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).

$^1$H NMR:

$^{13}$C NMR:
HRMS:
Diethyl 2-(4-nitrophenyl)-4, 6-dimethylpyridine-3, 5-dicarboxylate (3b).

$^1$H NMR:

$^{13}$C NMR:
HRMS:

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

$^1$H NMR:
$^{13}$C NMR:

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

$^1$H NMR:

![H NMR spectrum](image)

$^{13}$C NMR:

![C NMR spectrum](image)
Diethyl 2-(4-bromophenyl)-4, 6-dimethylpyridine-3, 5-dicarboxylate (3e).

$^1$H NMR:
$^{13}$C NMR:

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

$^1$H NMR:

$^{13}$C NMR:
Diethyl 4, 6-dimethyl-2, 3'-bipyridine-3, 5-dicarboxylate (3g).

$^1$H NMR:
$^{13}$C NMR:

![13C NMR spectrum]

HRMS:

![HRMS spectrum]
Dimethyl 2-(4-trifluoromethoxyphenyl)-4, 6-dimethylpyridine-3, 5-dicarboxylate (3h).

$^1$H NMR:

13C NMR:
HRMS:

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

\(^1\)H NMR:
Dimethyl 6'-chloro-4, 6-dimethyl-2, 3'-bipyridine-3, 5-dicarboxylate (3j).

$^1$H NMR:

$^{13}$C NMR:
HRMS:

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

$^1$H NMR:
$^{13}$C NMR:

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

$^1$H NMR:

$^{13}$C NMR:
Diethyl 2-(4-fluorophenyl)-4, 6-dimethylpyridine-3, 5-dicarboxylate (3m).

$^1$H NMR:
$^{13}$C NMR:

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Analysis & Research Center ECUST  
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Dimethyl 2-(4-chlorophenyl)-4, 6-dimethylpyridine-3, 5-dicarboxylate (3n).

$^1$H NMR:

$^{13}$C NMR:
HRMS: