

# A Revisit to the Hantzsch Reaction: Unexpected products beyond 1,4-dihydropyridines

Li Shen, Song Cao\*, Jingjing Wu, Jian Zhang, Hui Li, Nianjin Liu and Xuhong Qian\*

Shanghai Key Laboratory of Chemical Biology, Center of Fluorine Chemical Technology, School of

Pharmacy, East China University of Science and Technology, Shanghai, 200237, China

Fax: +86(21)64252603

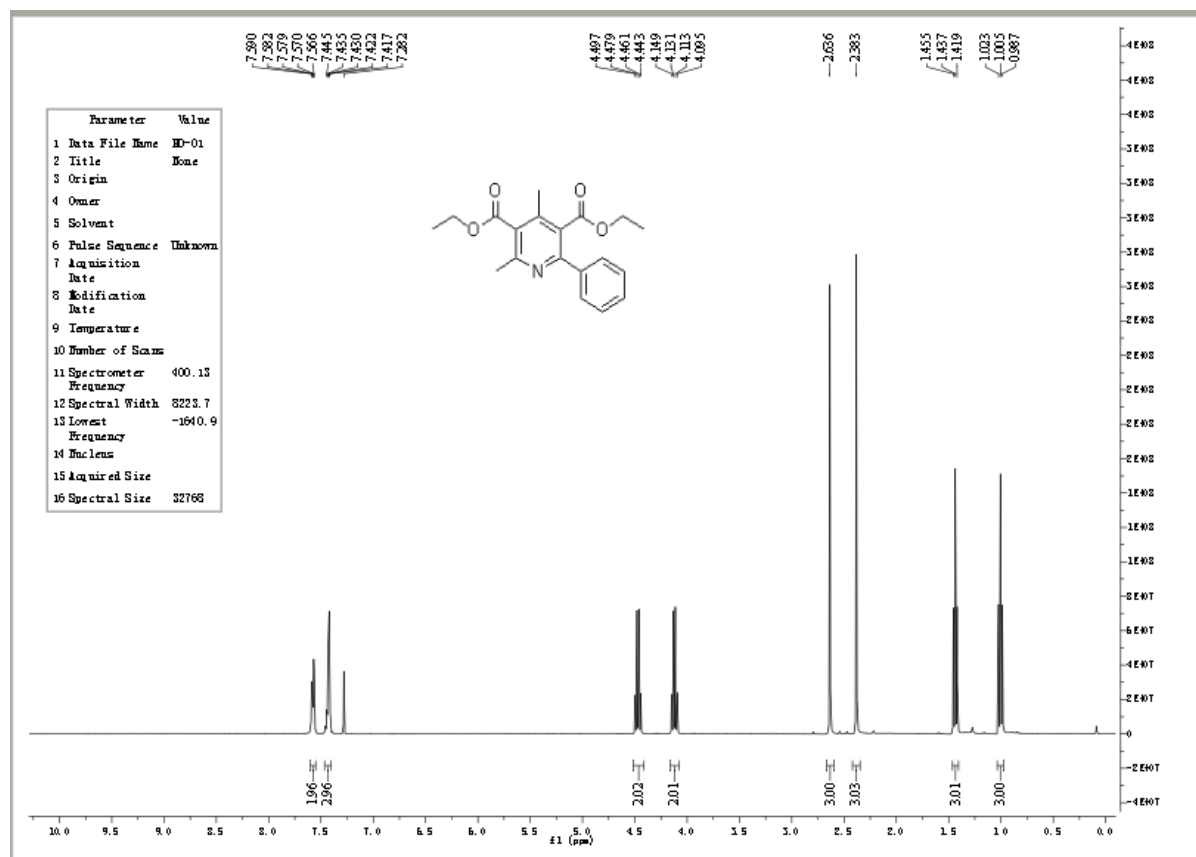
E-mail: scao@ecust.edu.cn; xhqian@ecust.edu.cn

## Supporting information:

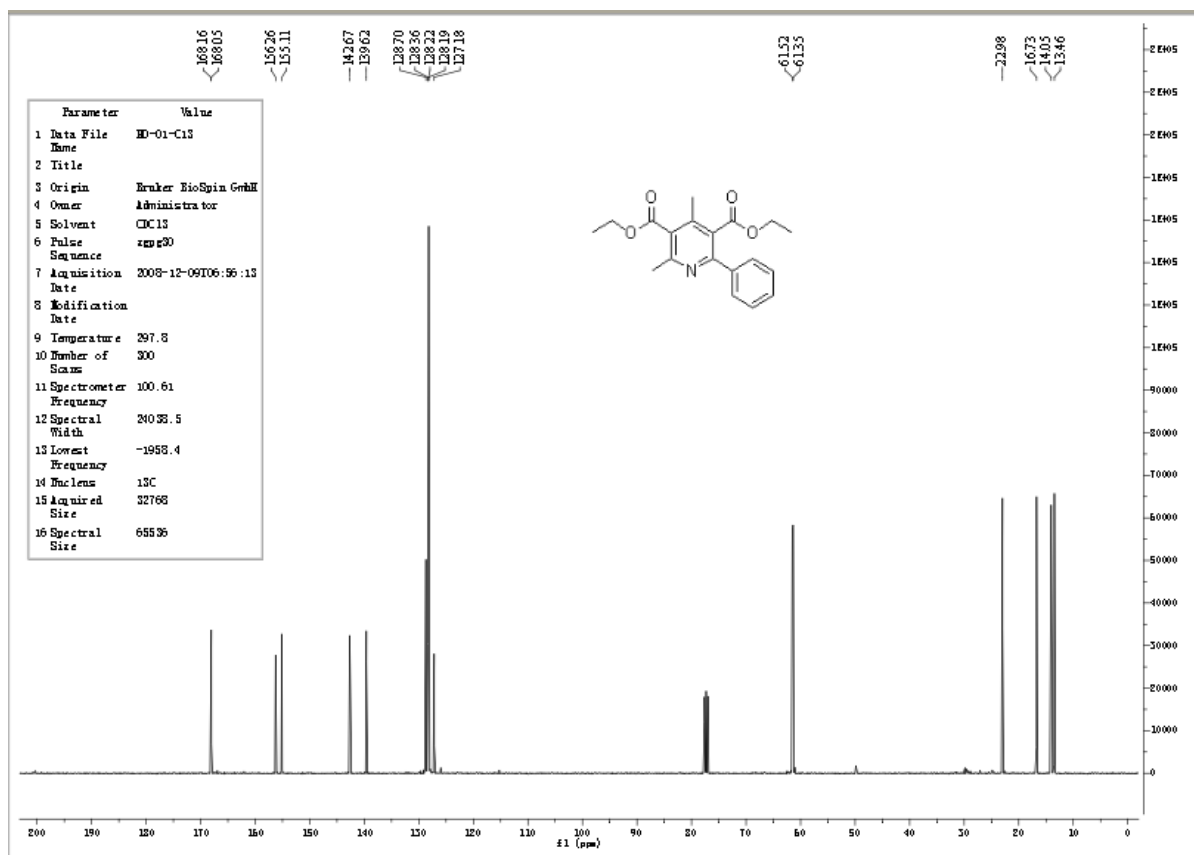
### Spectra of the pyridine derivatives:

#### Diethyl 2-phenyl-4, 6-dimethylpyridine-3, 5-dicarboxylate (3a).

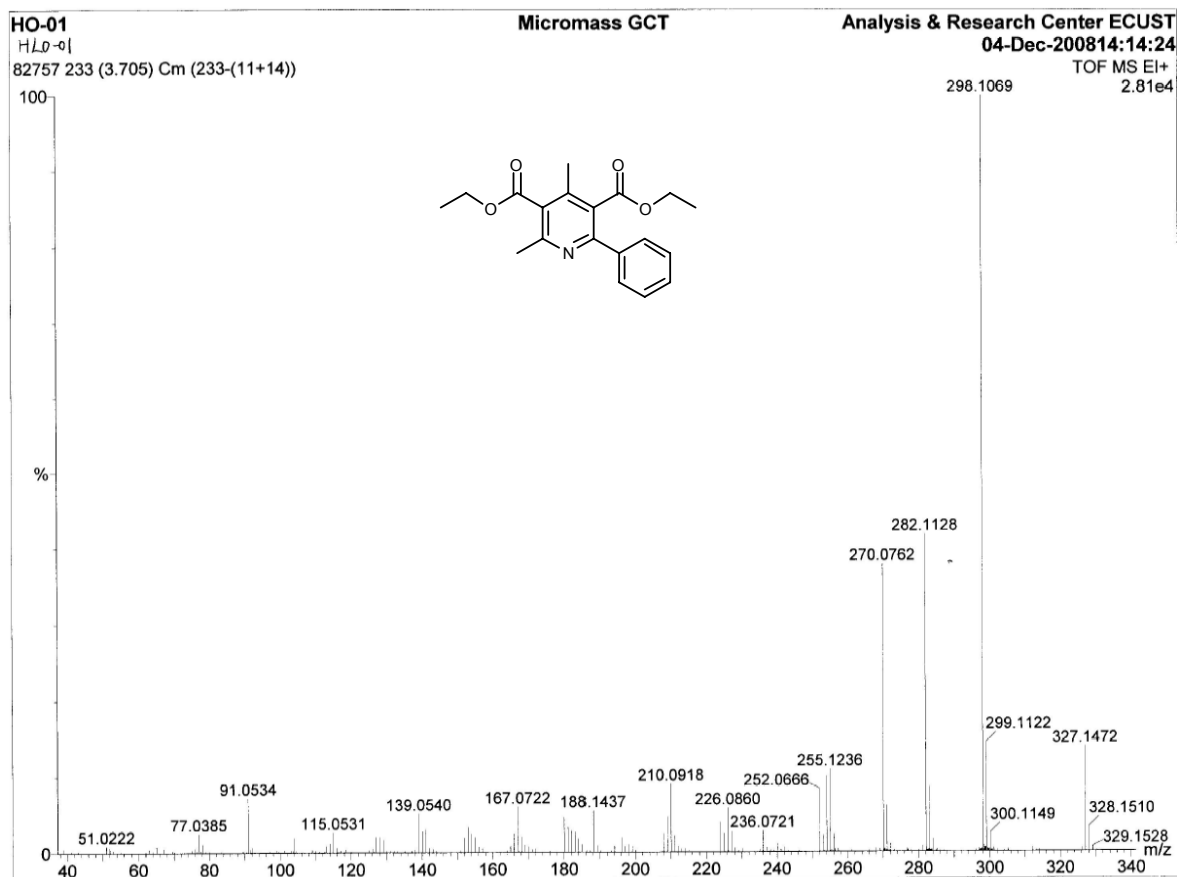
#### <sup>1</sup>H NMR:



#### <sup>13</sup>C NMR:

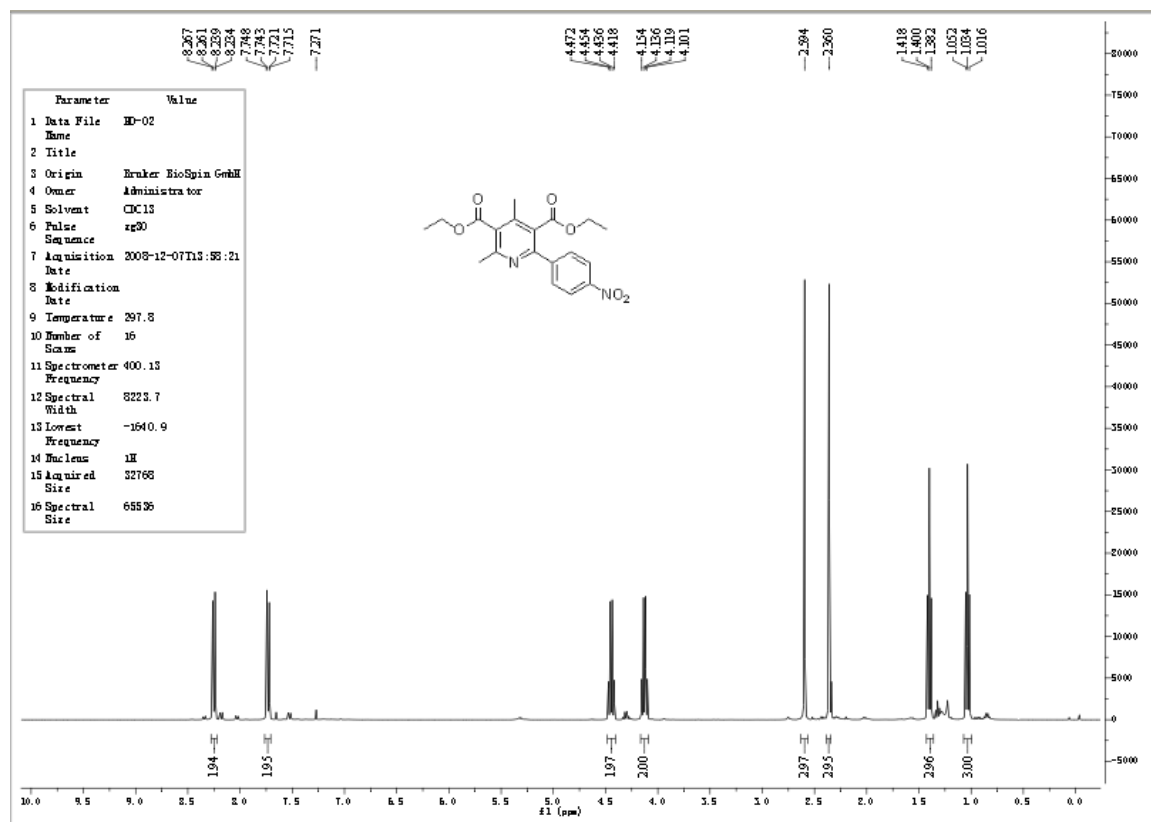


**HRMS:**

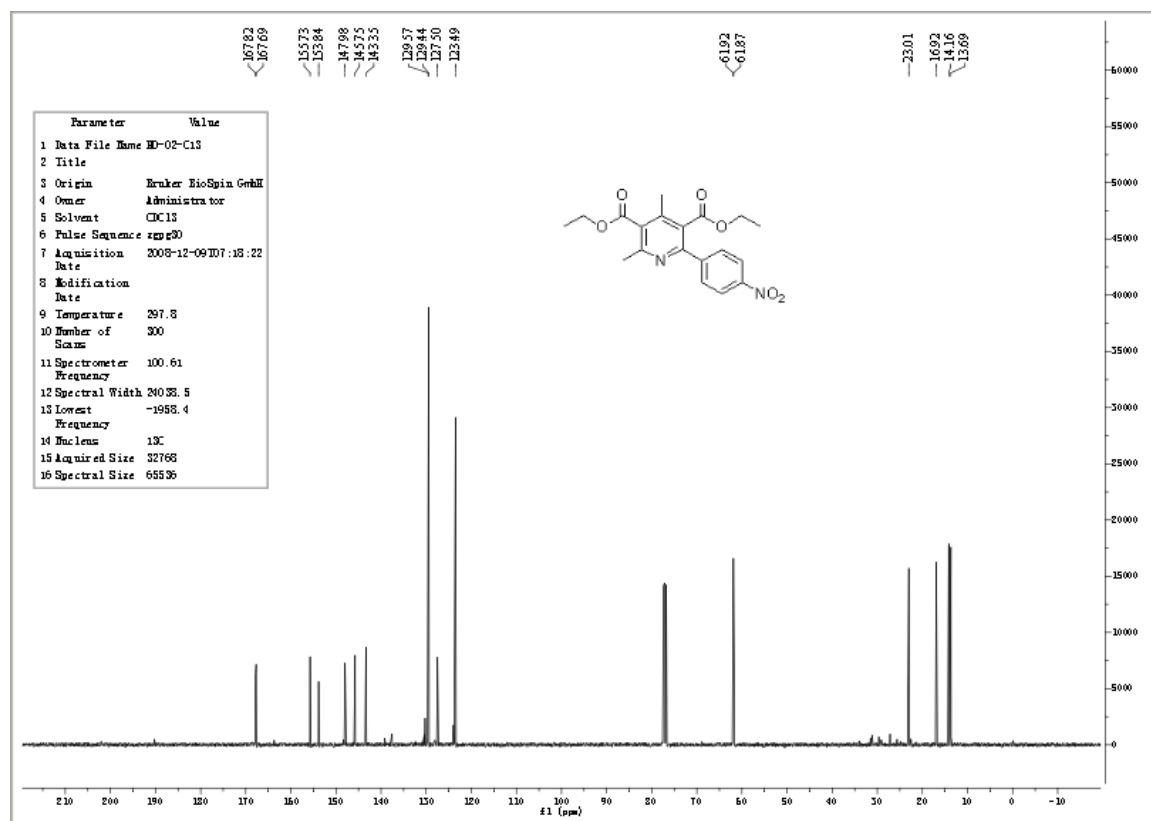


# Diethyl 2-(4-nitrophenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3b).

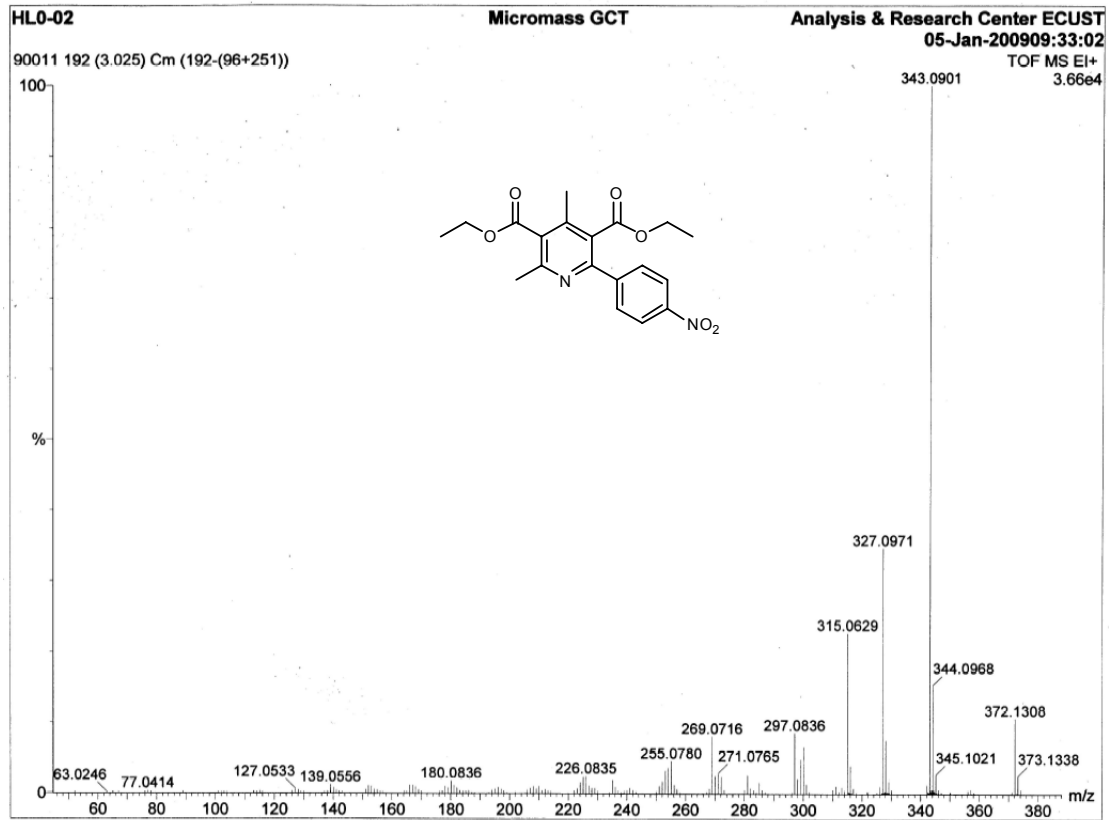
## <sup>1</sup>H NMR:



## <sup>13</sup>C NMR:

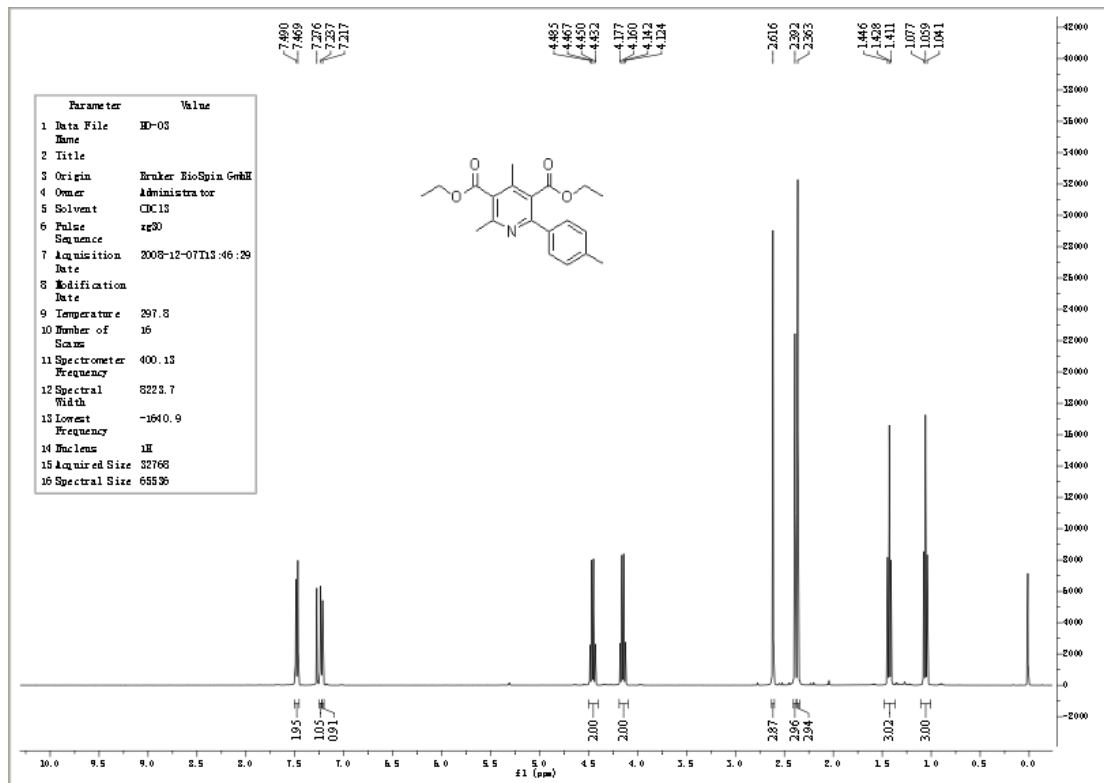


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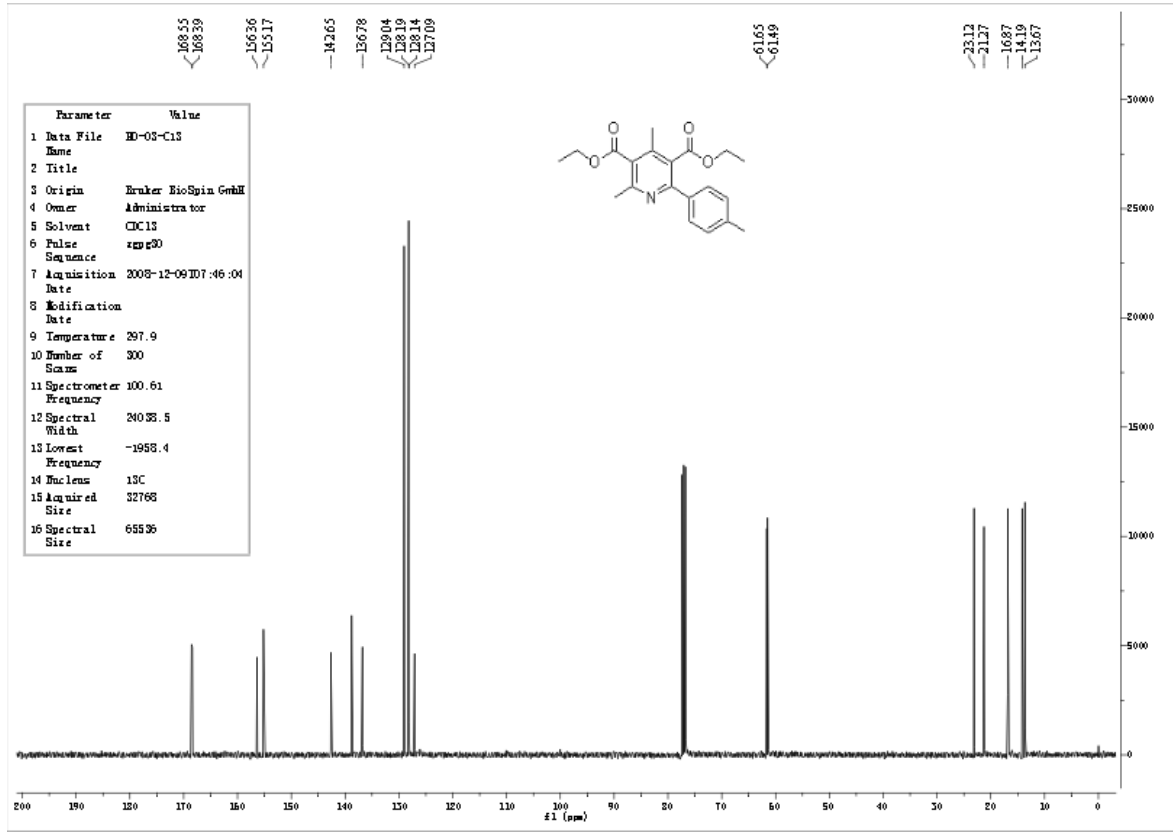


Diethyl 2-(4-methylphenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3c).

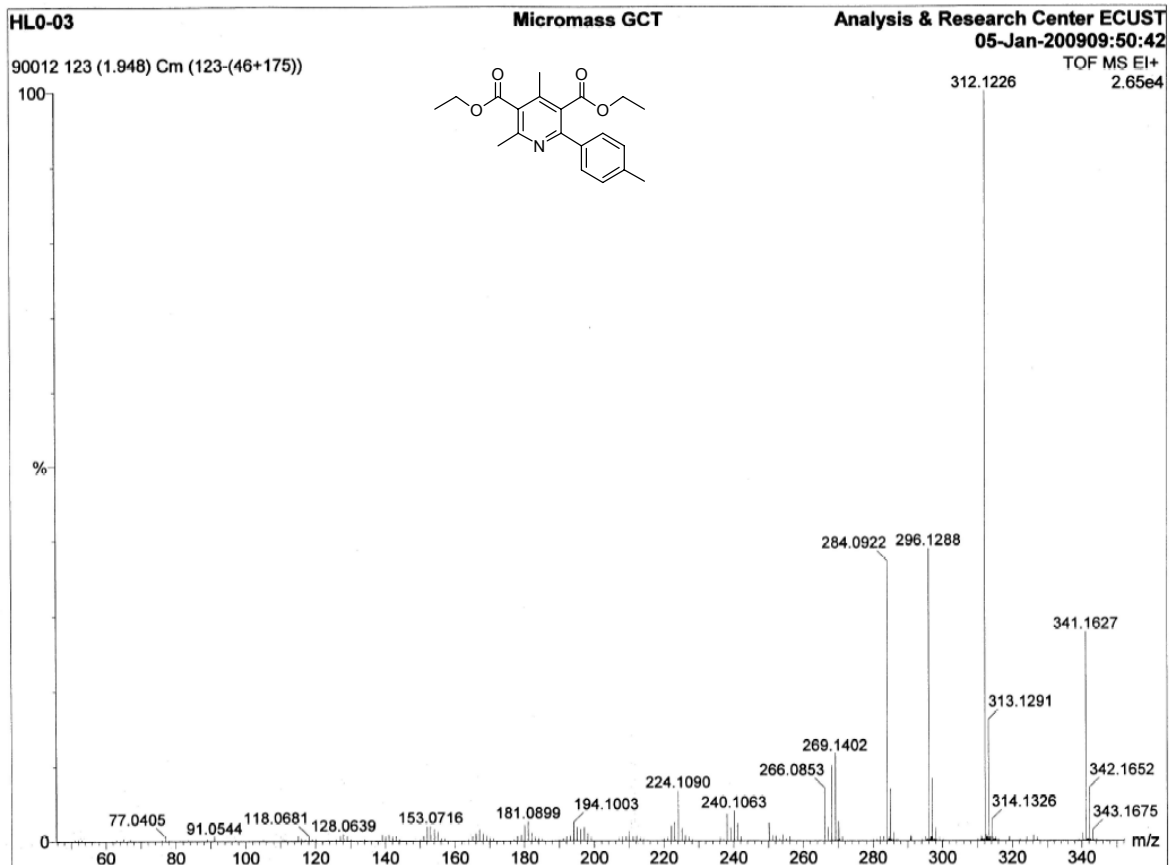
<sup>1</sup>H NMR:



**<sup>13</sup>C NMR:**

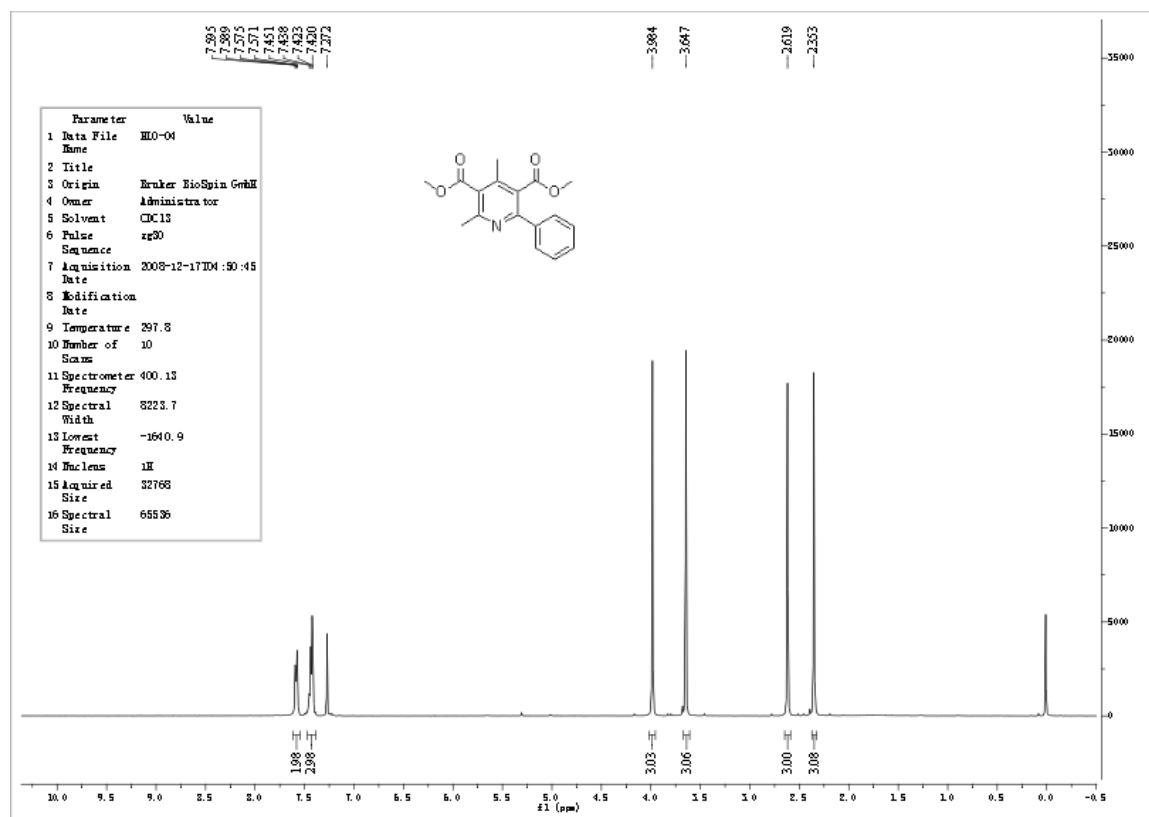


**HRMS:**

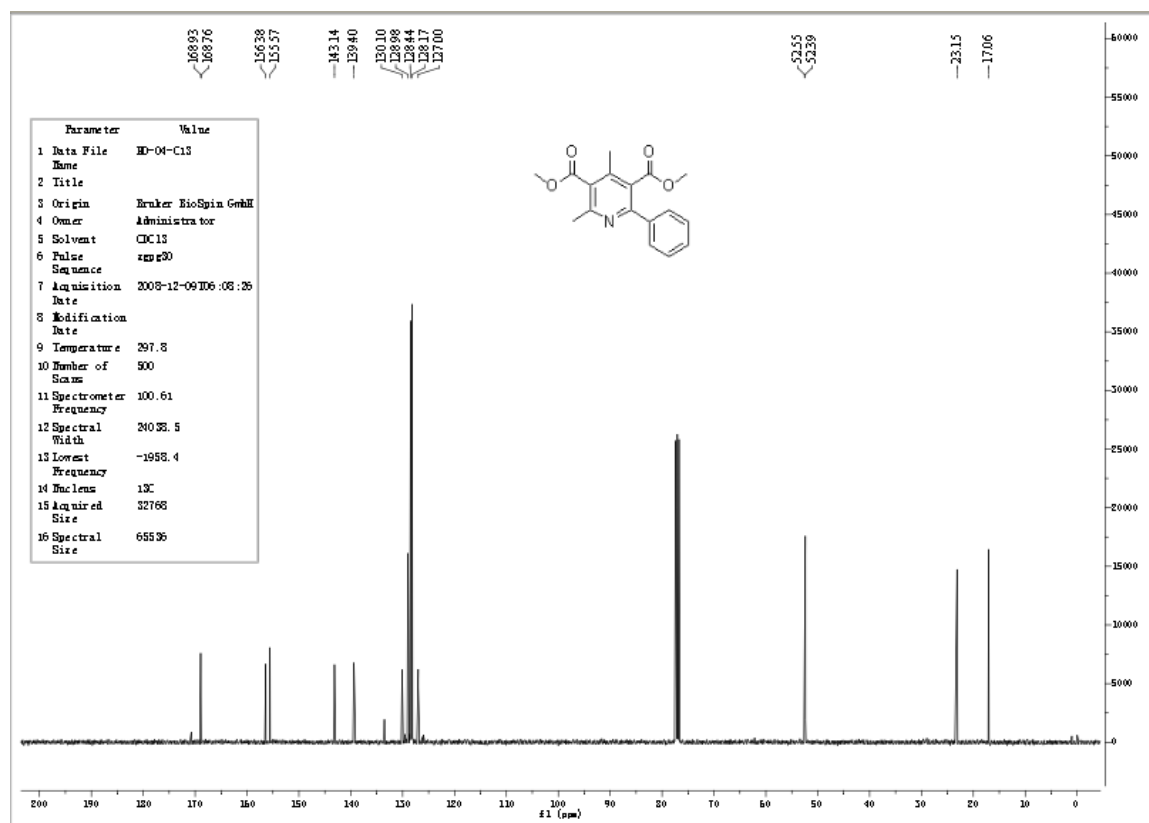


# Dimethyl 2-phenyl-4, 6-dimethylpyridine-3, 5-dicarboxylate (3d).

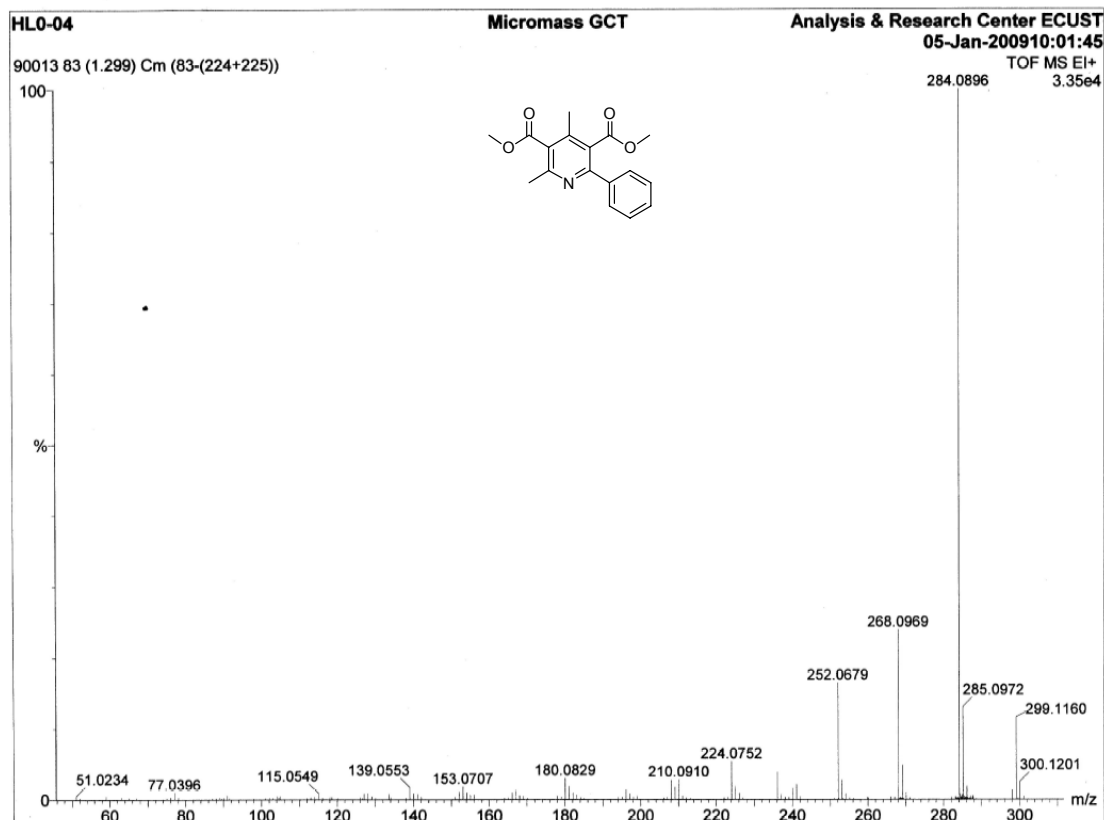
## <sup>1</sup>H NMR:



## <sup>13</sup>C NMR:

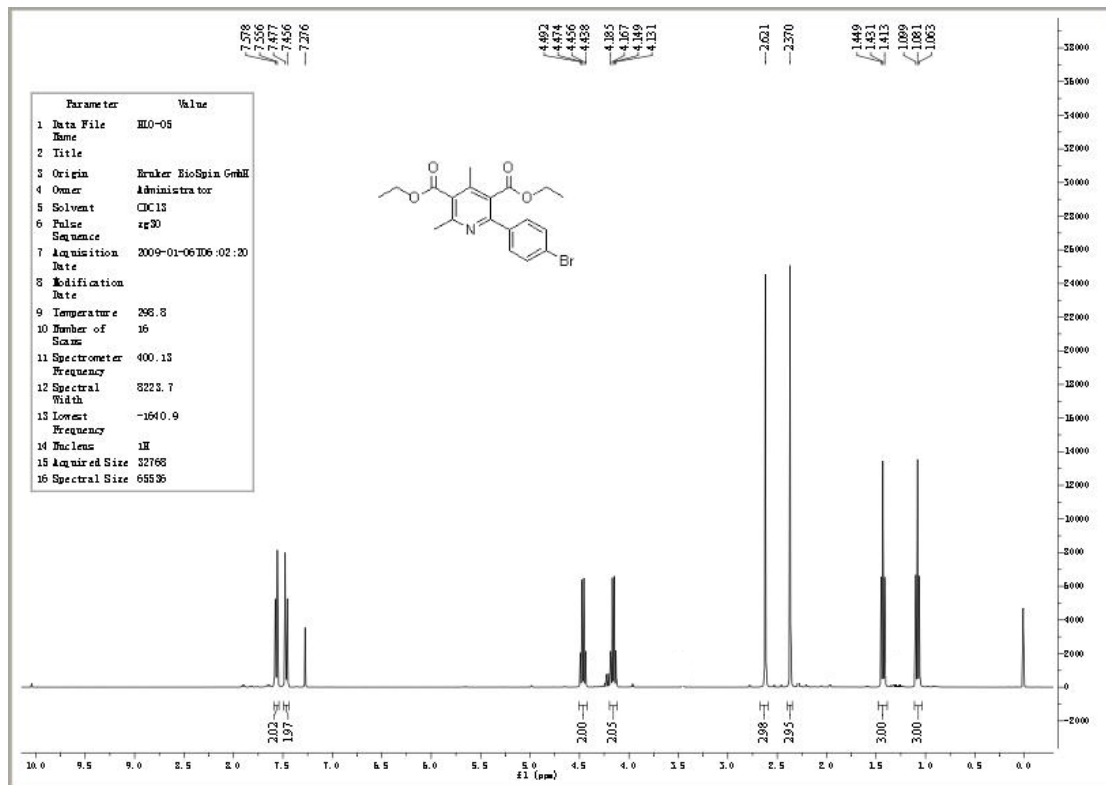


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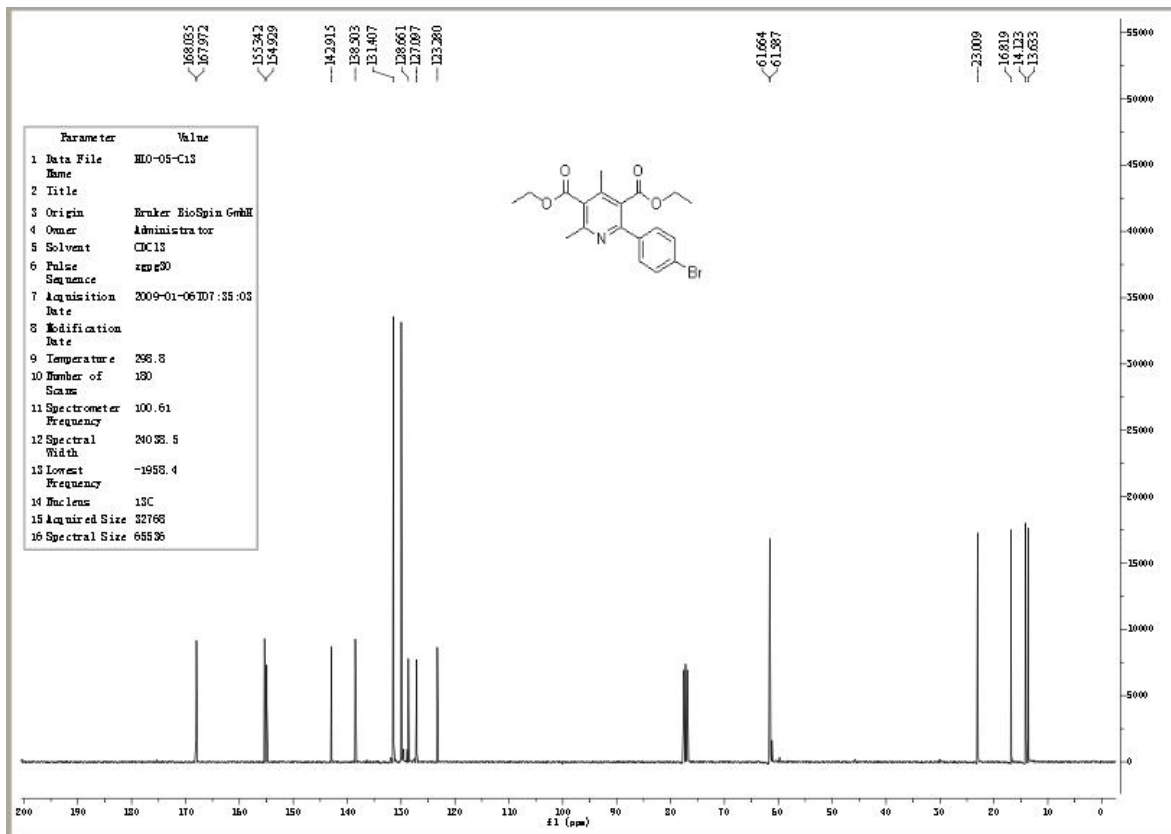


Diethyl 2-(4-bromophenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3e).

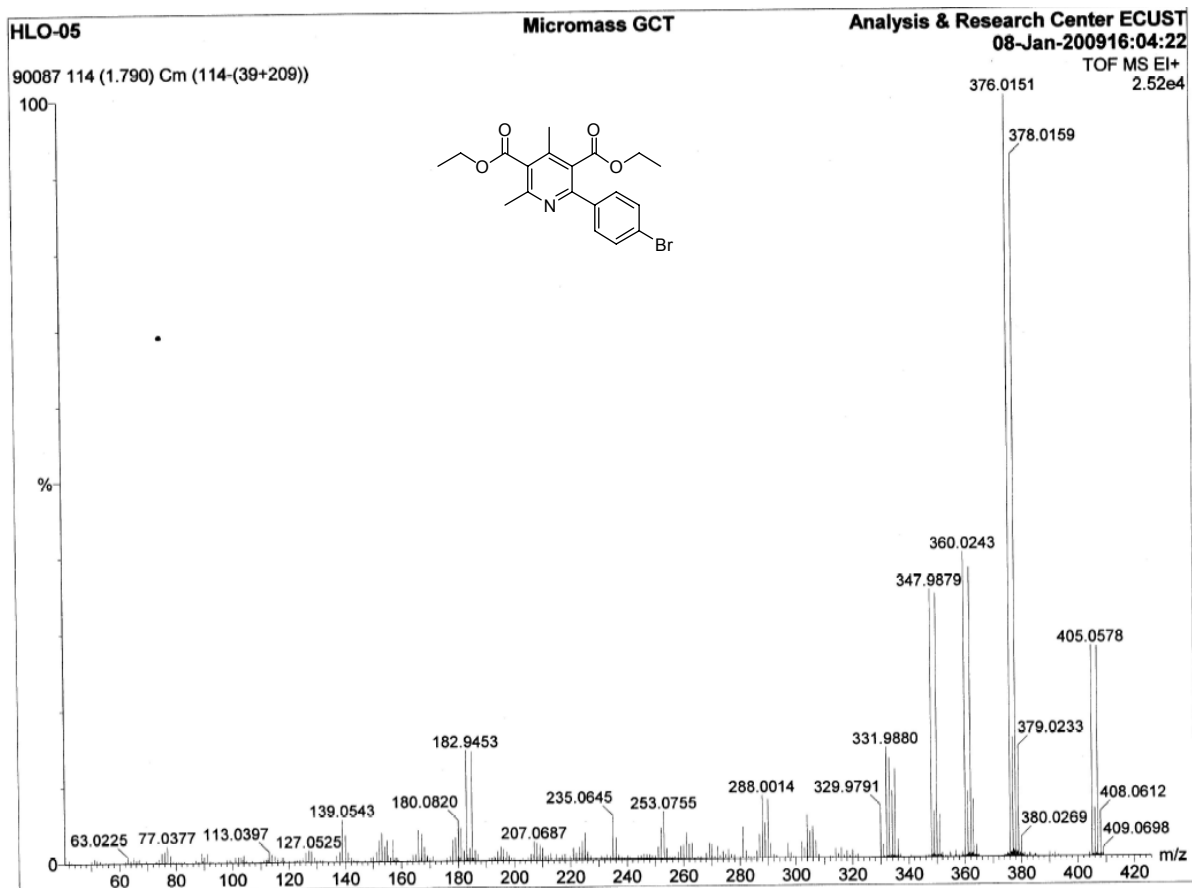
<sup>1</sup>H NMR:



### <sup>13</sup>C NMR:



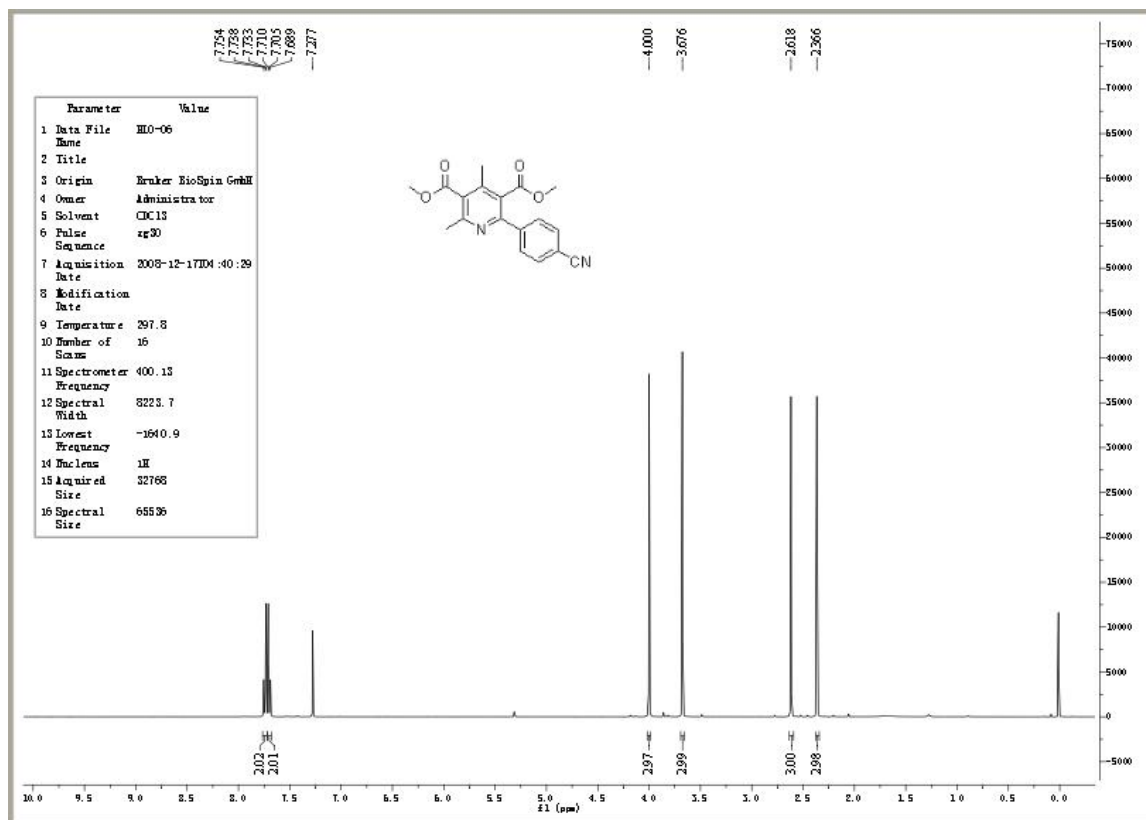
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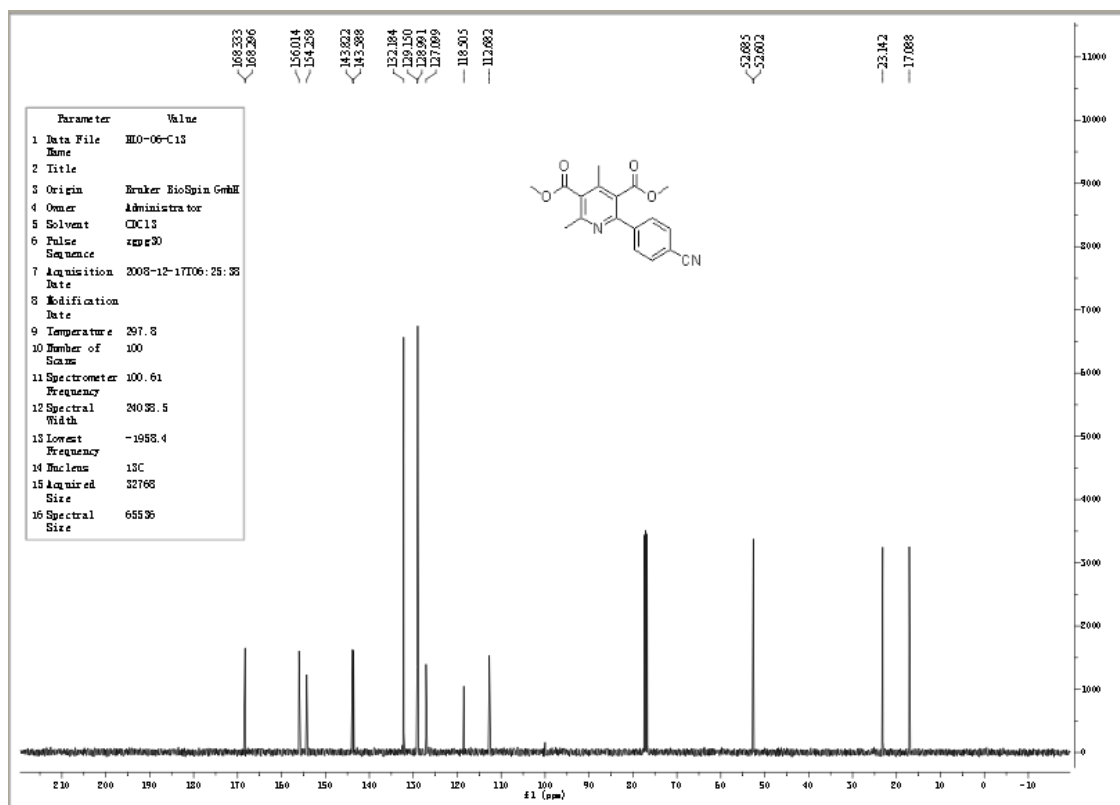


# Dimethyl 2-(4-cyanophenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3f).

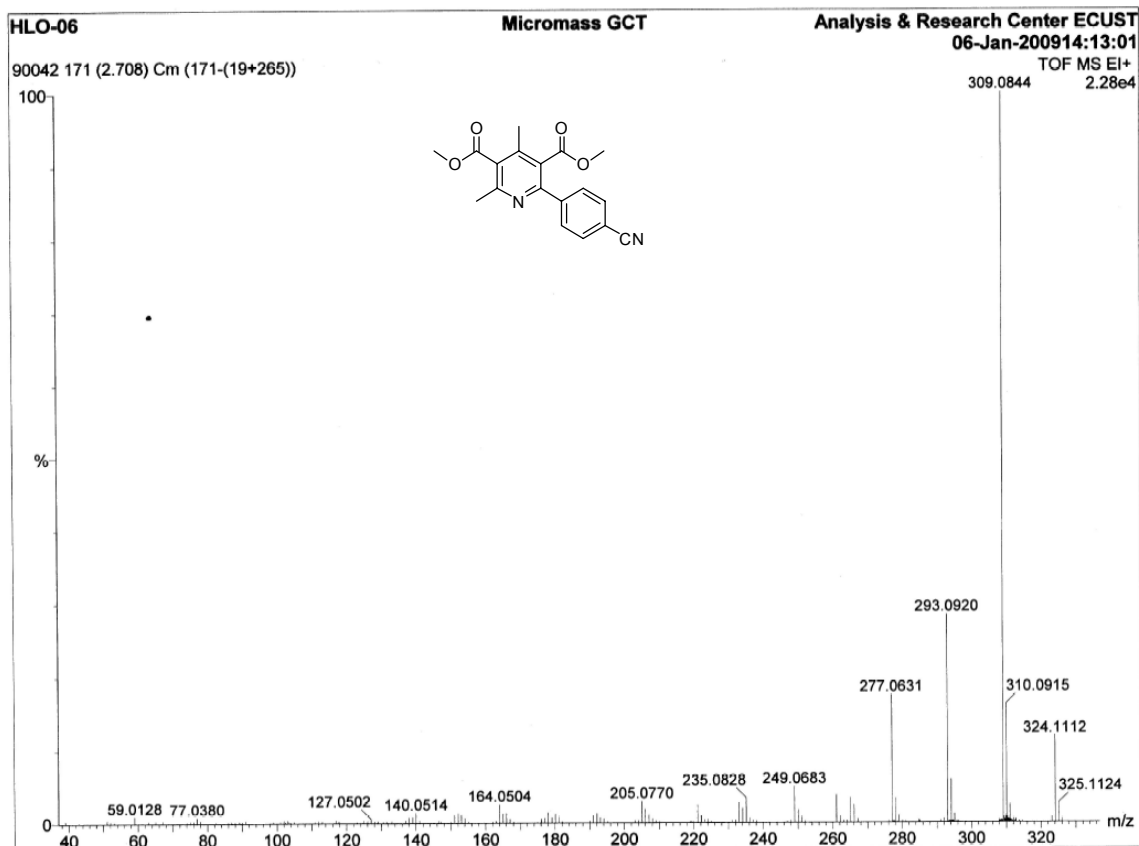
## <sup>1</sup>H NMR:



## <sup>13</sup>C NMR:

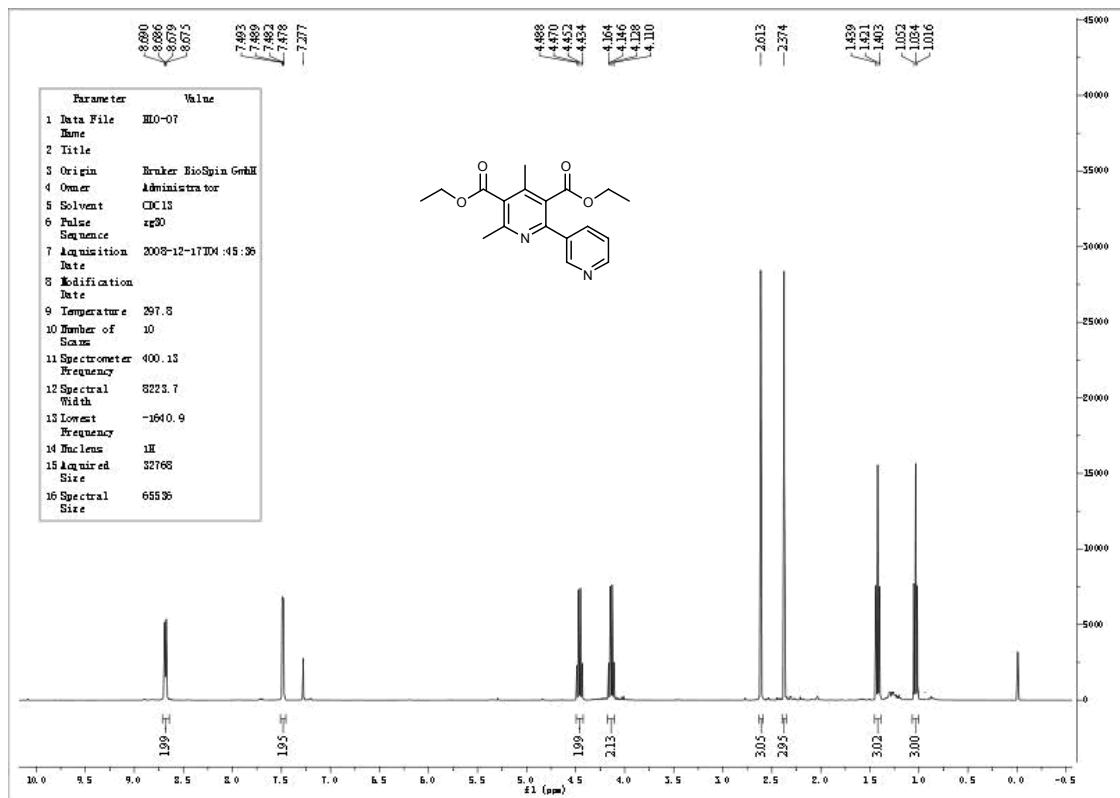


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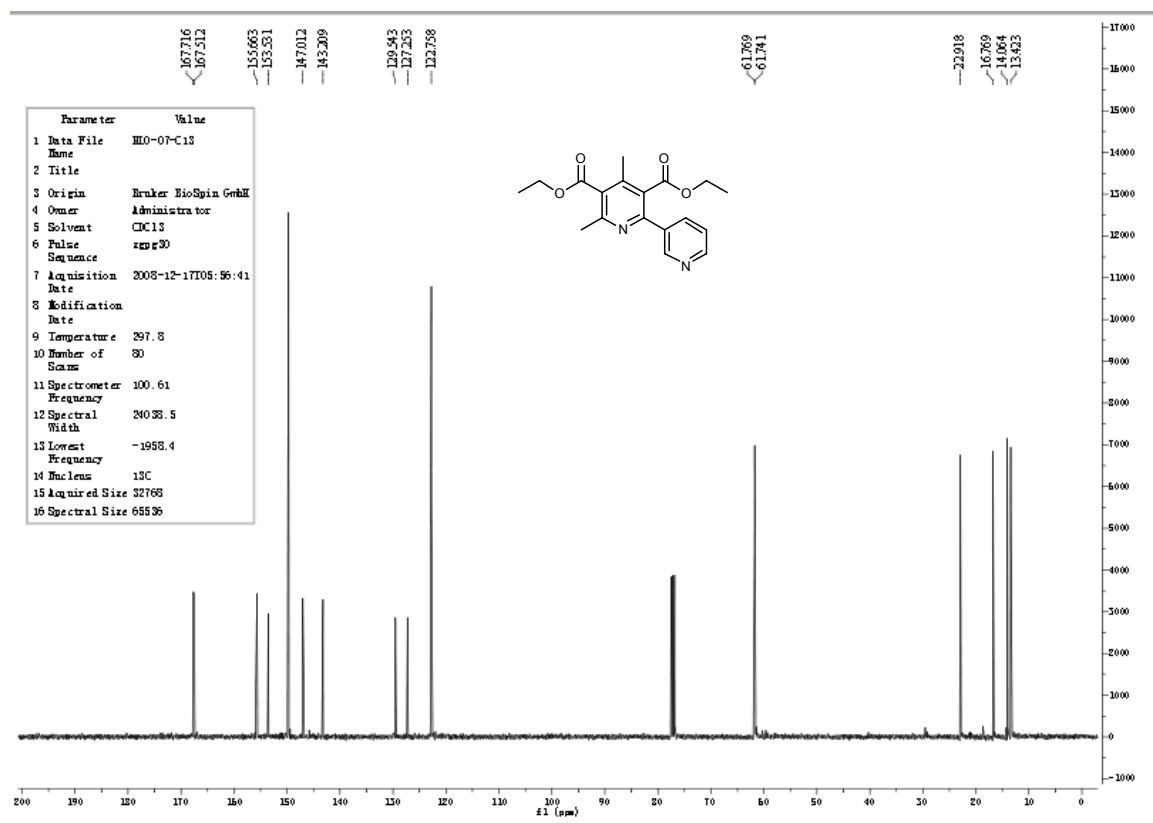


Diethyl 4, 6-dimethyl-2, 3'-bipyridine-3, 5-dicarboxylate (3g).

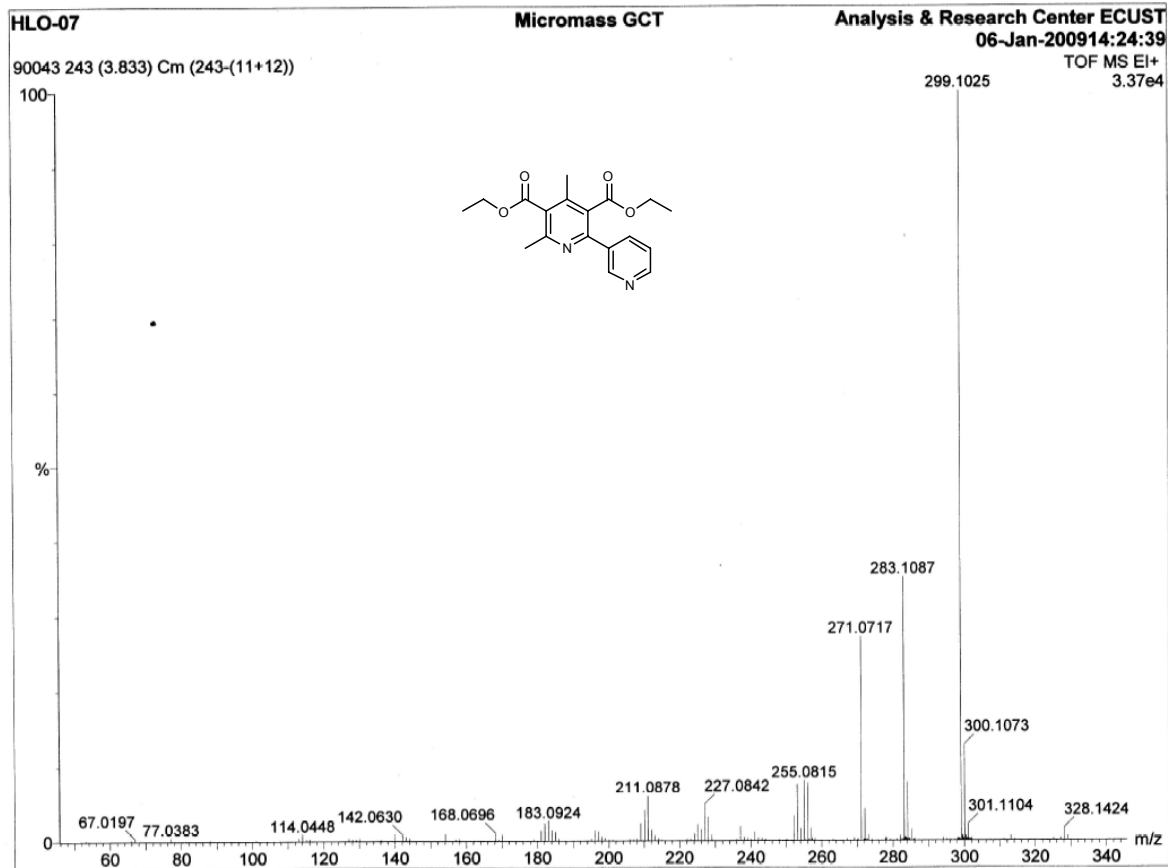
<sup>1</sup>H NMR:



# <sup>13</sup>C NMR:

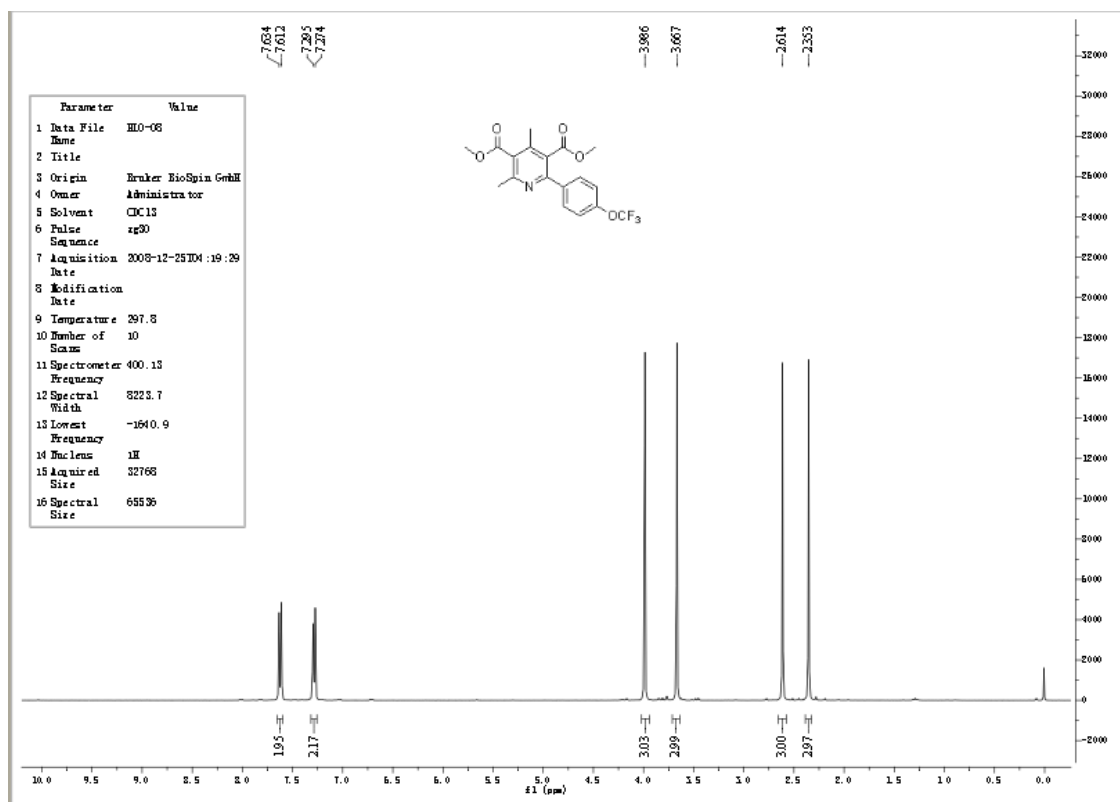


# HRMS:

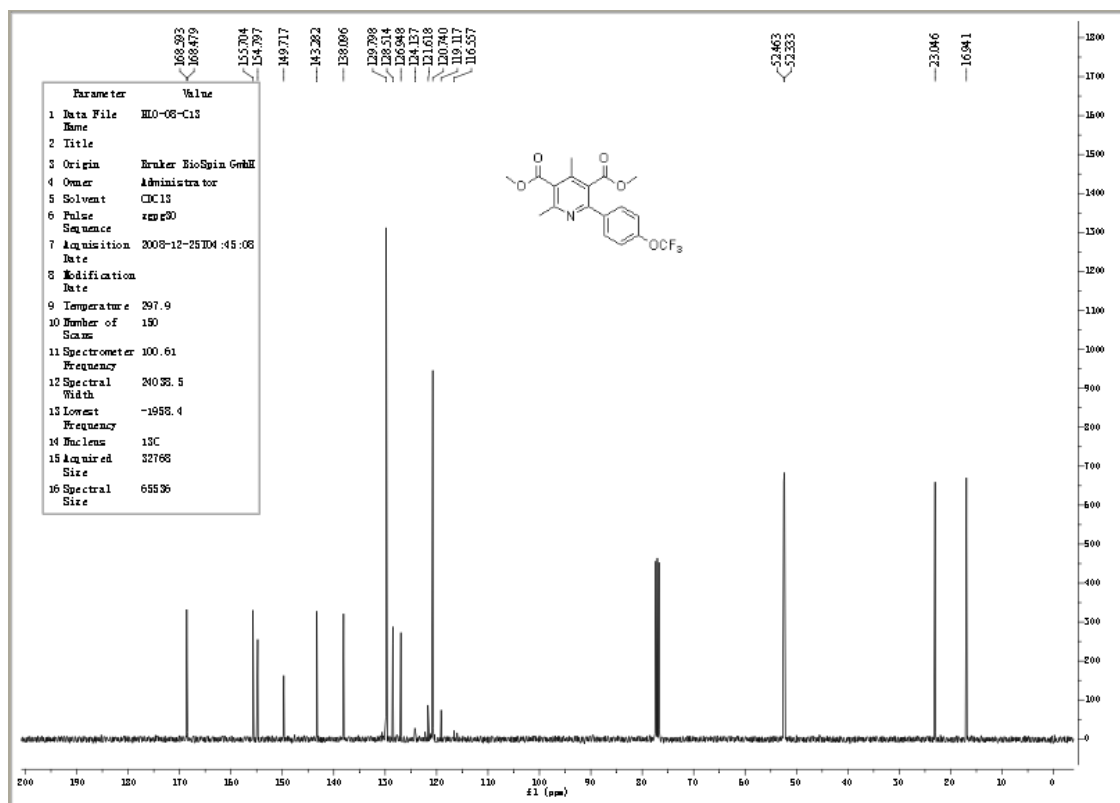


# Dimethyl 2-(4-trifluoromethoxyphenyl)-4, 6-dimethylpyridine-3, 5-dicarboxylate (3h).

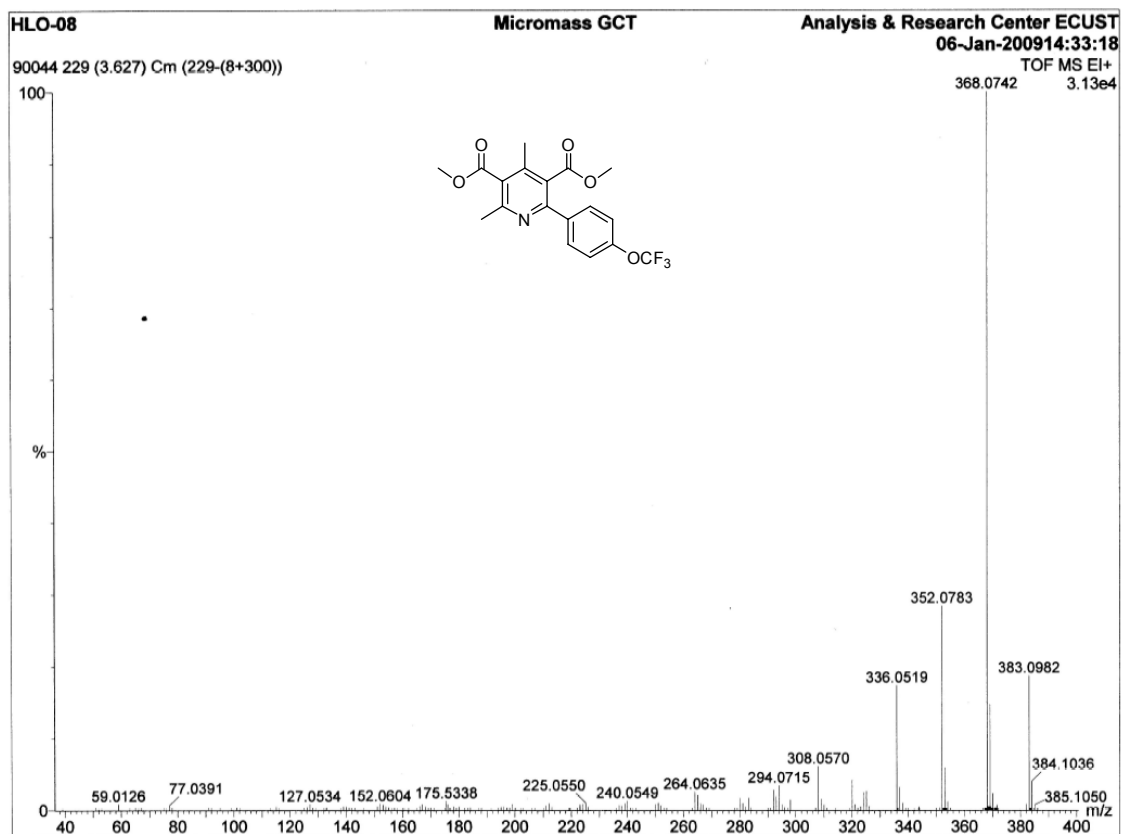
## <sup>1</sup>H NMR:



## <sup>13</sup>C NMR:

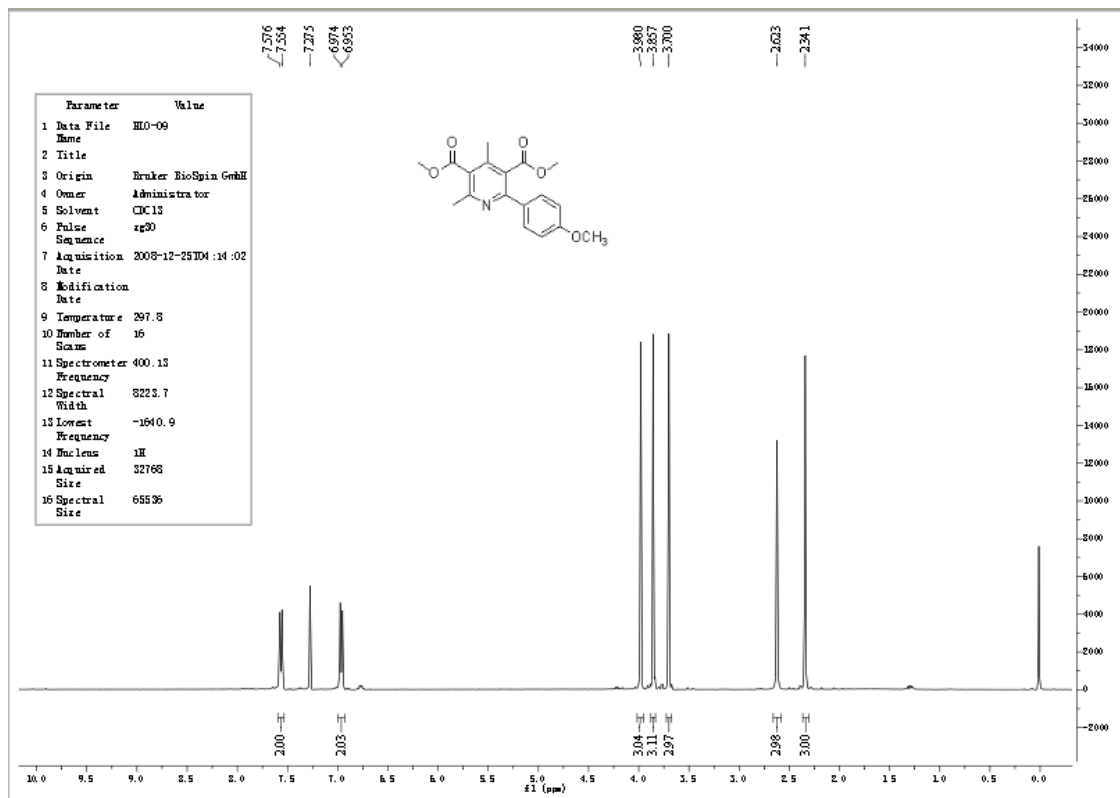


HRMS:

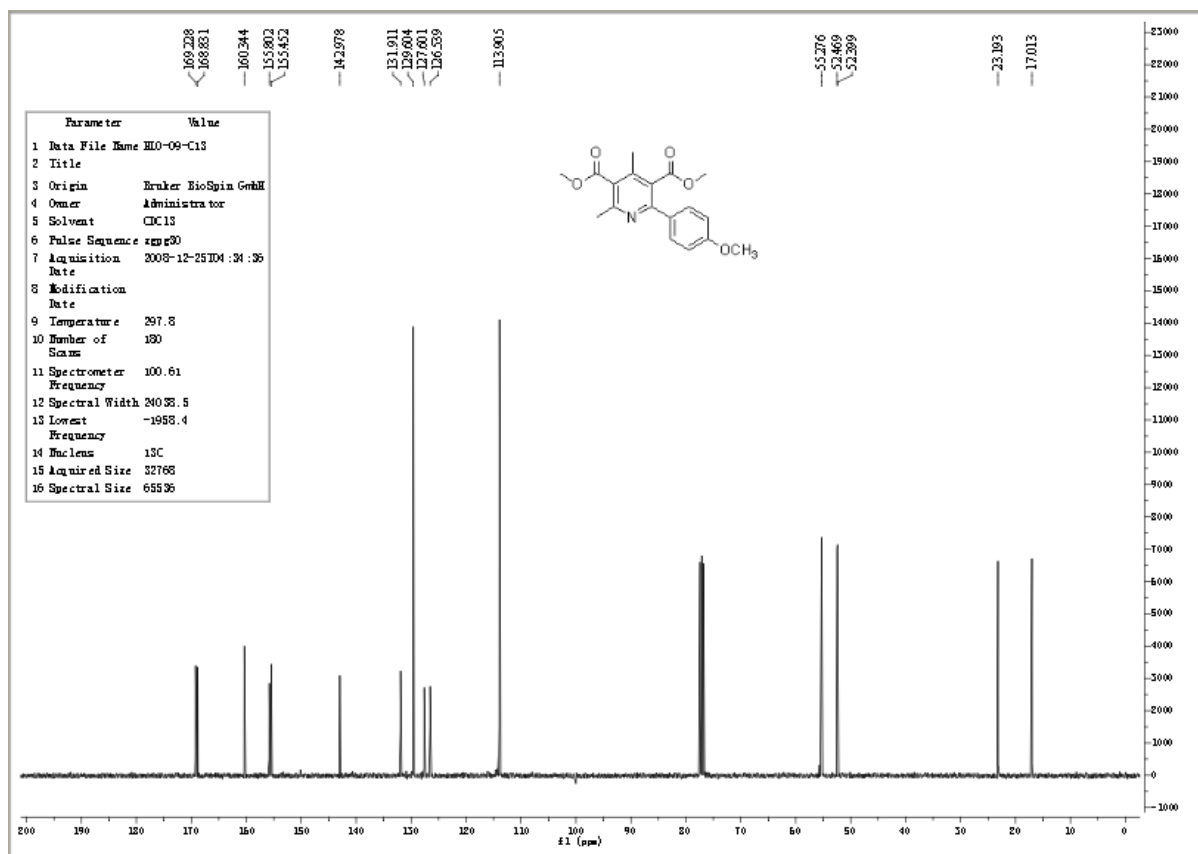


Dimethyl 2-(4-methoxyphenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3i).

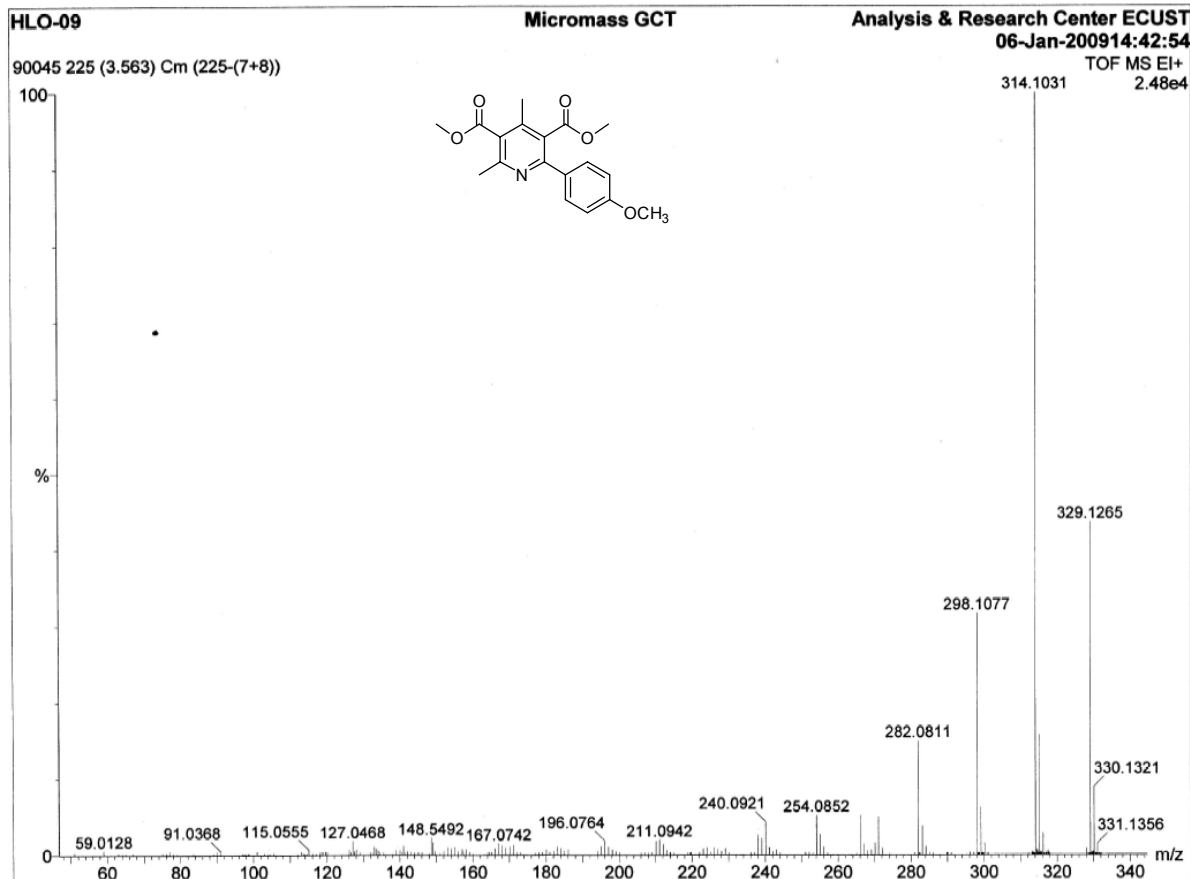
<sup>1</sup>H NMR:



### <sup>13</sup>C NMR:

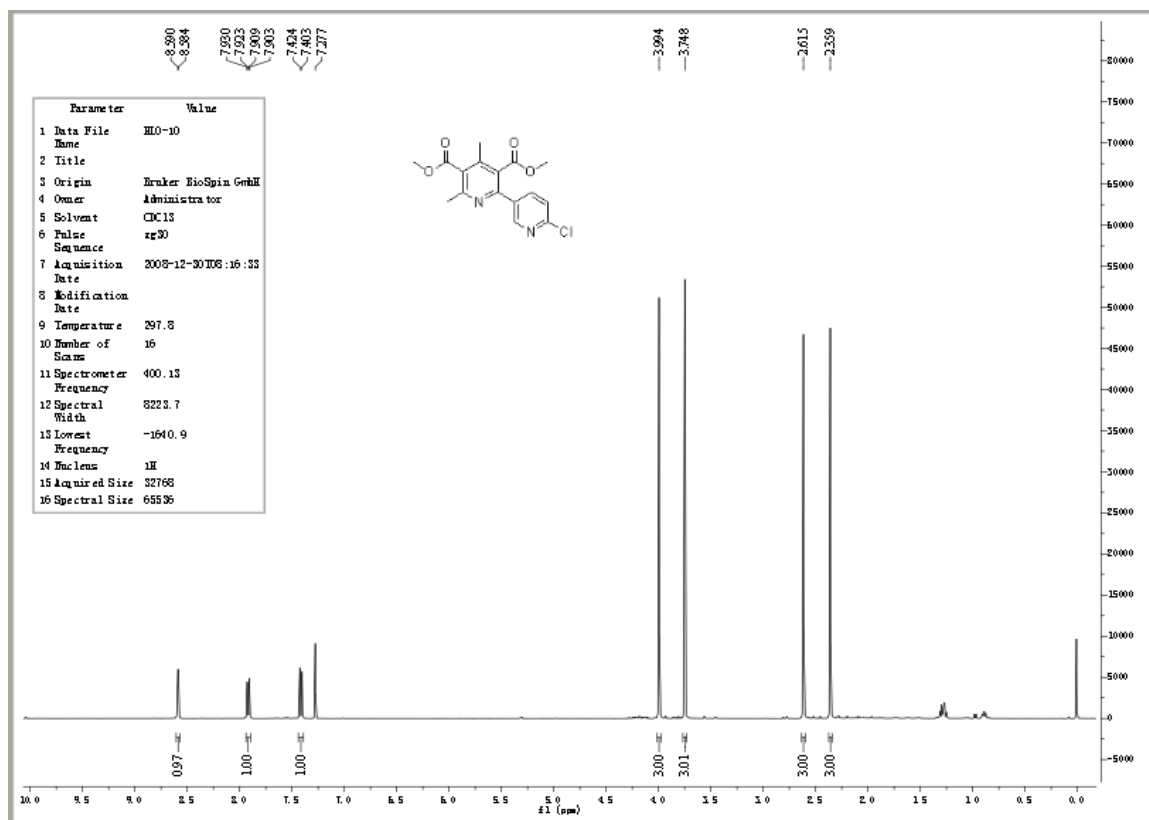


### HRMS:

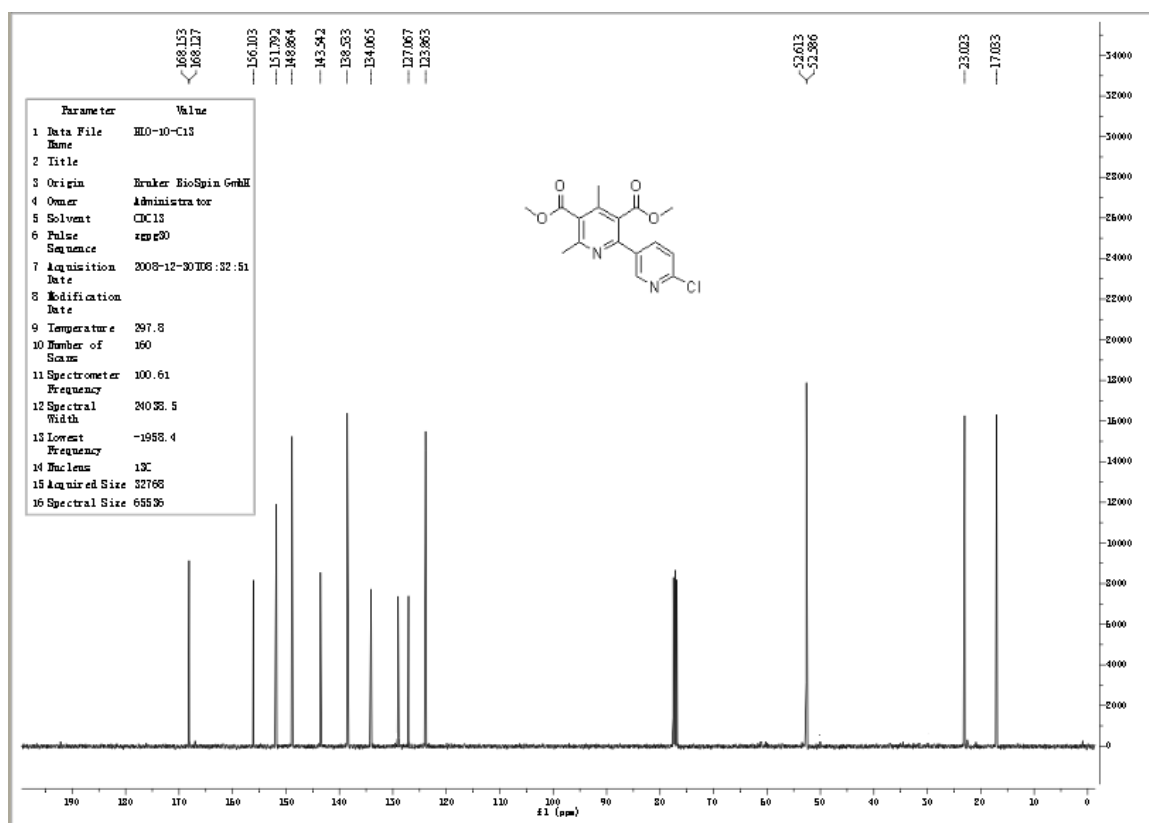


Dimethyl 6'-chloro-4,6-dimethyl-2,3'-bipyridine-3,5-dicarboxylate (3j).

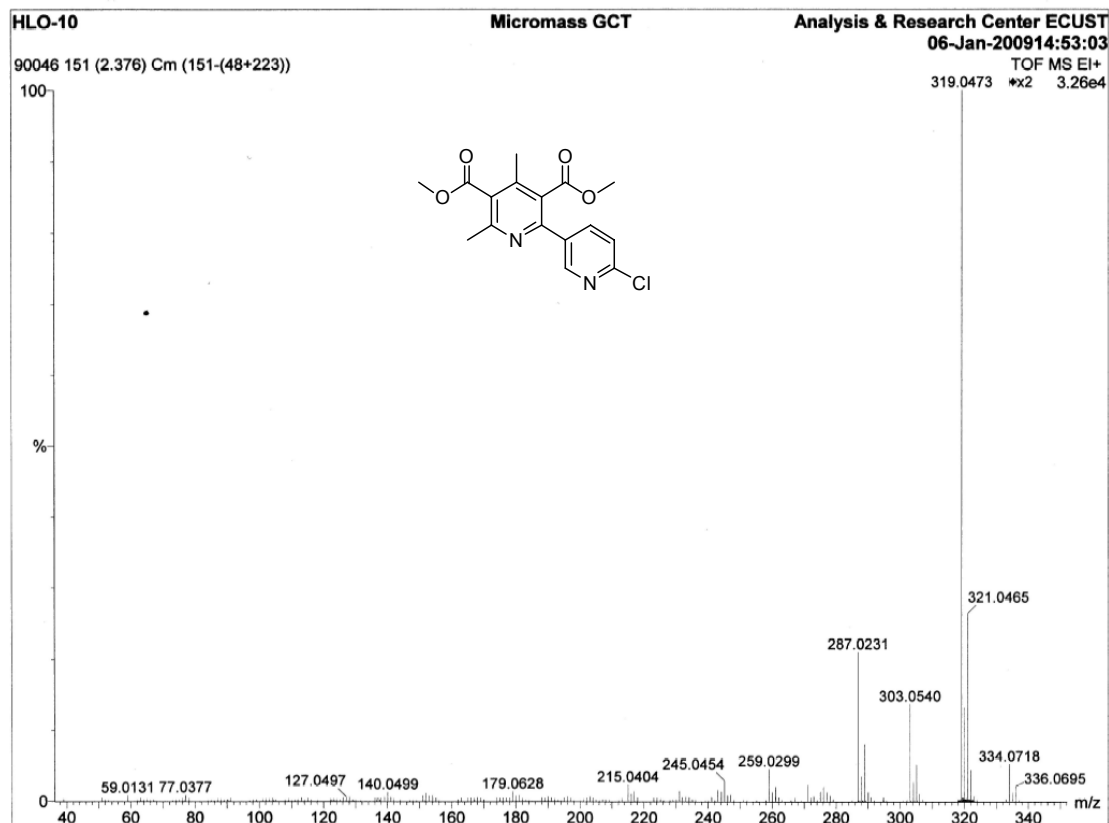
<sup>1</sup>H NMR:



<sup>13</sup>C NMR:

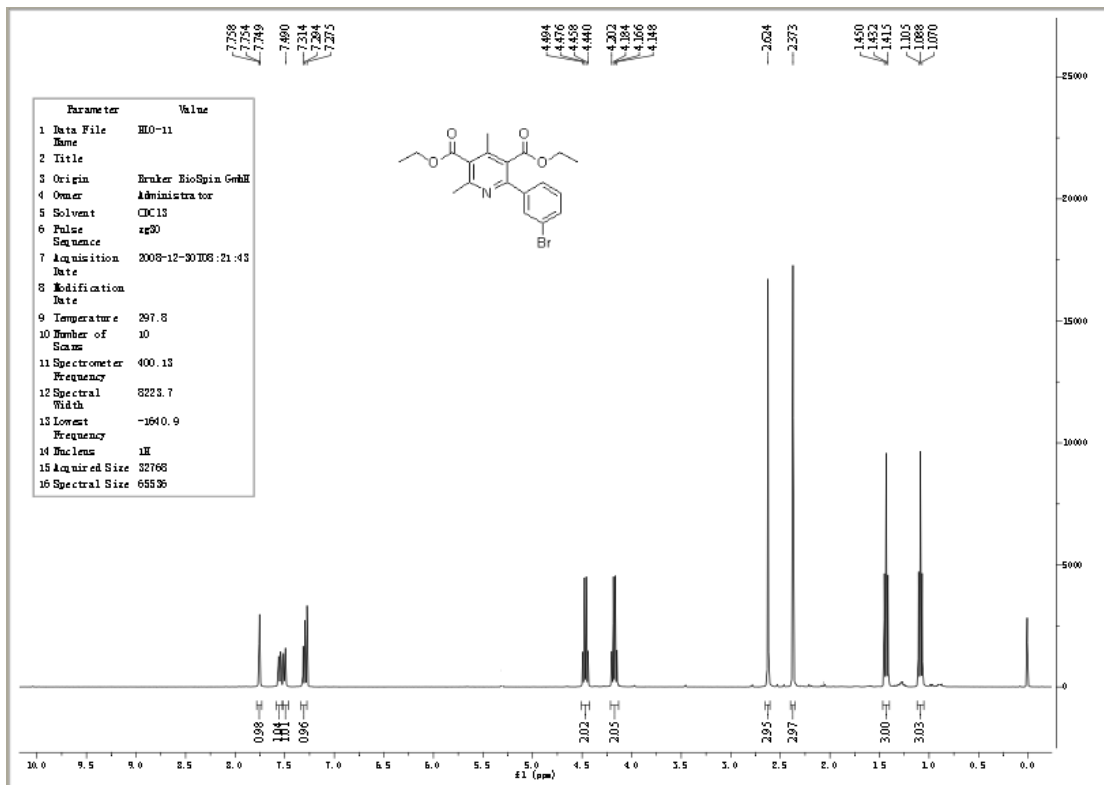


HRMS:



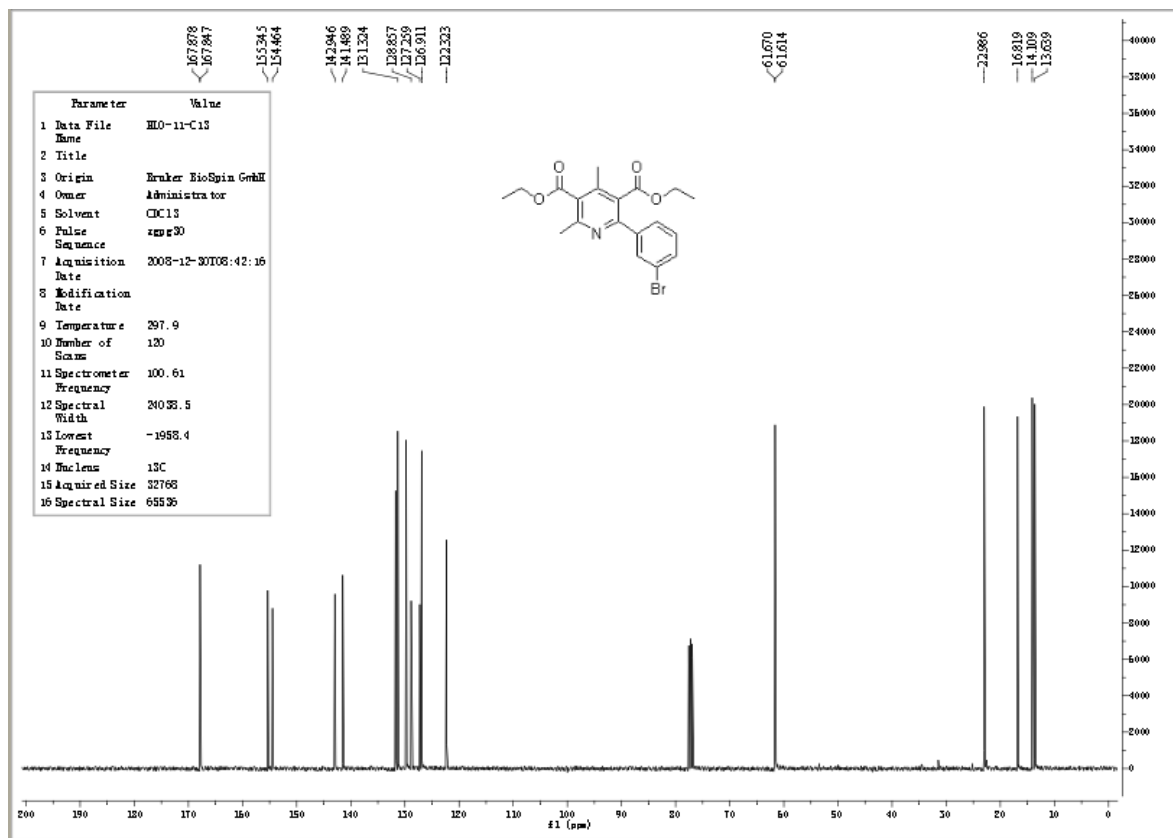
Diethyl 2-(3-bromophenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3k).

<sup>1</sup>H NMR:

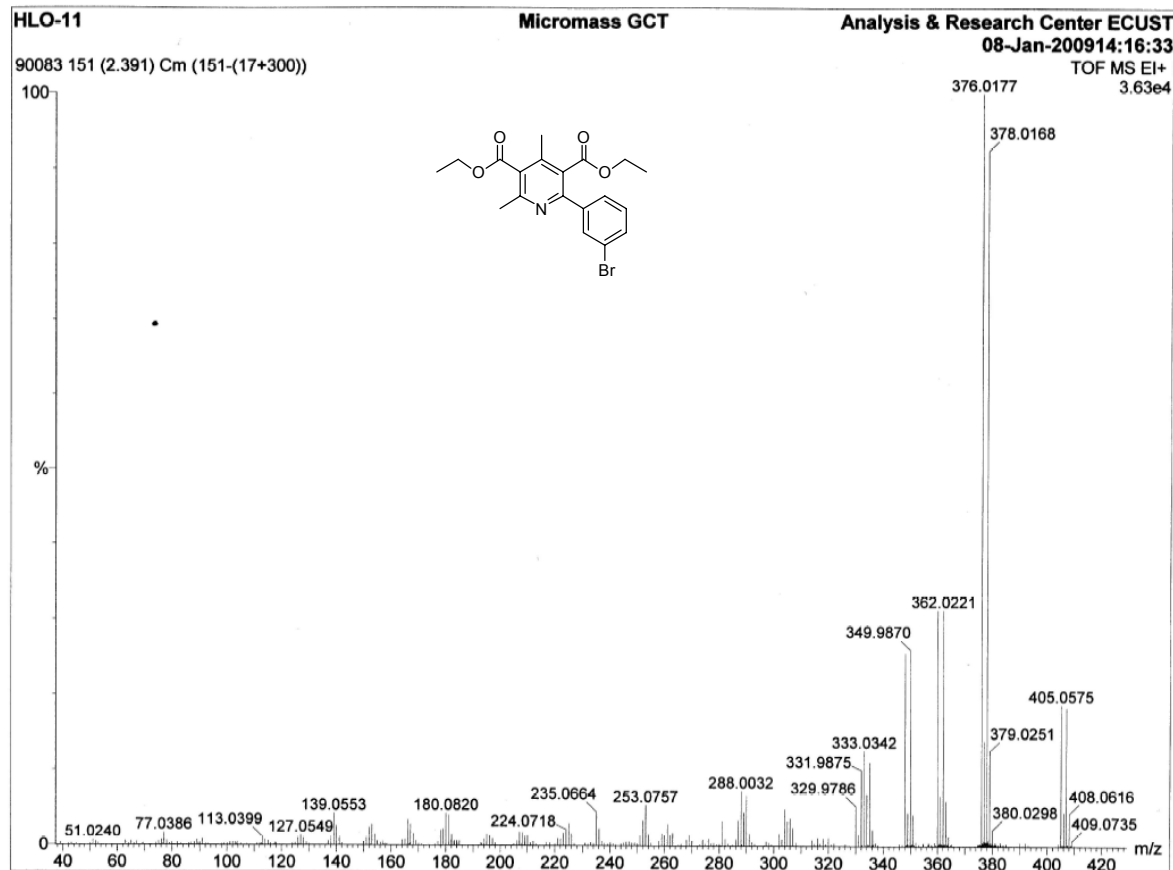




# <sup>13</sup>C NMR:

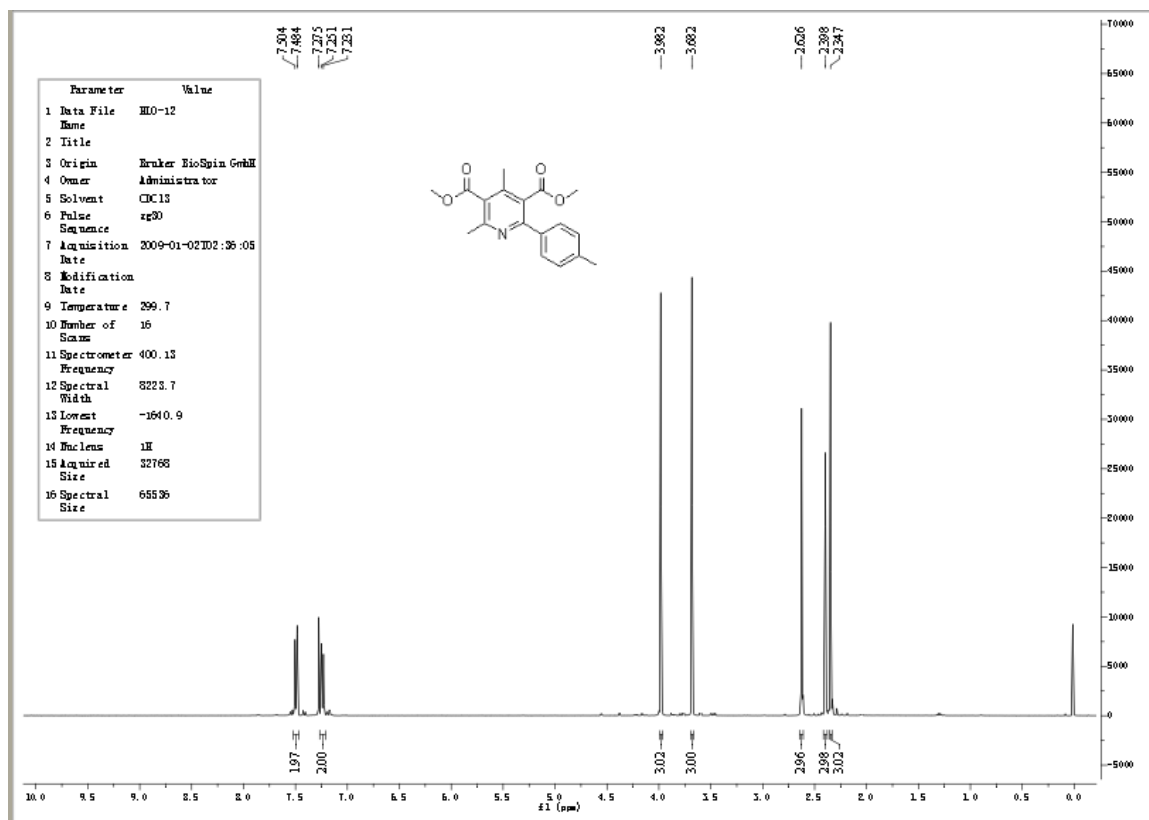


# HRMS:

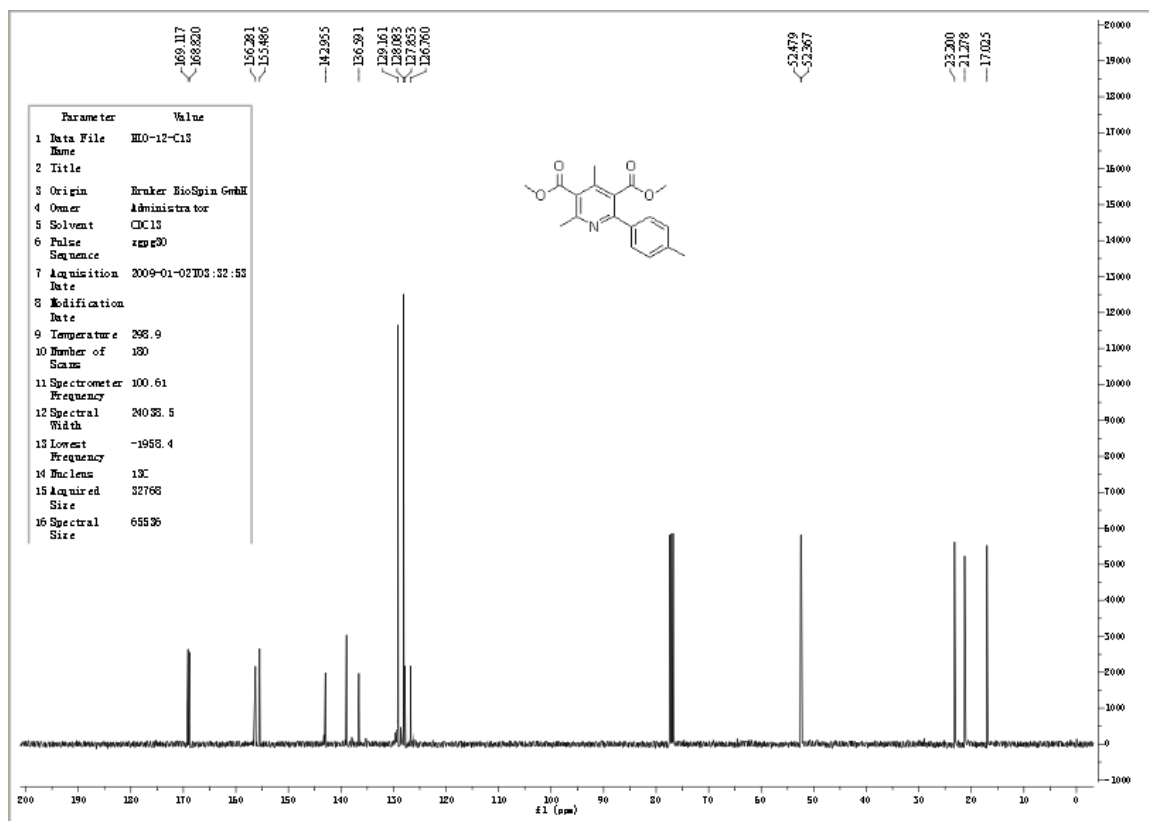


# Dimethyl 2-(4-methylphenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3l).

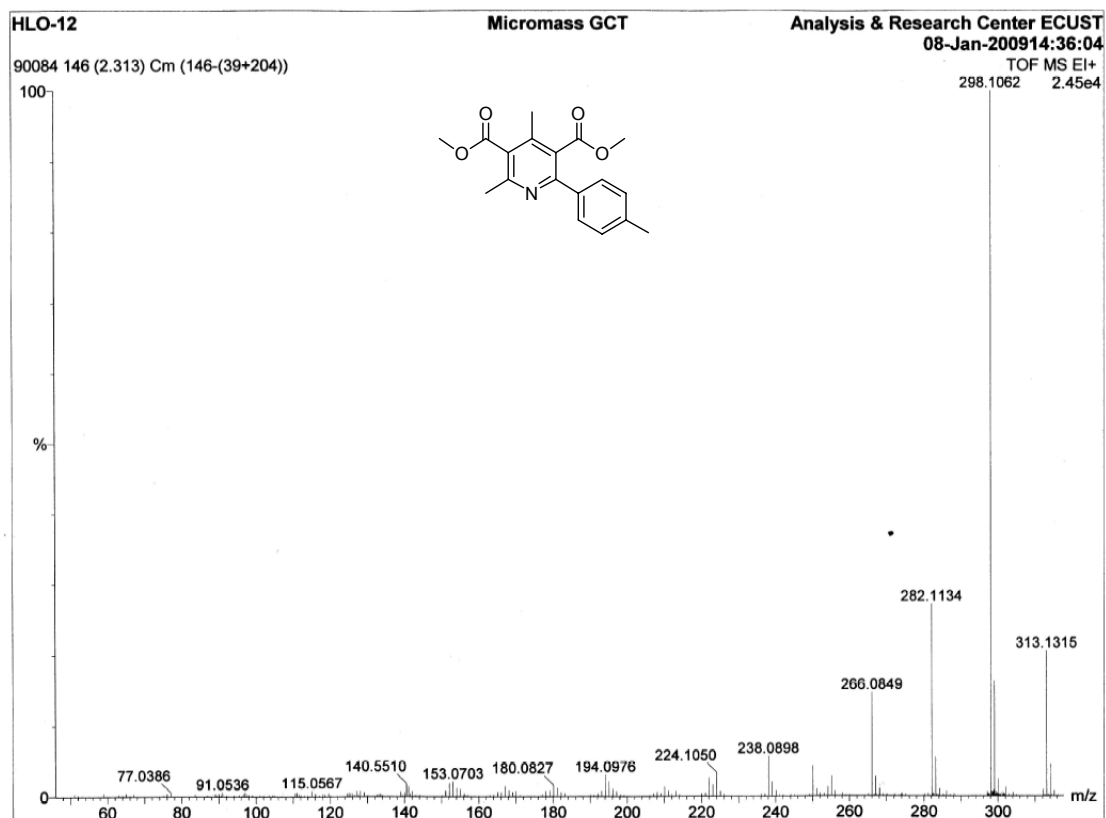
## <sup>1</sup>H NMR:



## <sup>13</sup>C NMR:

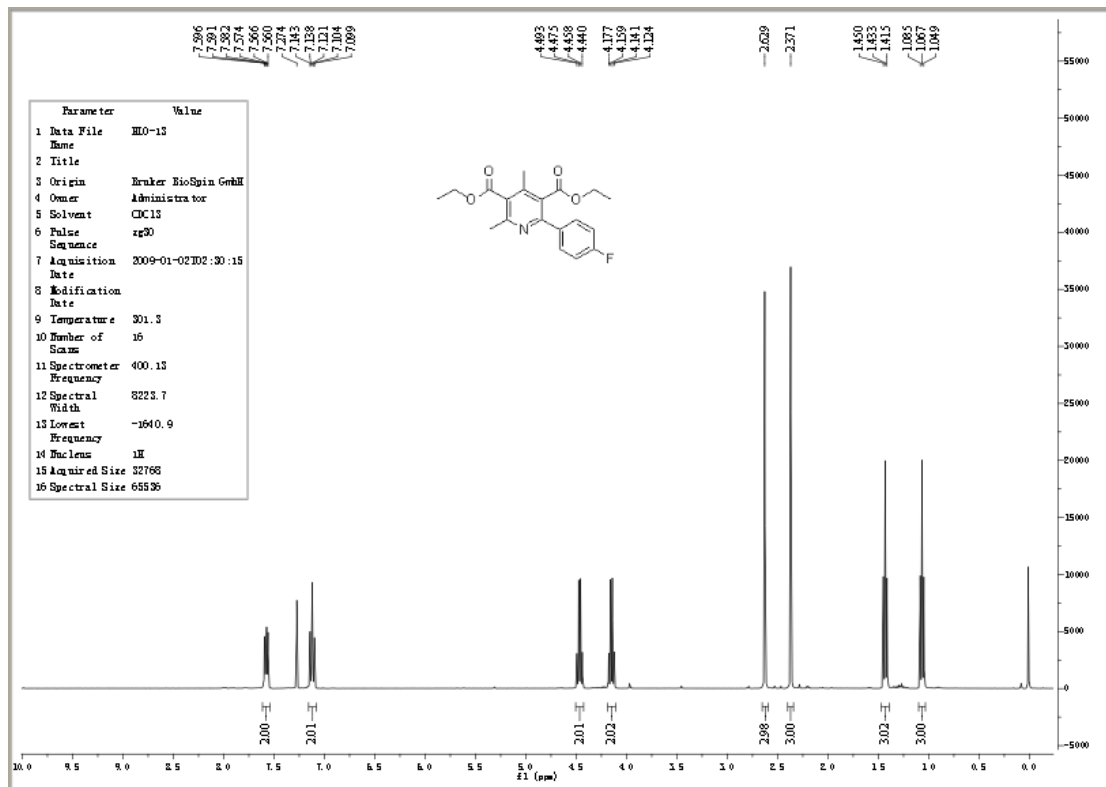


**HRMS:**

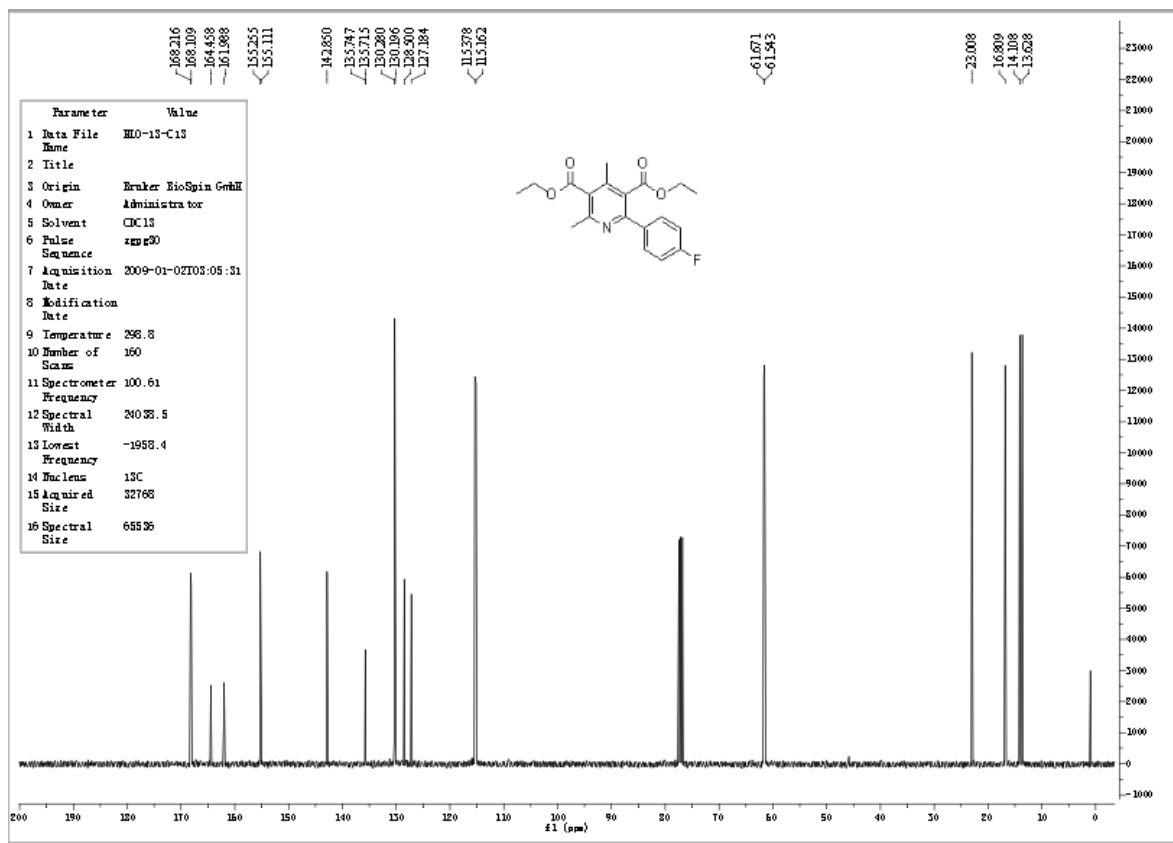


**Diethyl 2-(4-fluorophenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3m).**

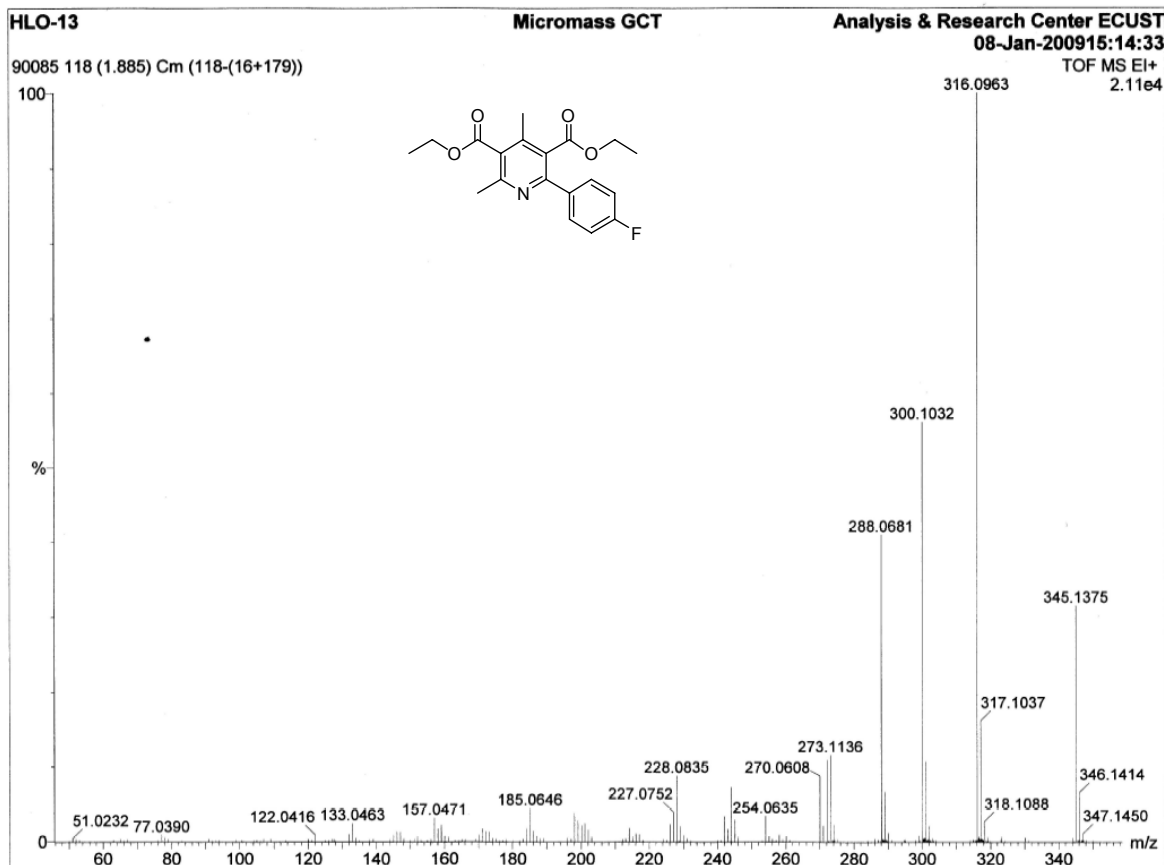
**<sup>1</sup>H NMR:**



### <sup>13</sup>C NMR:

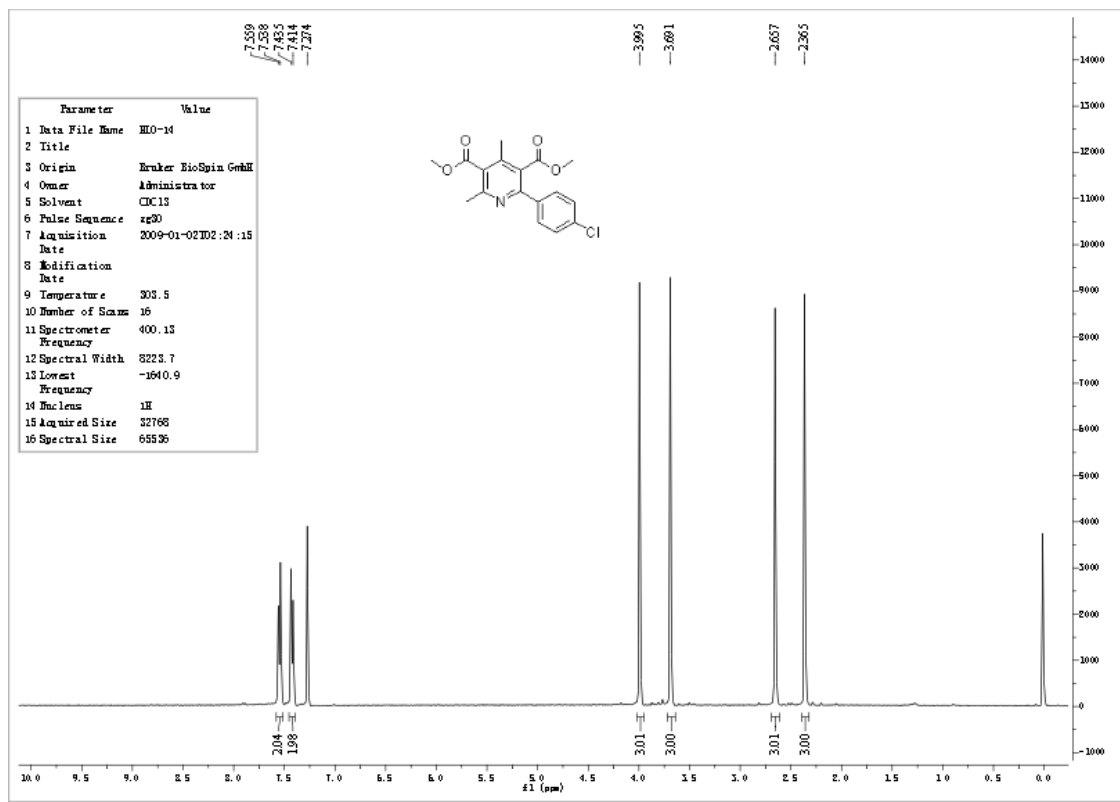


### HRMS:

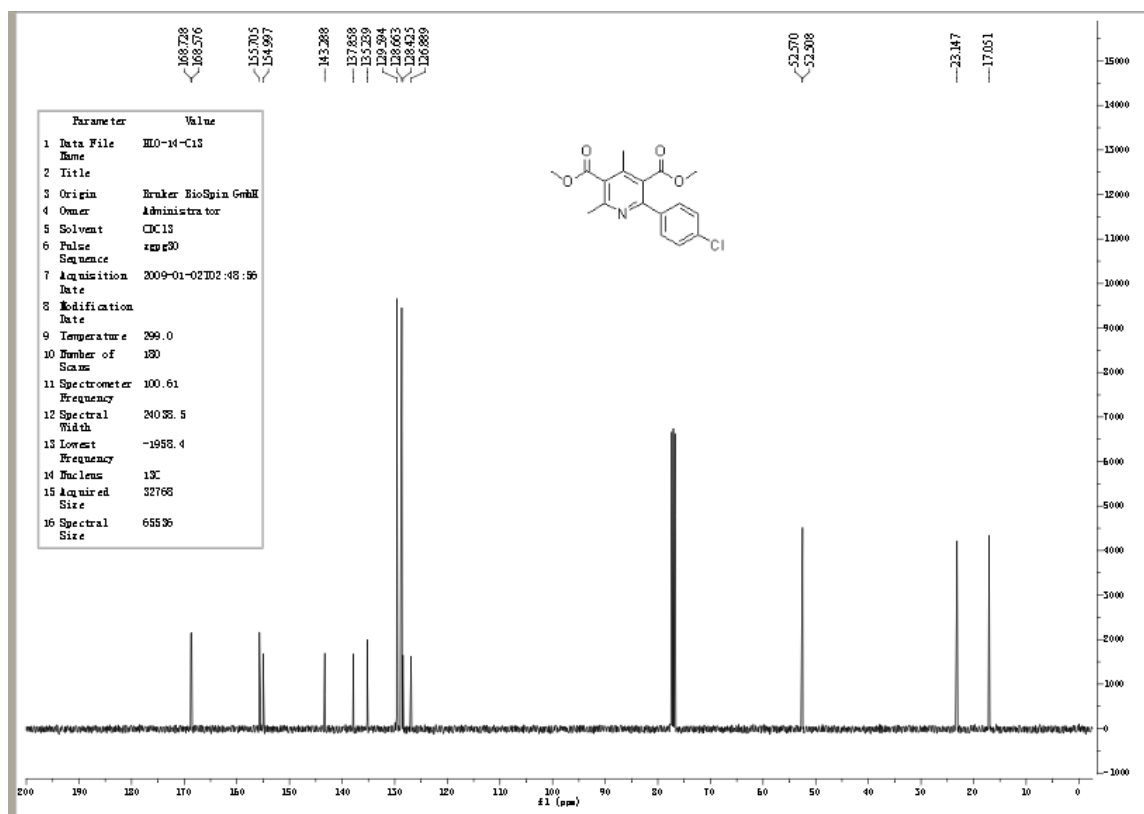


# Dimethyl 2-(4-chlorophenyl)-4,6-dimethylpyridine-3,5-dicarboxylate (3n).

## <sup>1</sup>H NMR:



## <sup>13</sup>C NMR:



HRMS:

