

## Supplementary Material

### Facile synthesis of tetrasaccharide fragments of bioactive Asterosaponins novaeguinosides I and II from starfish *Culcita novaeguineae*

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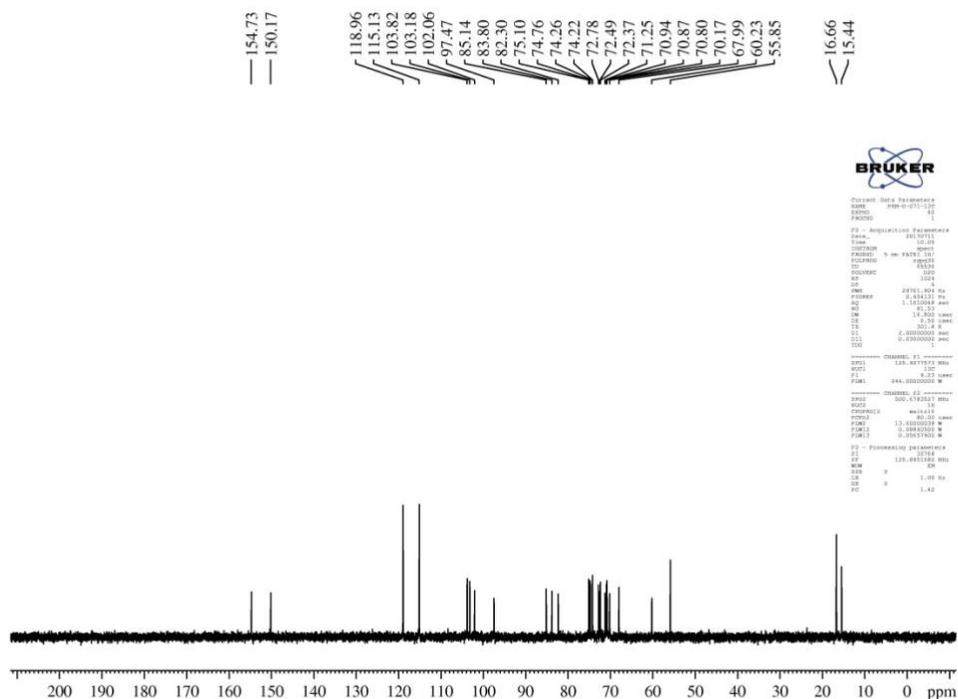
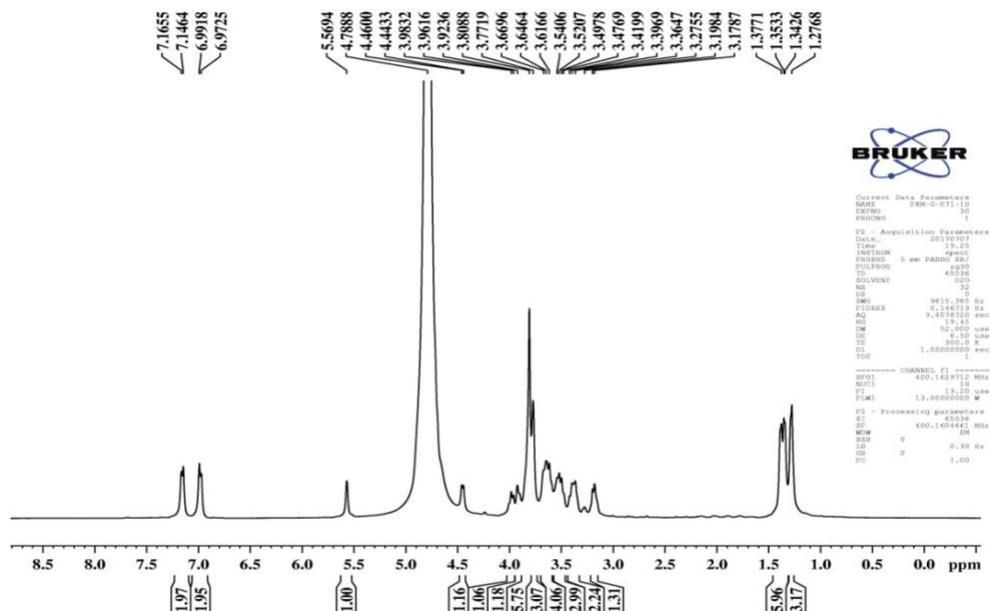
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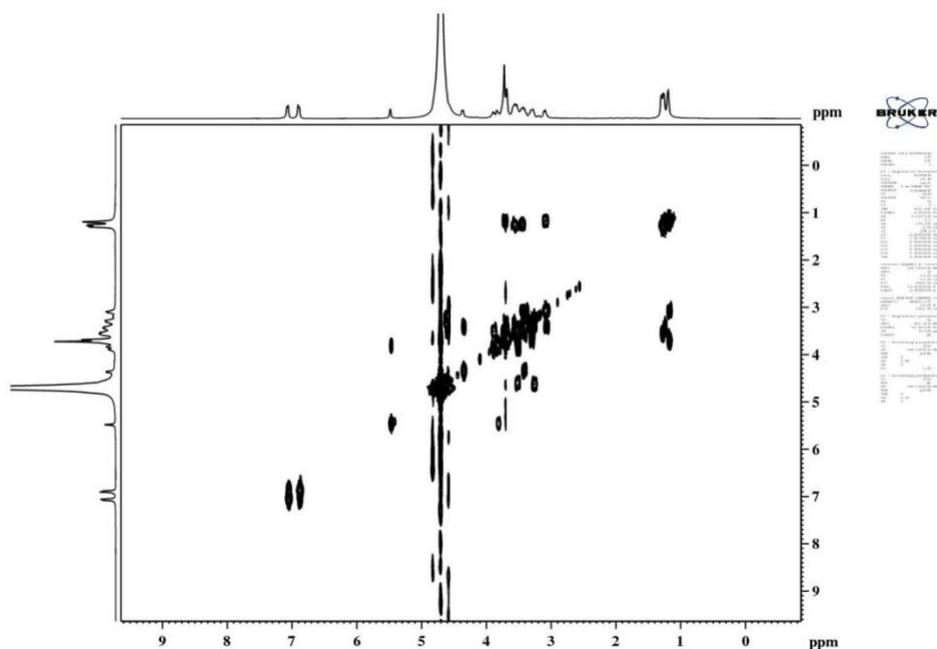
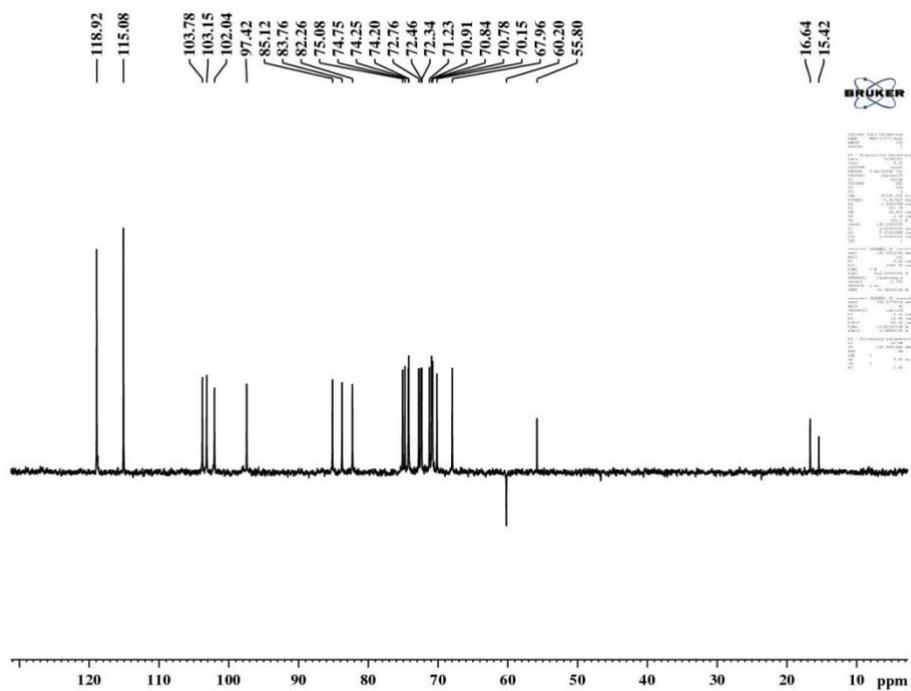
\* Corresponding author; Email: [pintuchem06@gmail.com](mailto:pintuchem06@gmail.com)

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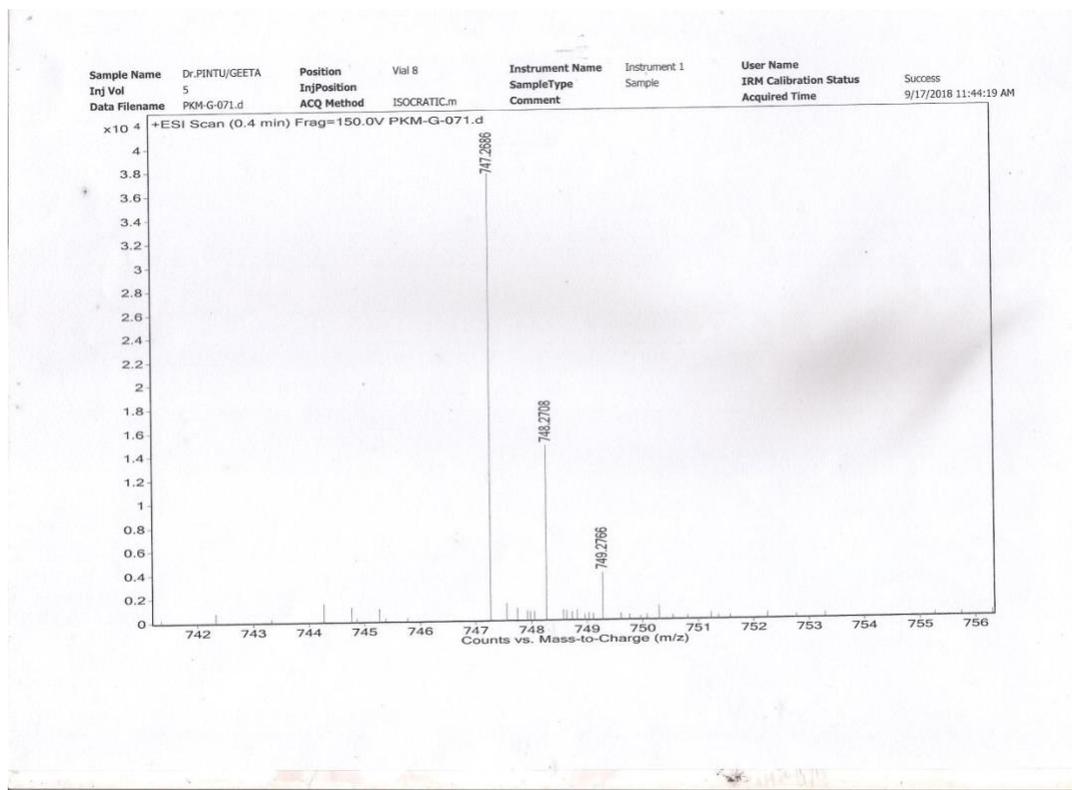
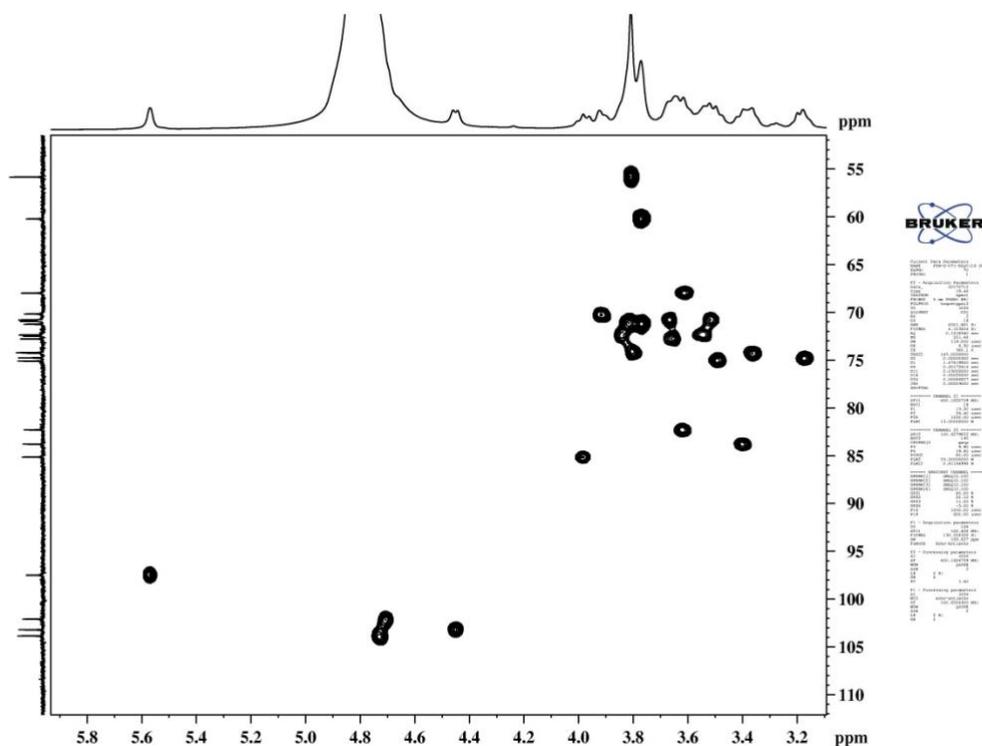
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| 1. 1D and 2D NMR spectra of compounds <b>1,2,3, 7,12, 14-20</b> | S2 |
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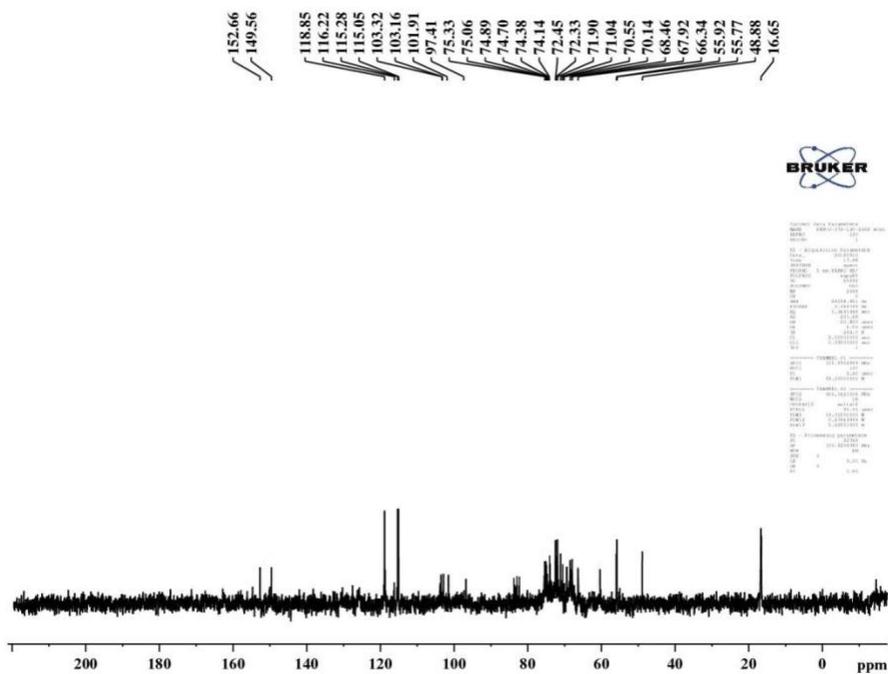
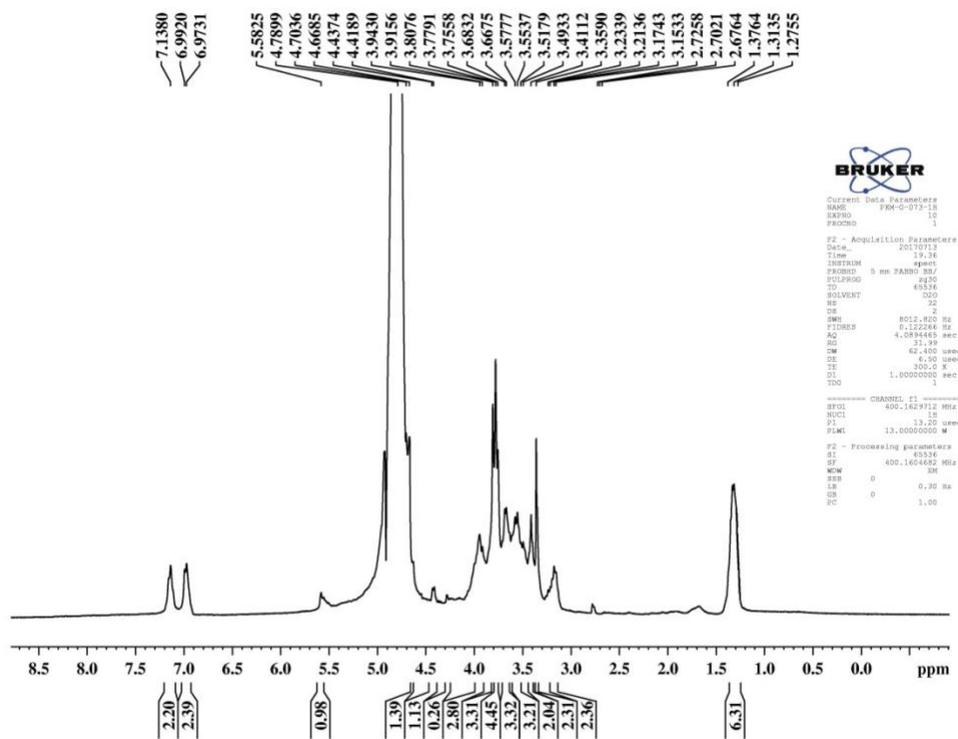
$^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of *p*-Methoxyphenyl (6-deoxy- $\beta$ -D-galactopyranosyl)-(1 $\rightarrow$ 4)-(6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 2)-(6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 3)- $\alpha$ -D-glucopyranoside (**1**) ( $\text{D}_2\text{O}$ ).



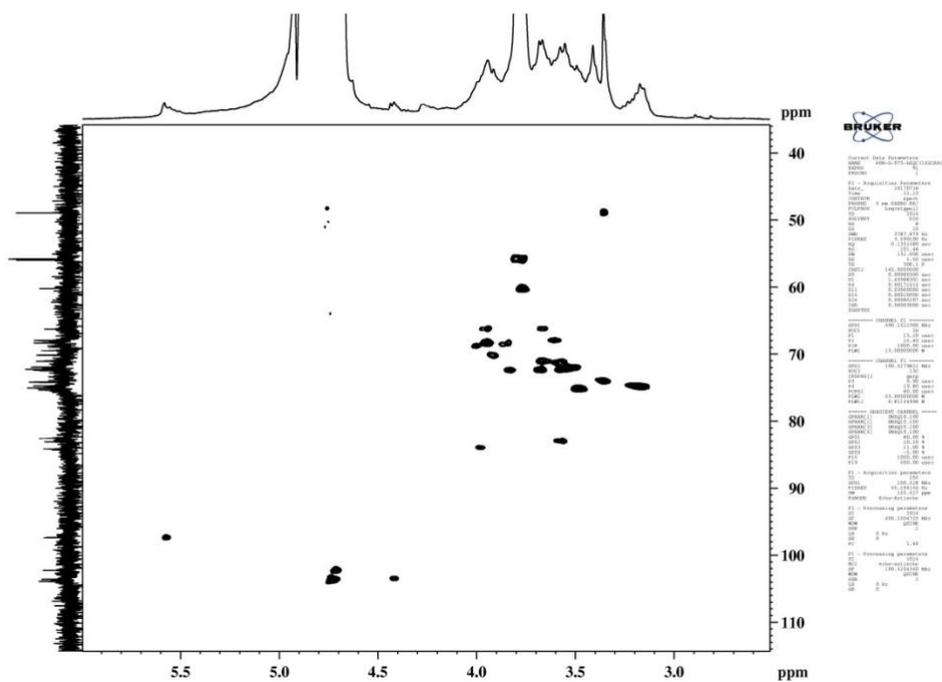
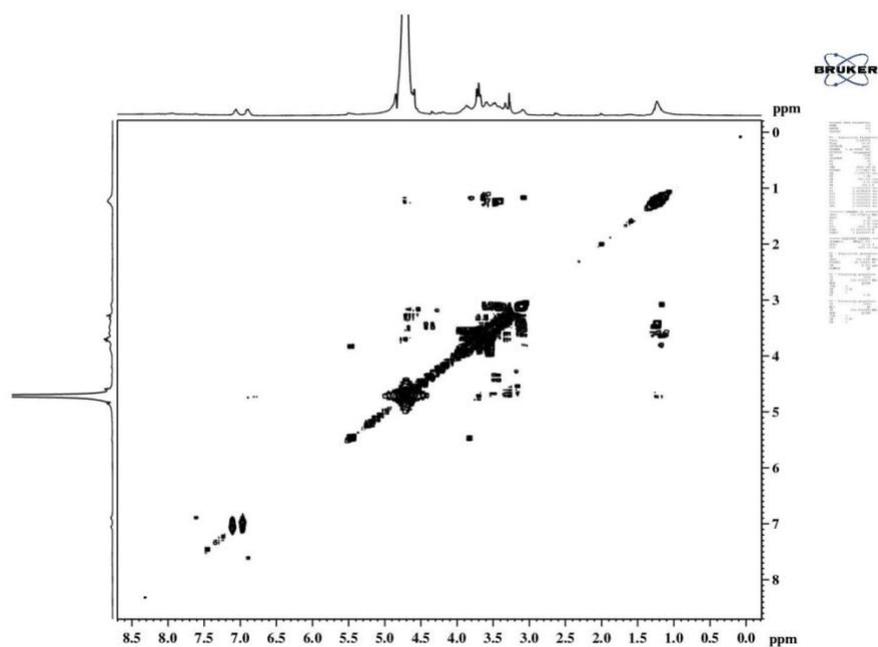
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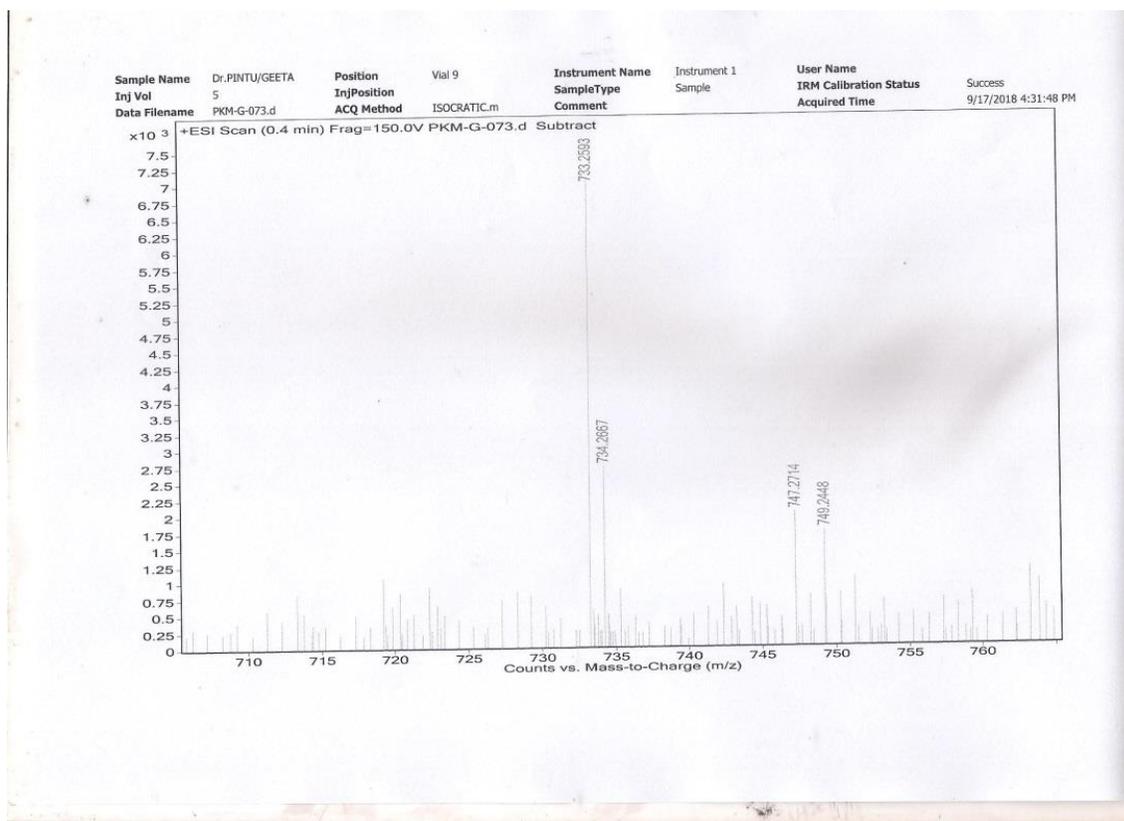
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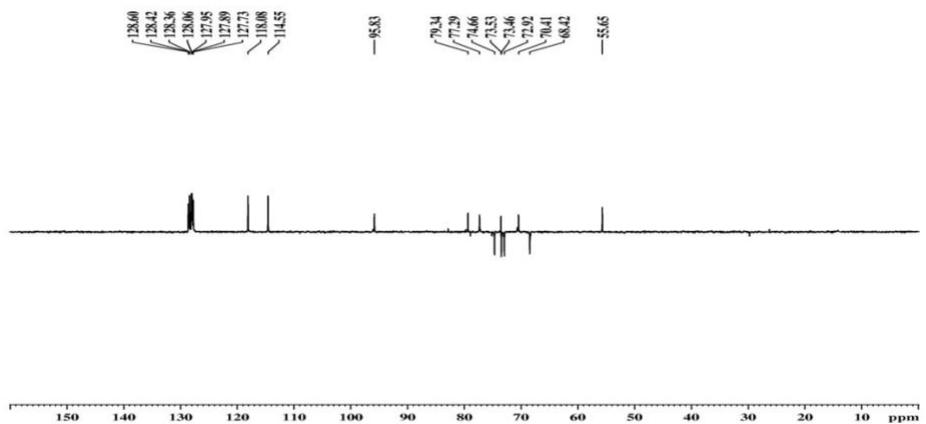
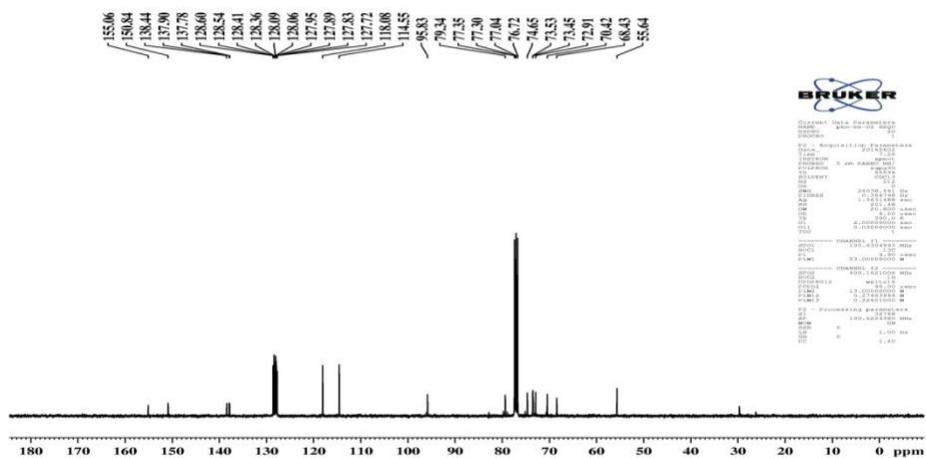
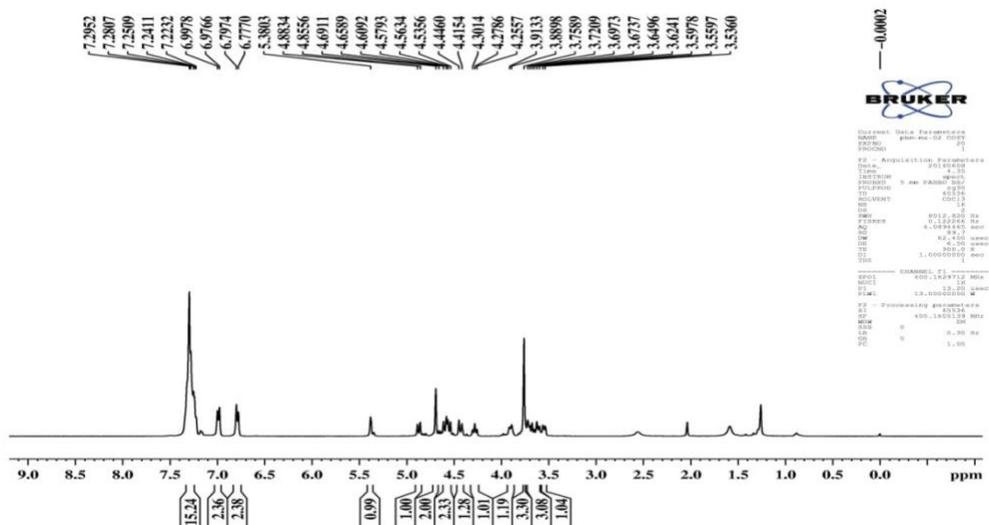
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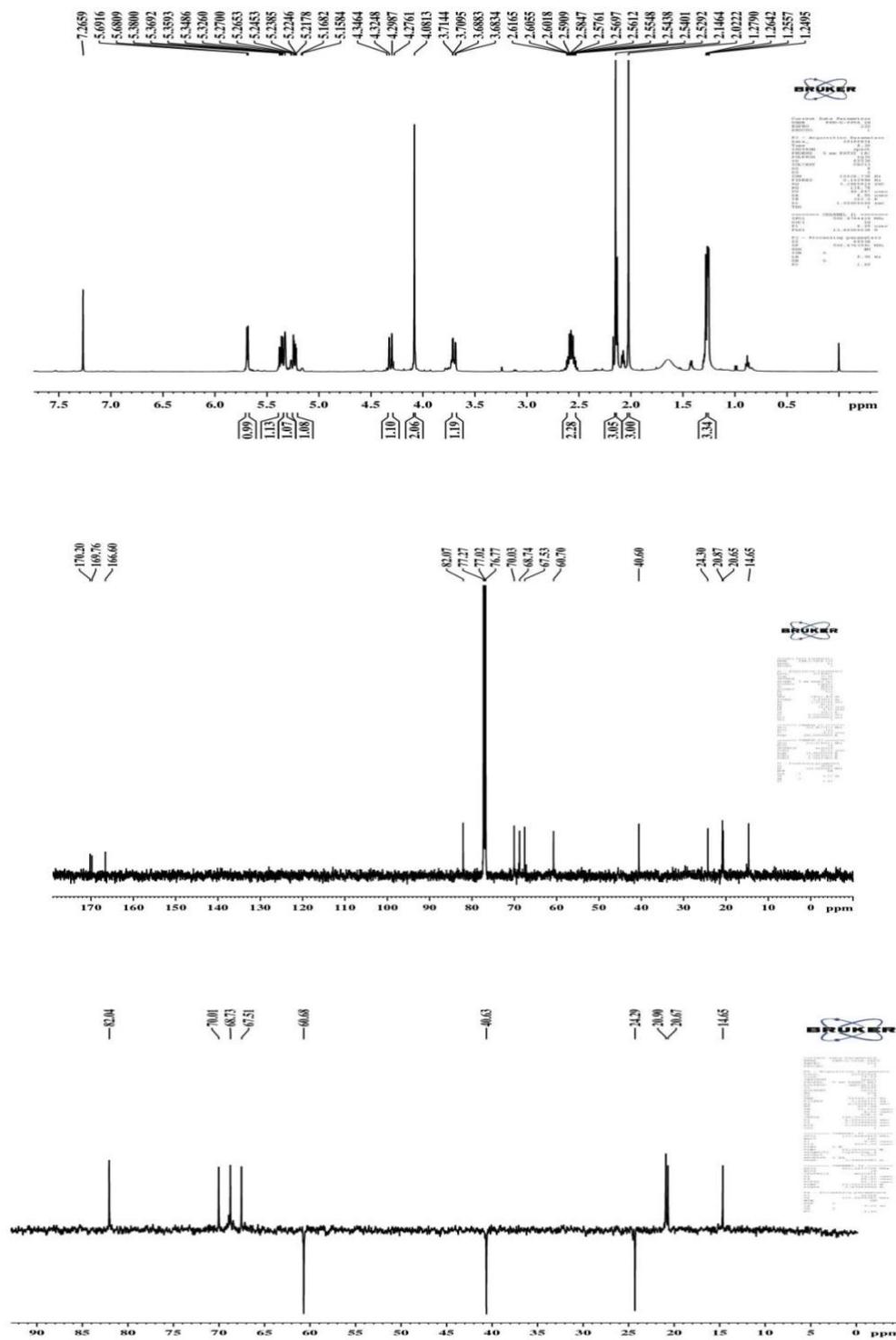
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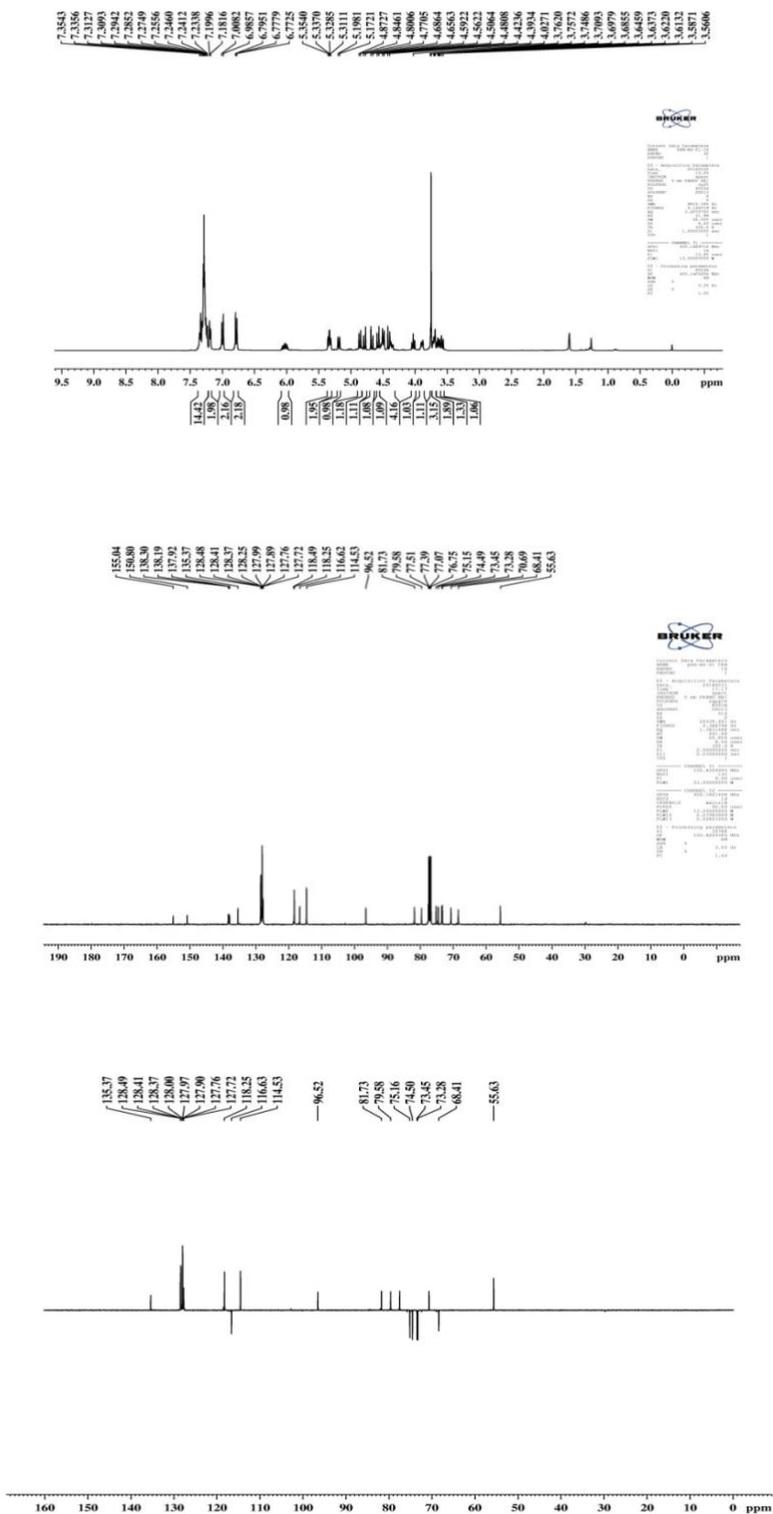
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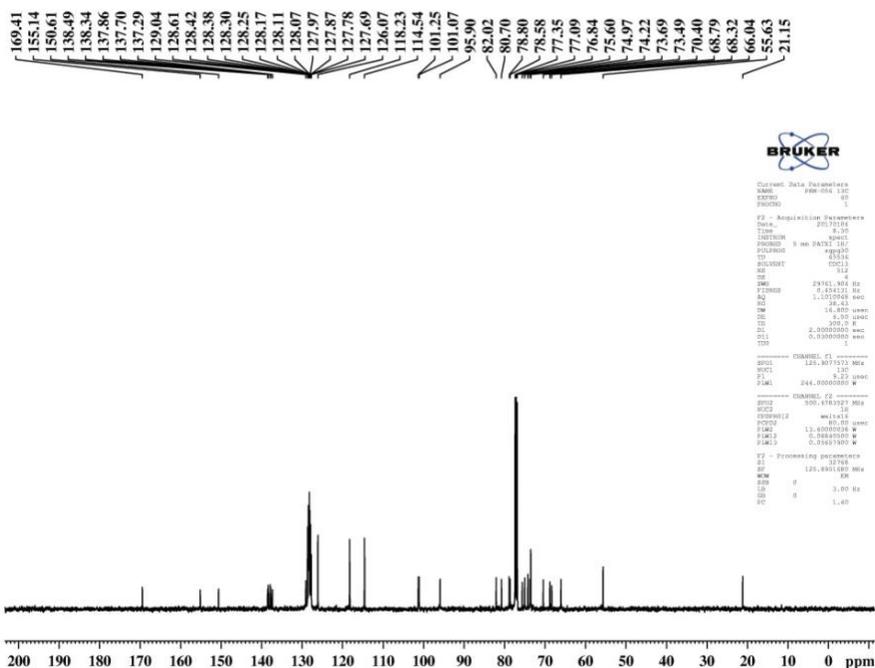
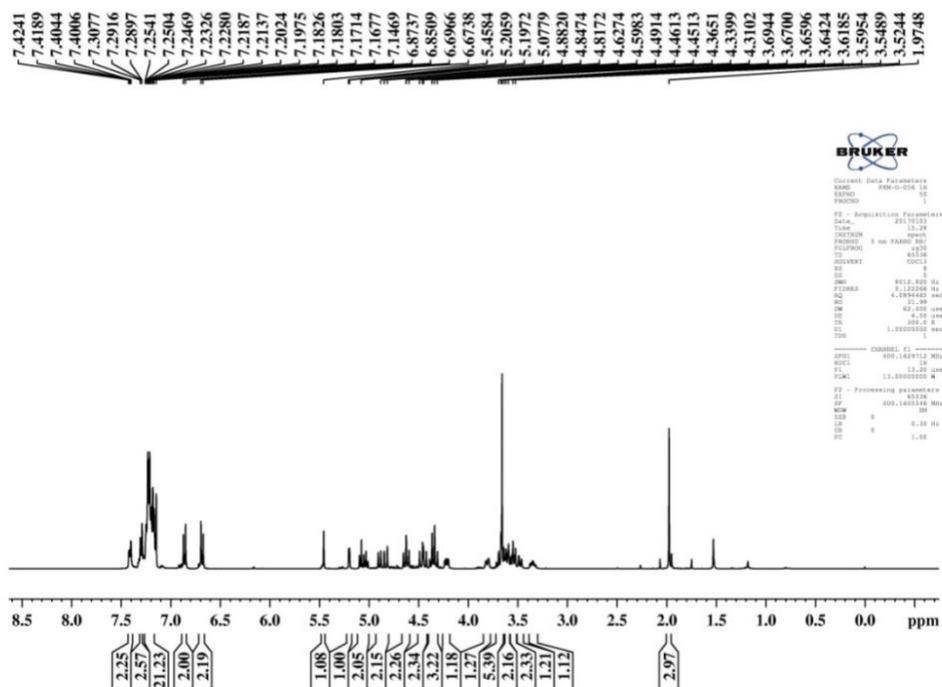
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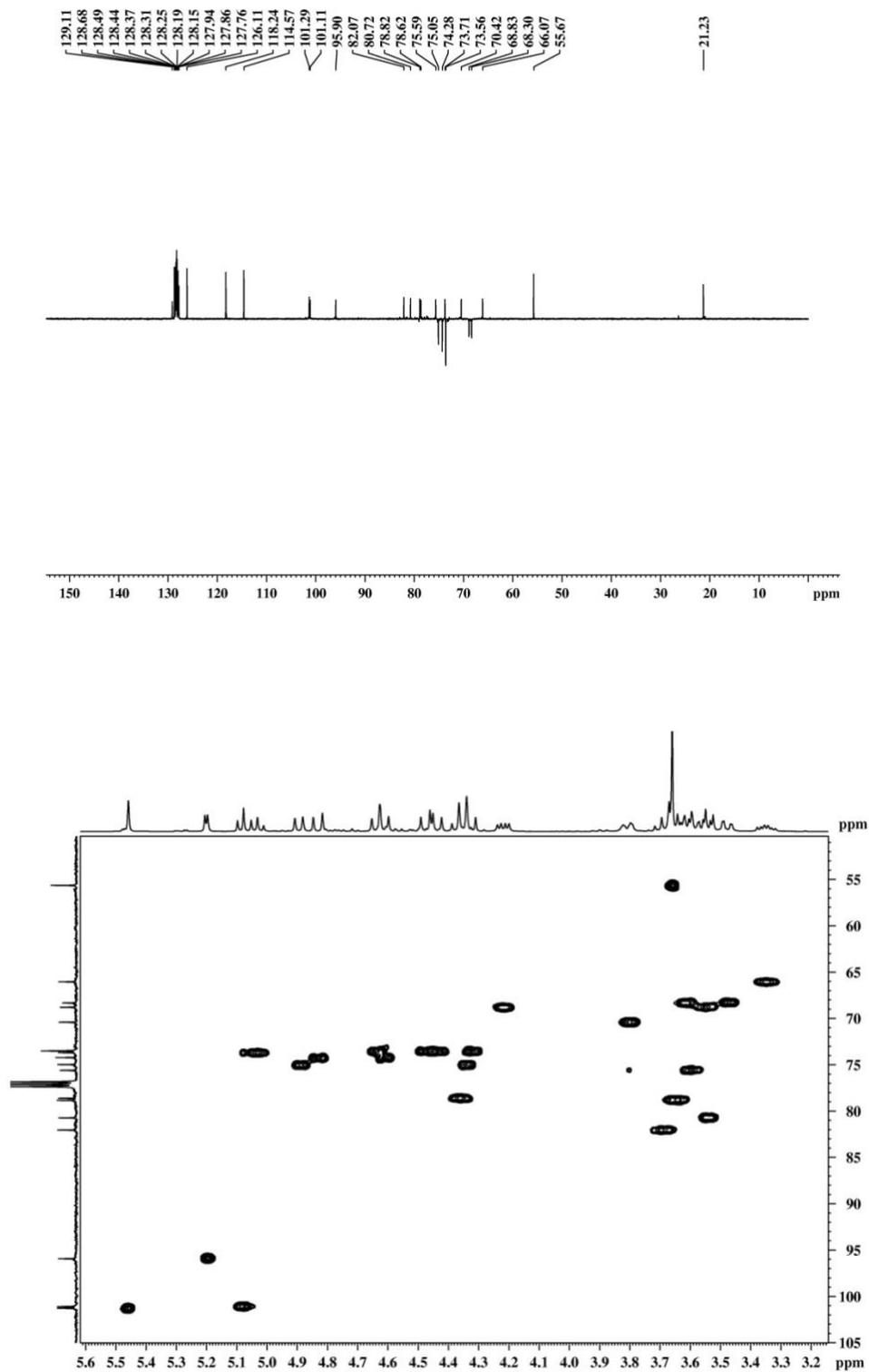
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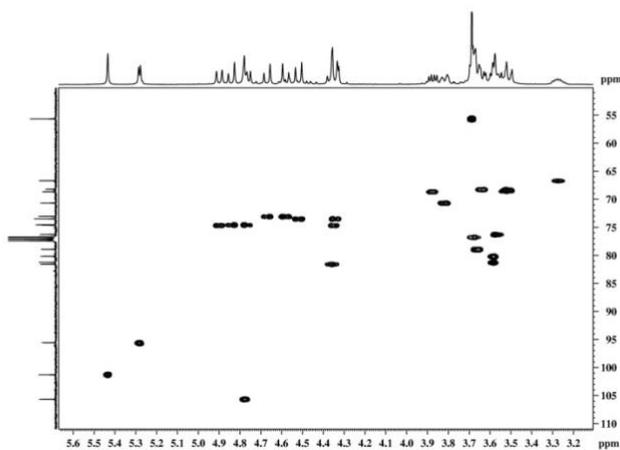
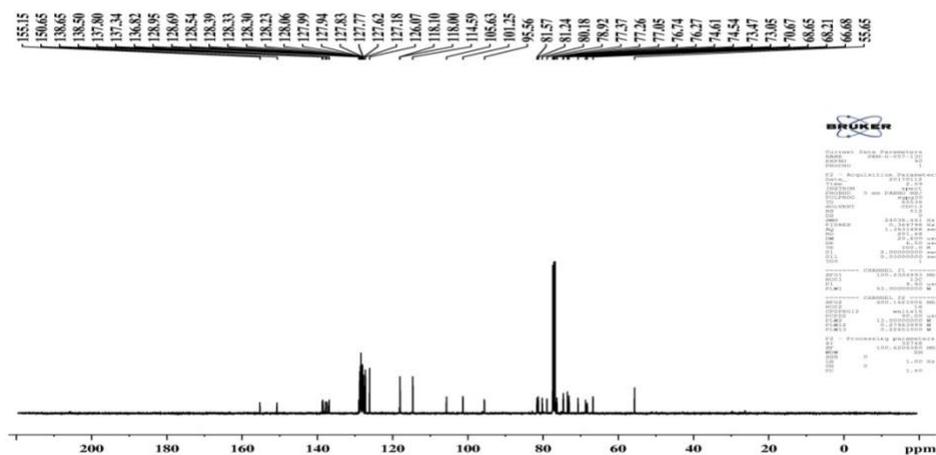
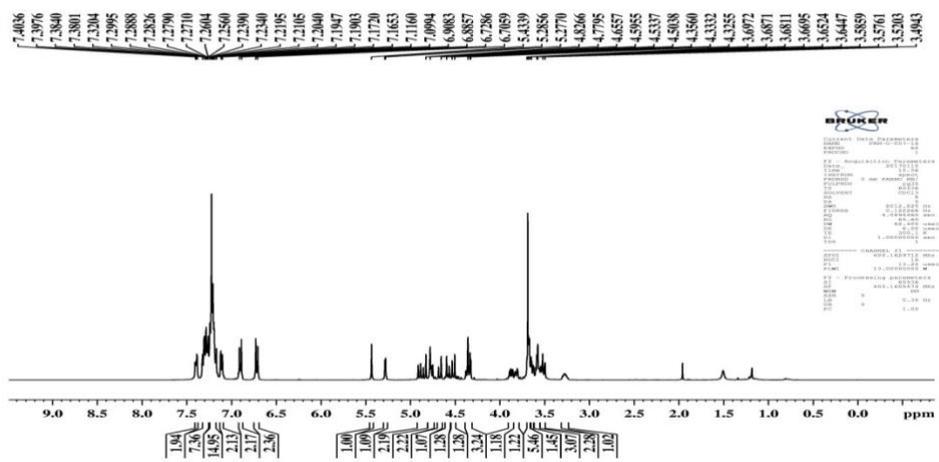
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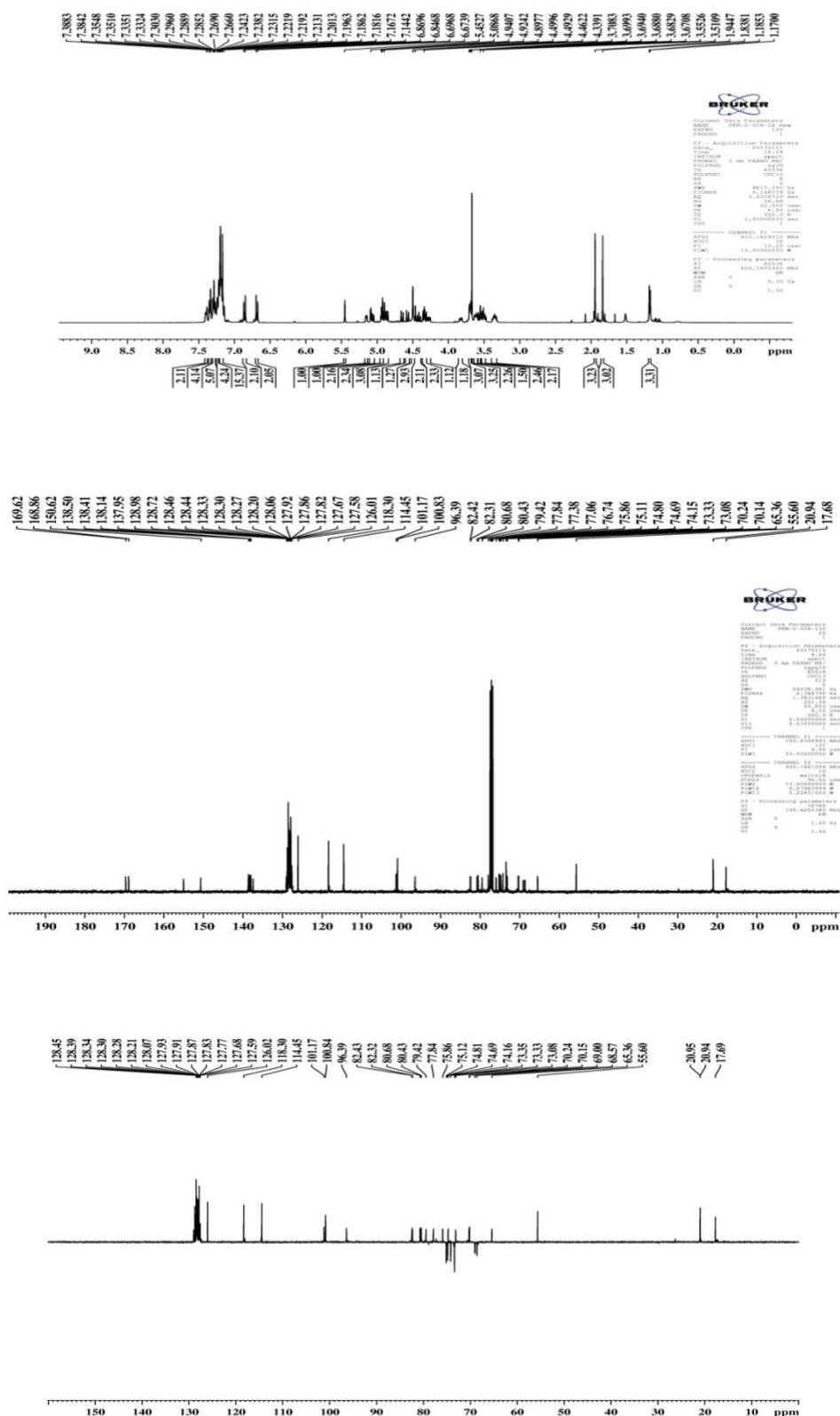
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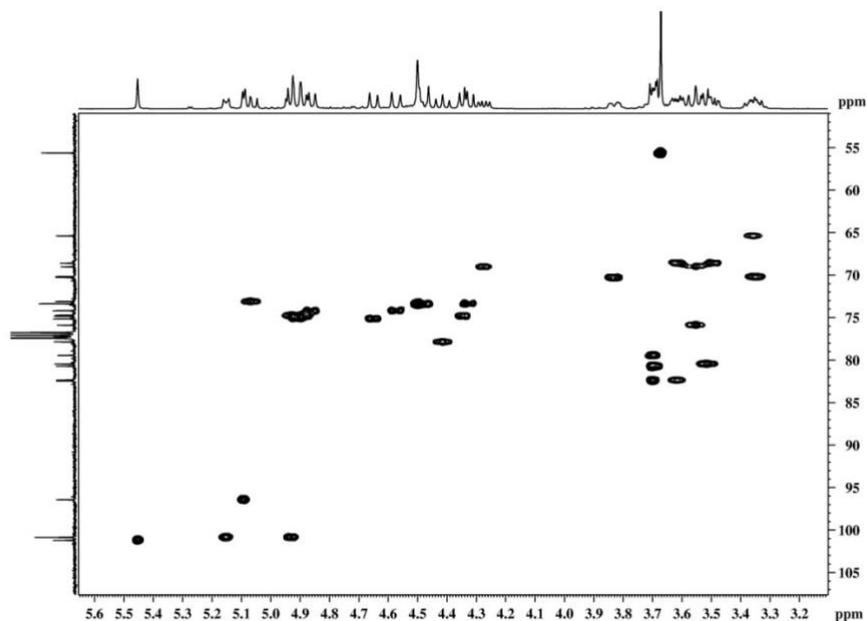
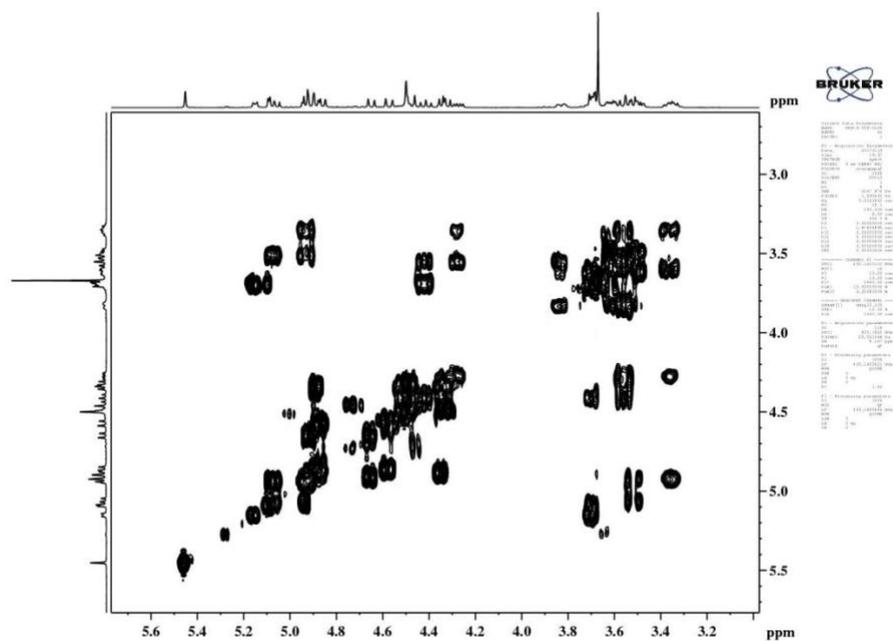
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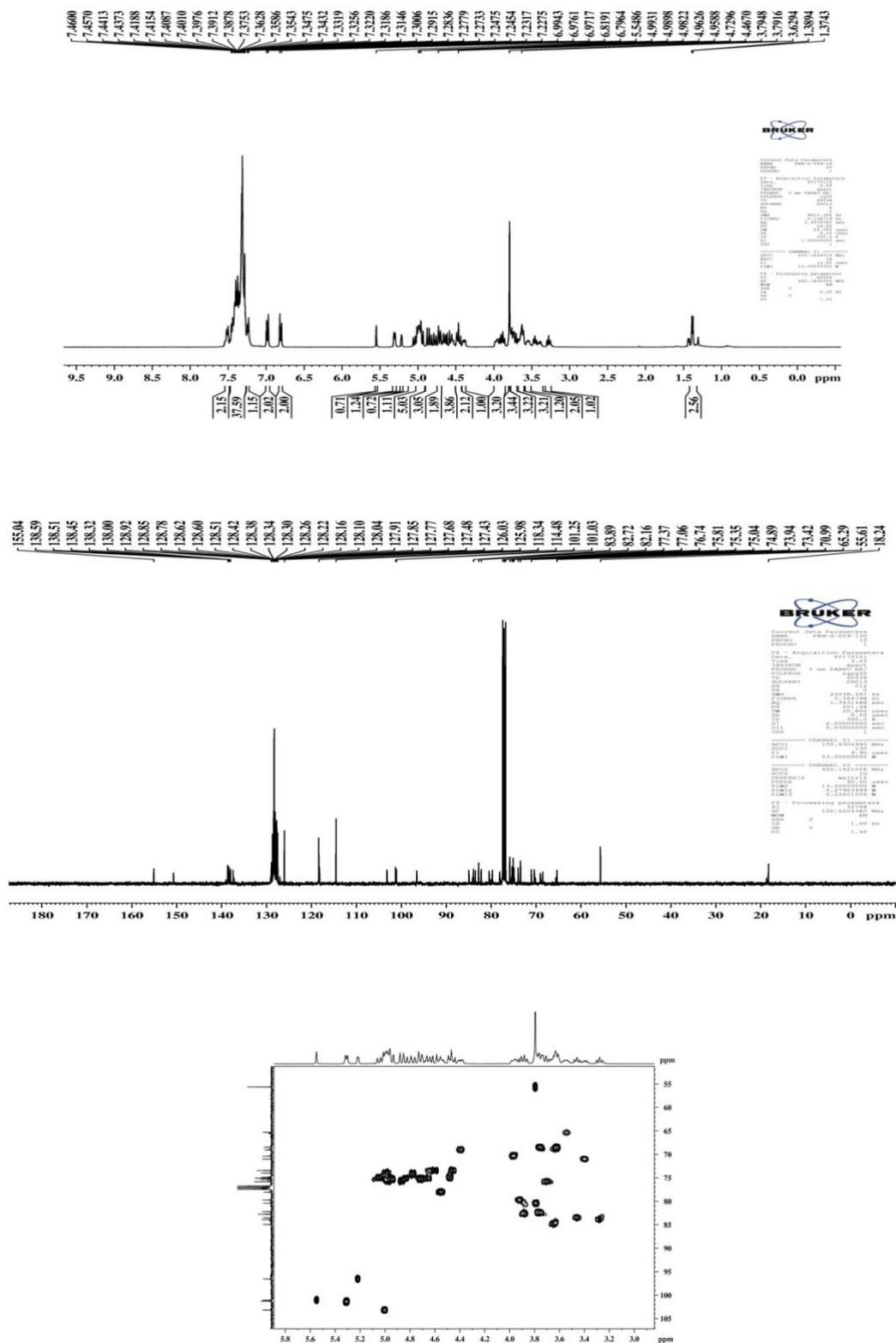
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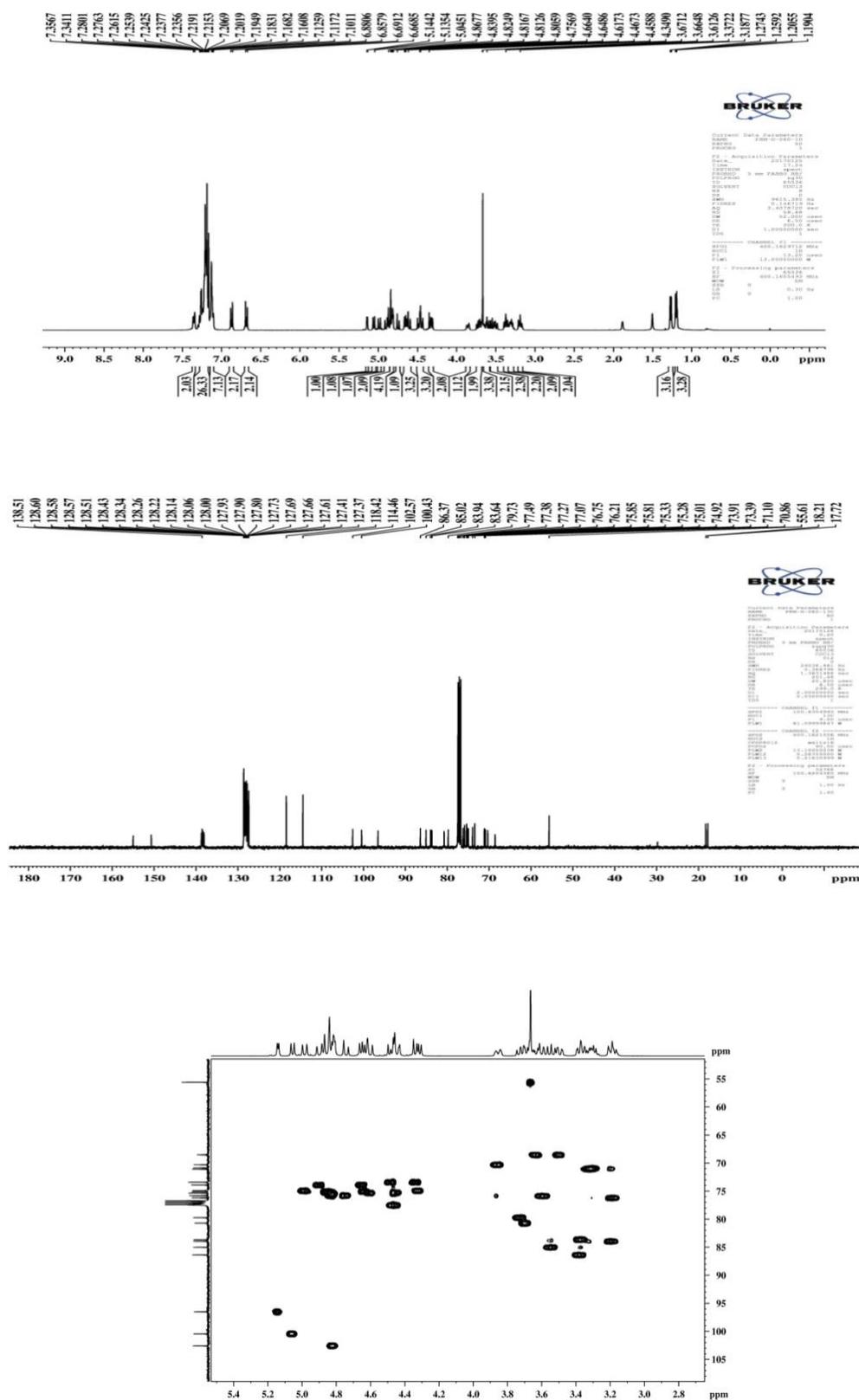
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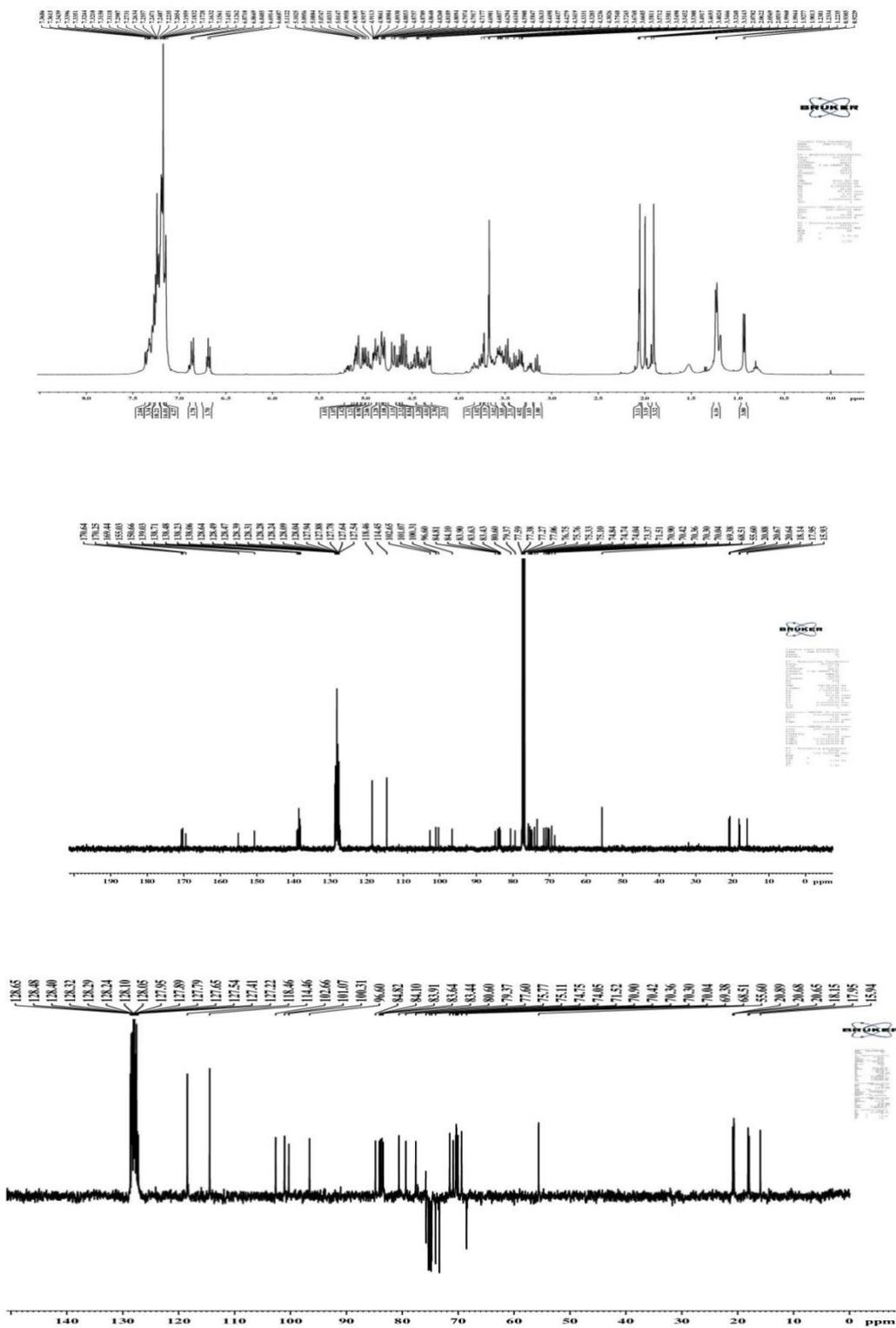
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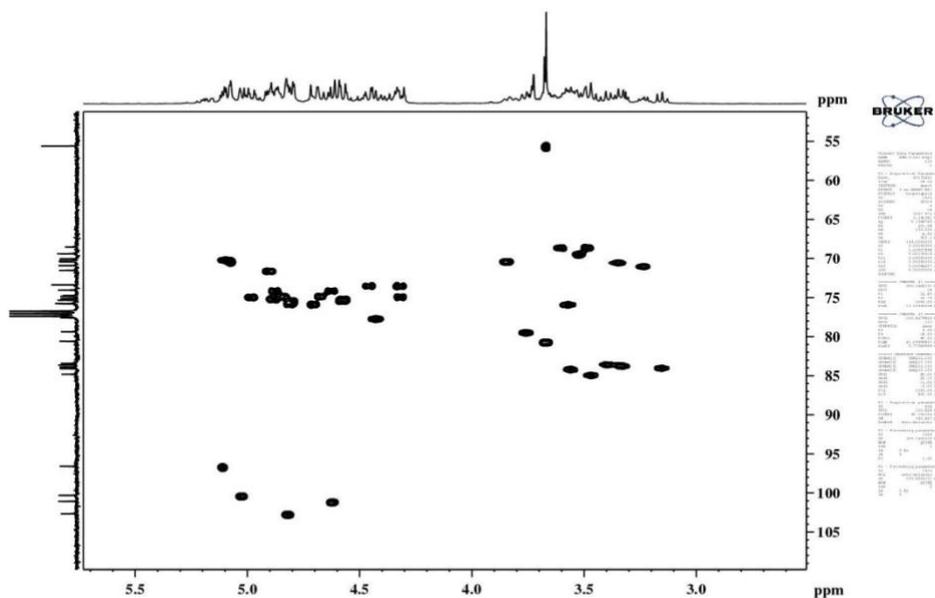
