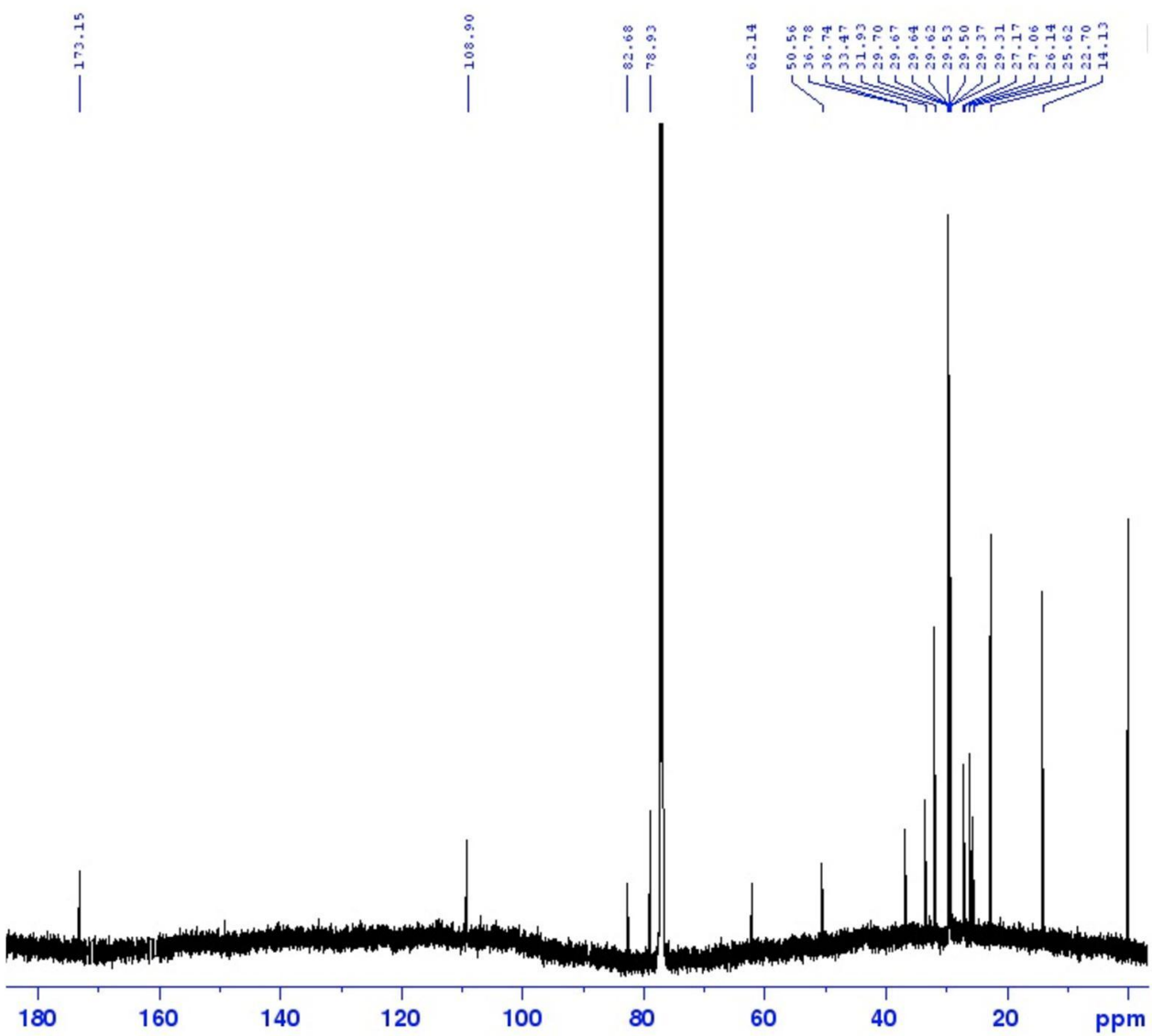




Figure S7.