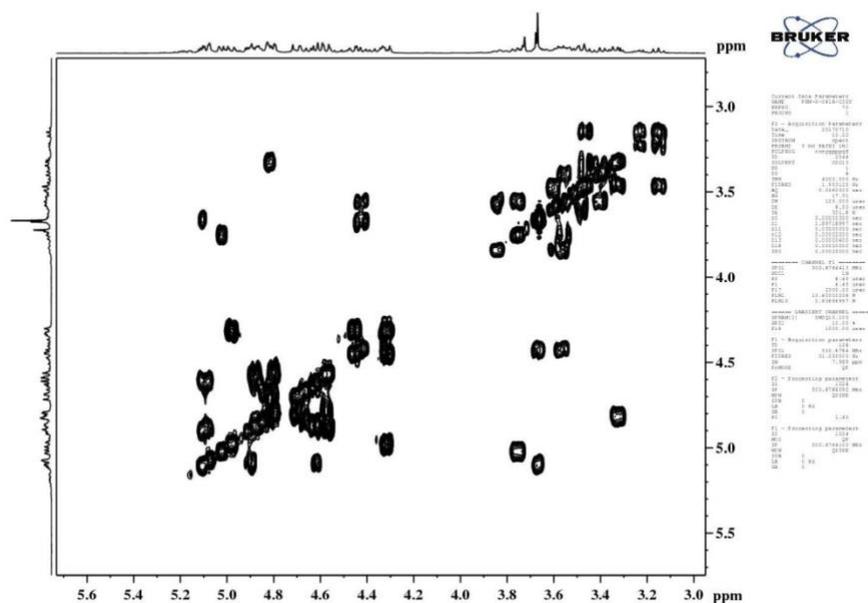


<sup>1</sup>H, <sup>13</sup>C and HSQC NMR spectra (selected regions) of *p*-Methoxyphenyl (2,3,4-tri-*O*-benzyl-6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 2)-(3-*O*-benzyl-4,6-*O*-benzylidene- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 3)-2,4,6-tri-*O*-benzyl- $\alpha$ -D-glucopyranoside (**17**) (CDCl<sub>3</sub>).

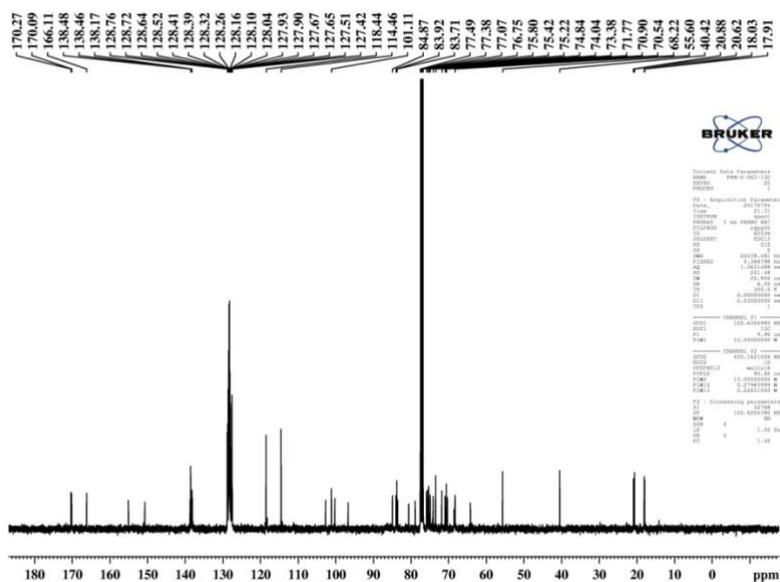
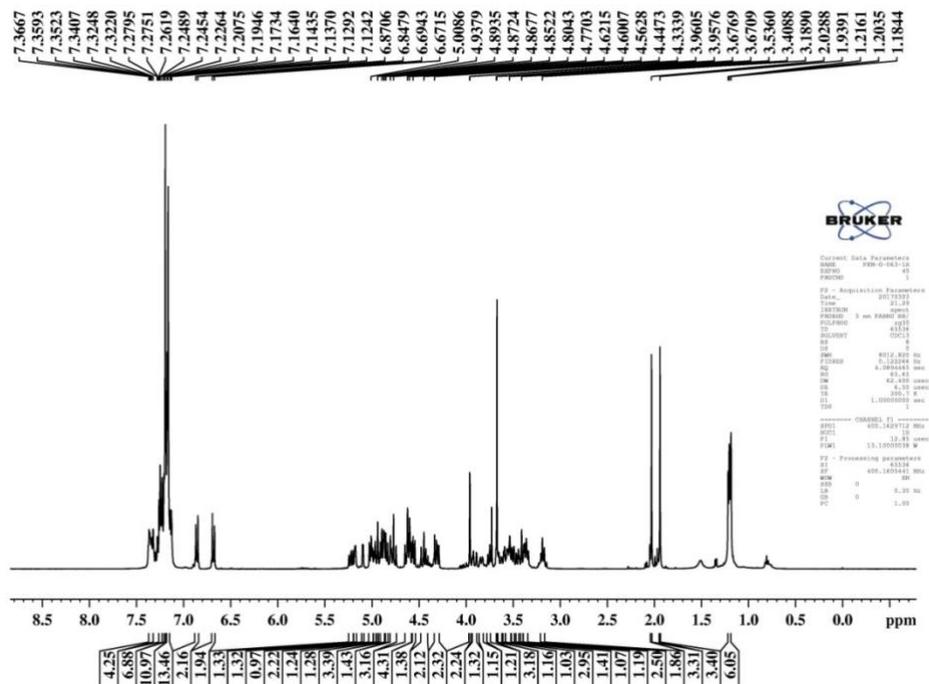


<sup>1</sup>H, <sup>13</sup>C and HSQC NMR spectra (selected regions) of *p*-Methoxyphenyl (2,3,4-tri-*O*-benzyl-6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 2)-(3-*O*-benzyl-6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 3)-2,4,6-tri-*O*-benzyl- $\alpha$ -D-glucopyranoside (**18**) (CDCl<sub>3</sub>).

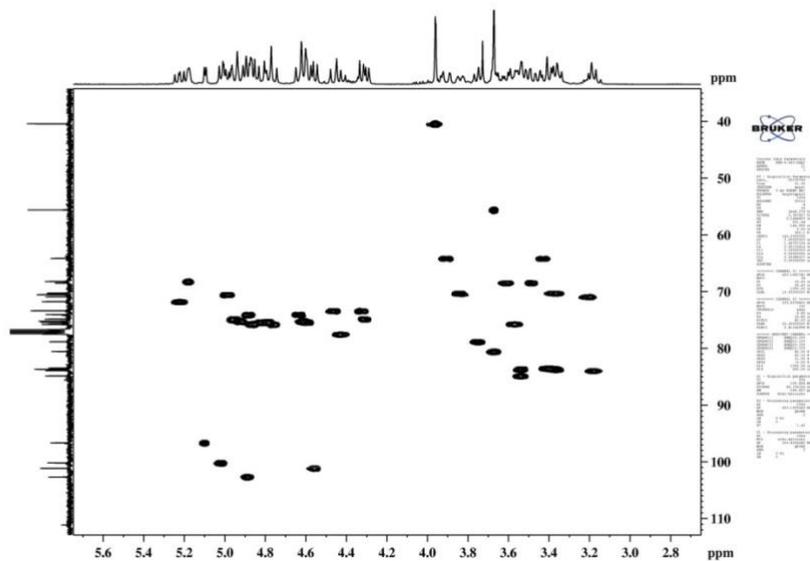
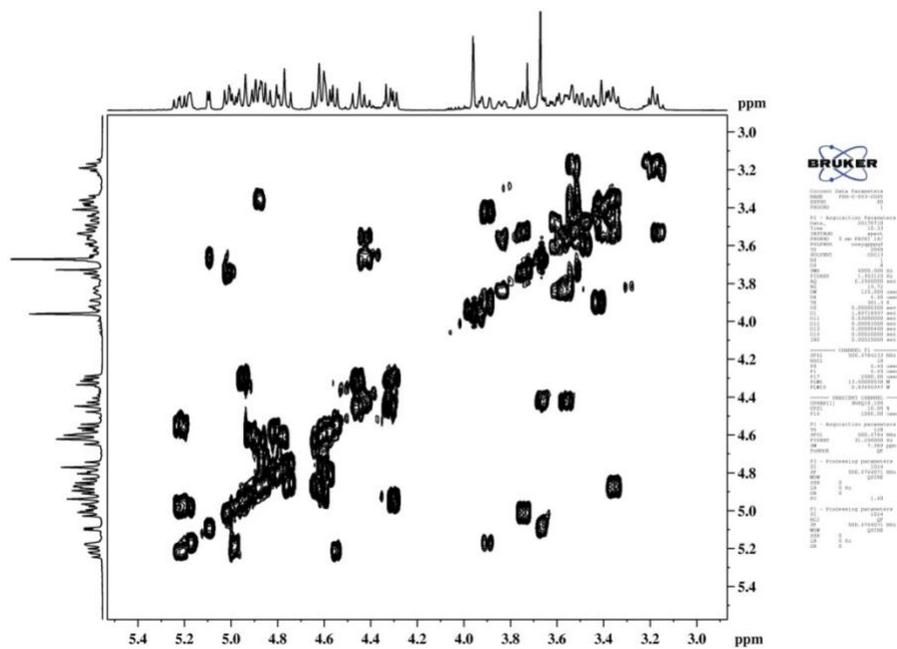




2D COSY and HSQC NMR spectra (selected regions) of *p*-Methoxyphenyl (2,3,4-tri-*O*-acetyl-6-deoxy- $\beta$ -D-galactopyranosyl)-(1 $\rightarrow$ 4)-(2,3,4-tri-*O*-benzyl-6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 2)-(3-*O*-benzyl-6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 3)-2,4,6-tri-*O*-benzyl- $\alpha$ -D-glucopyranoside (**19**) (CDCl<sub>3</sub>).



<sup>1</sup>H and <sup>13</sup>C NMR spectra of *p*-Methoxyphenyl (2-*O*-chloroacetyl-3,4-di-*O*-acetyl-β-L-arabinopyranosyl)-(1→4)-(2,3,4-tri-*O*-benzyl-6-deoxy-β-D-glucopyranosyl)-(1→2)-(3-*O*-benzyl-6-deoxy-β-D-glucopyranosyl)-(1→3)-2,4,6-tri-*O*-benzyl-α-D-glucopyranoside (**20**) (CDCl<sub>3</sub>).



2D COSY and HSQC NMR spectra (selected regions) of *p*-Methoxyphenyl (2-*O*-chloroacetyl-3,4-di-*O*-acetyl- $\beta$ -L-arabinopyranosyl)-(1 $\rightarrow$ 4)-(2,3,4-tri-*O*-benzyl-6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 2)-(3-*O*-benzyl-6-deoxy- $\beta$ -D-glucopyranosyl)-(1 $\rightarrow$ 3)-2,4,6-tri-*O*-benzyl- $\alpha$ -D-glucopyranoside (**20**) (CDCl<sub>3</sub>).