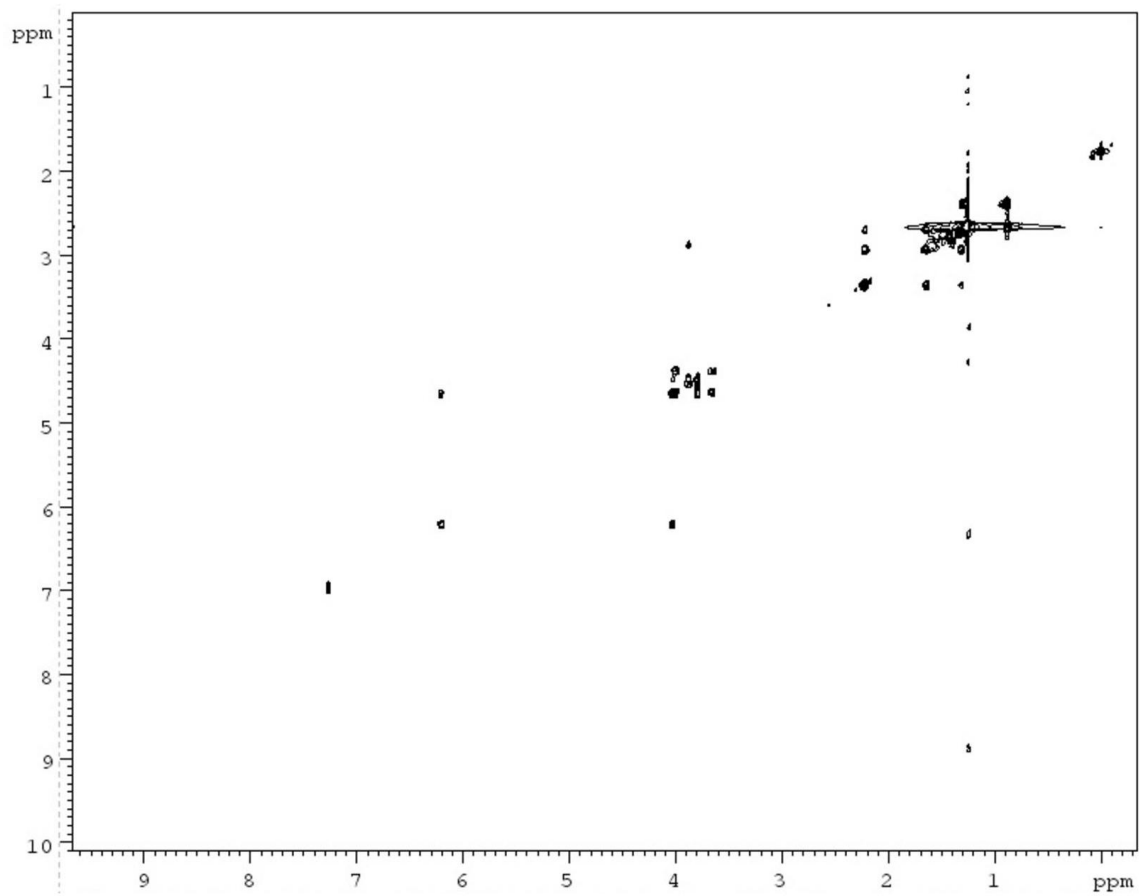


Figure S8.

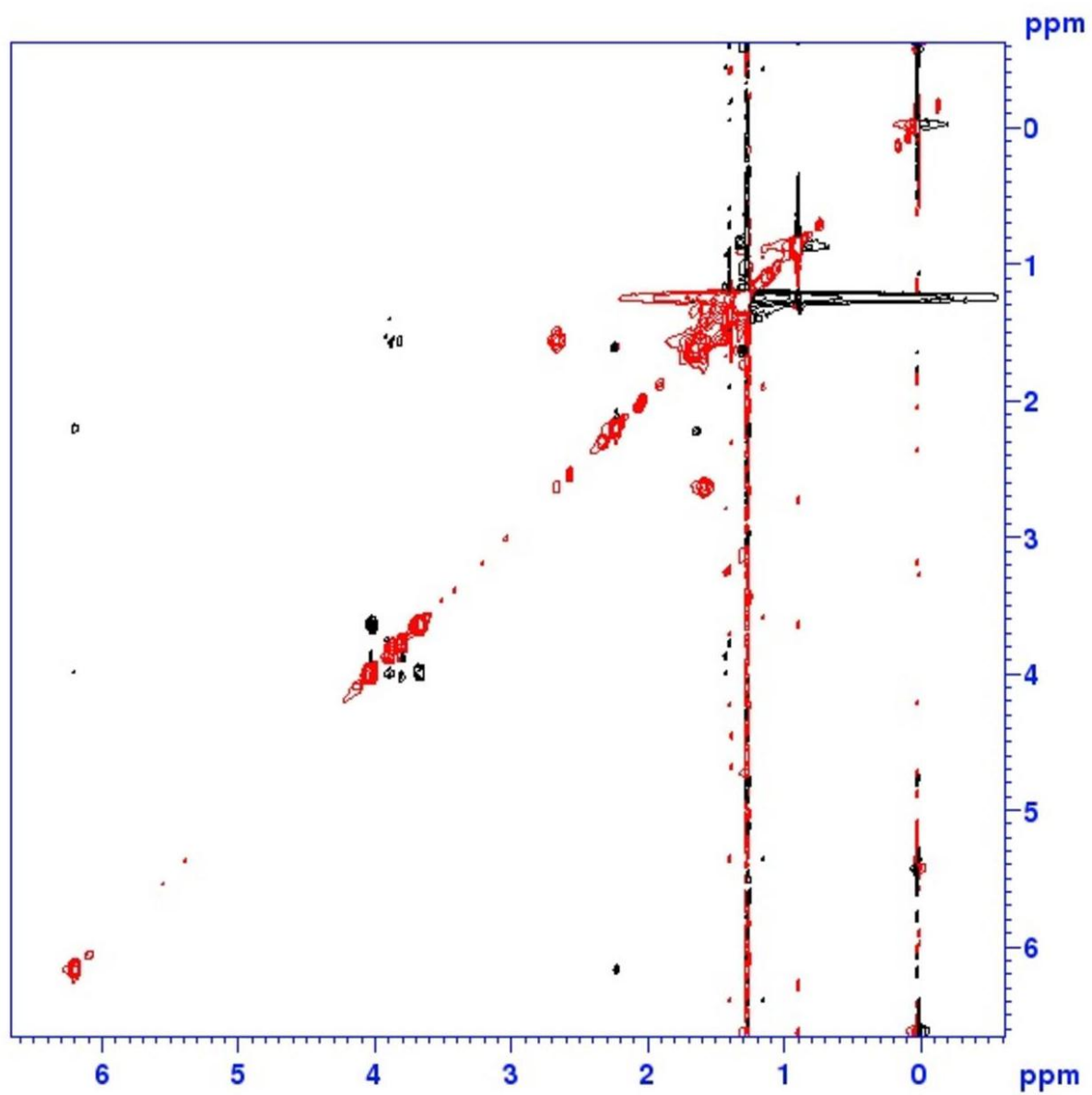


Figure S9.

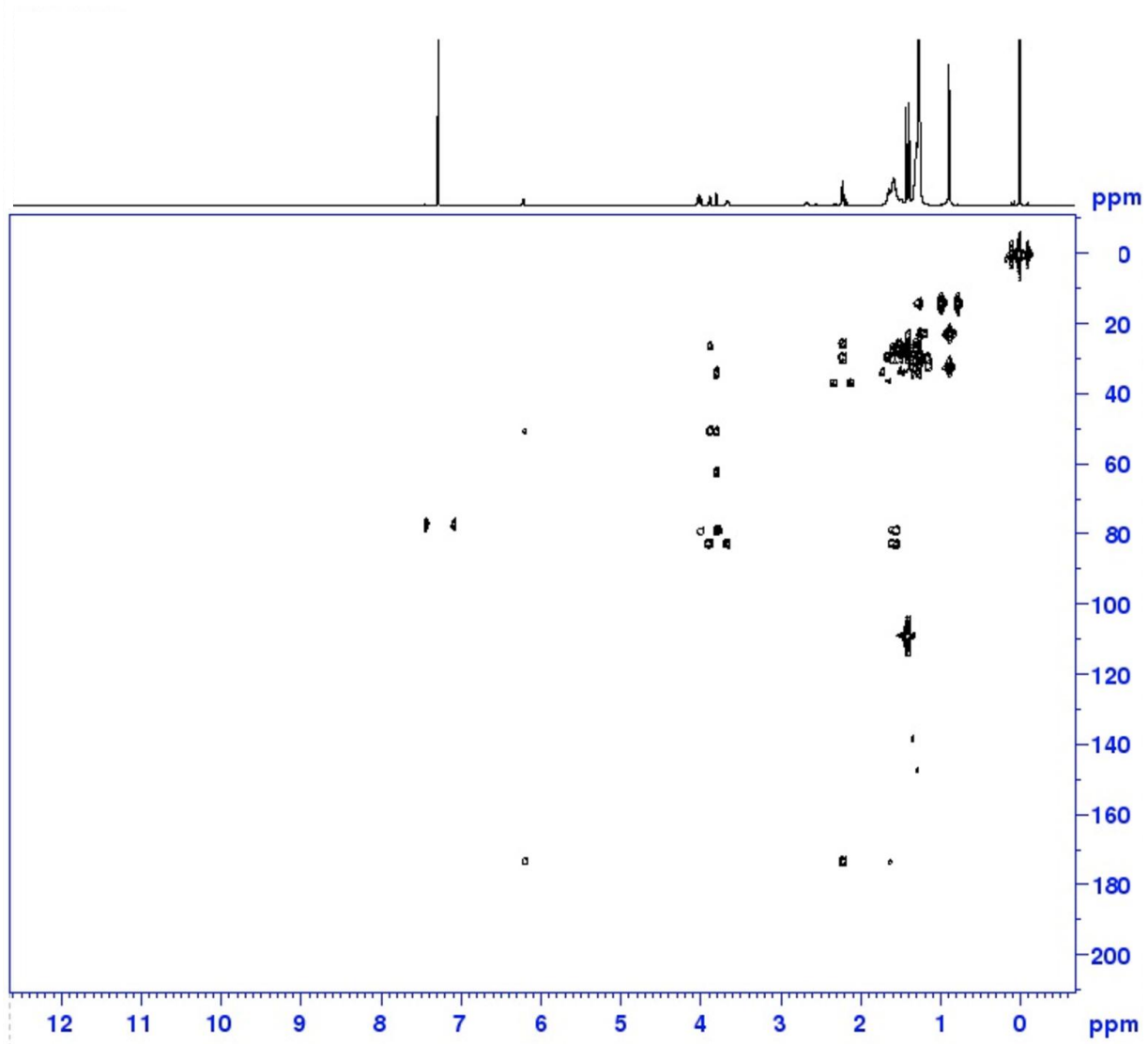
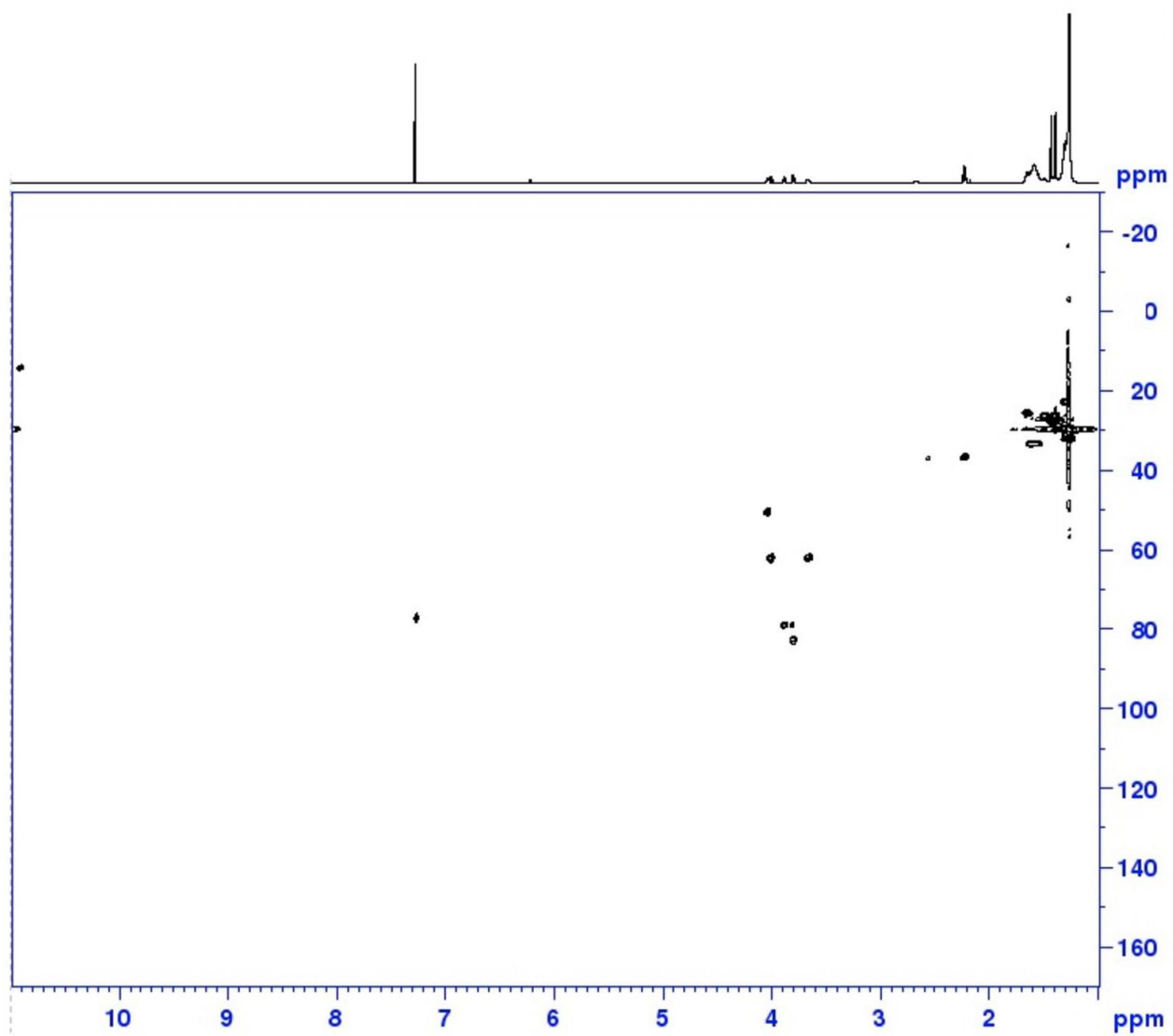


Figure S10.



**Figure S11.**

