

SUPPORTING INFORMATION

WHEN HYDRAZONOYL CHLORIDES MEET ALLENES: A SITE- AND REGIO-SELECTIVE COPPER (I)-CATALYSED APPROACH TO 5-SUBSTITUTED PYRAZOLES

Giorgio Molteni*, **Stefano Baroni**, **Marco Manenti**, and **Alessandra Silvani**

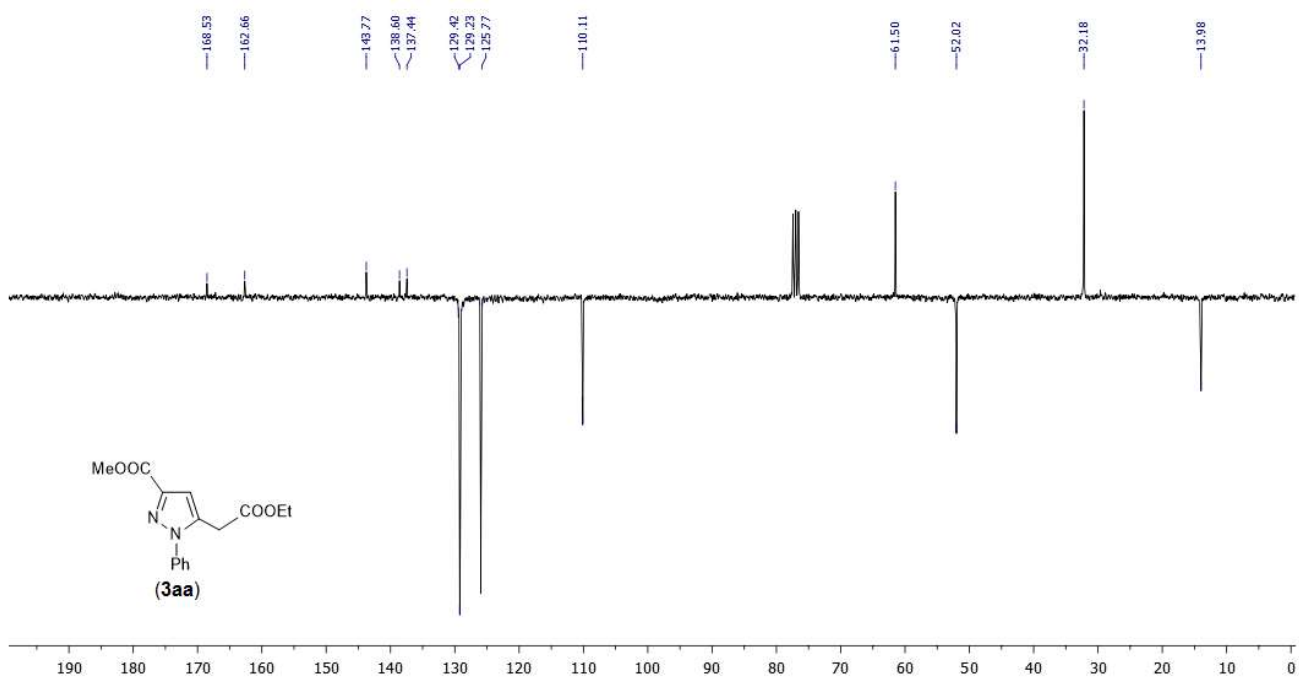
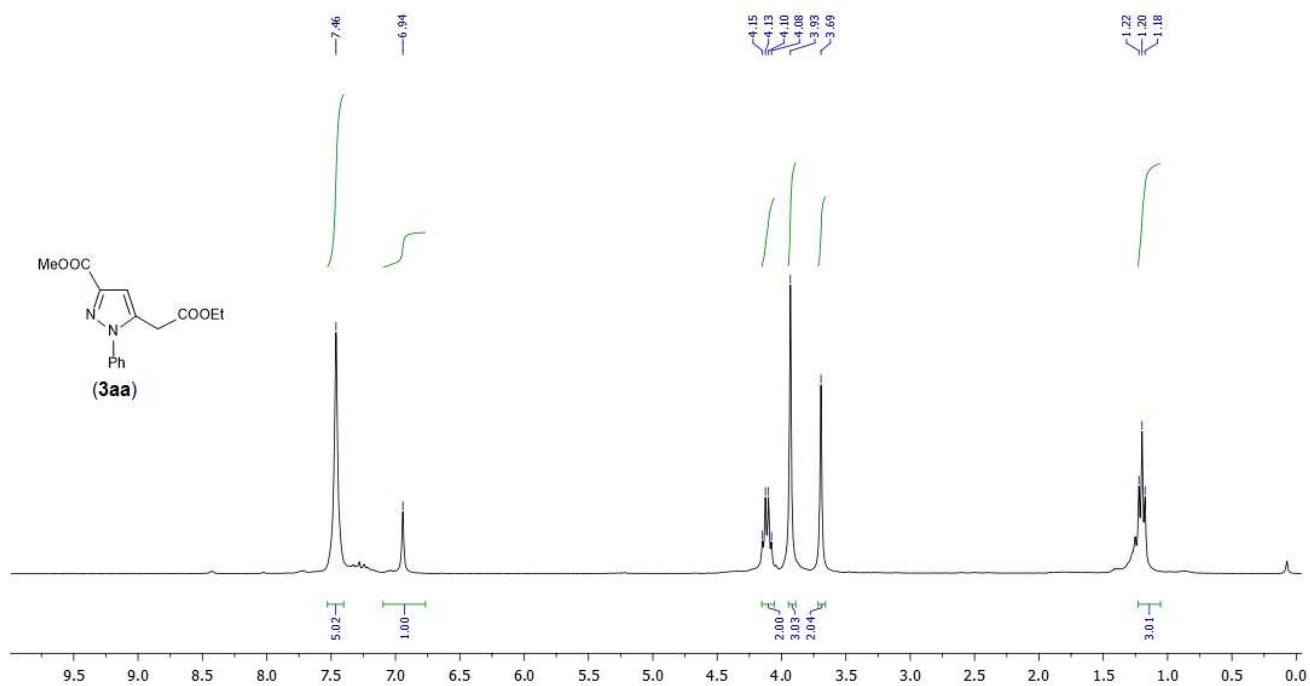
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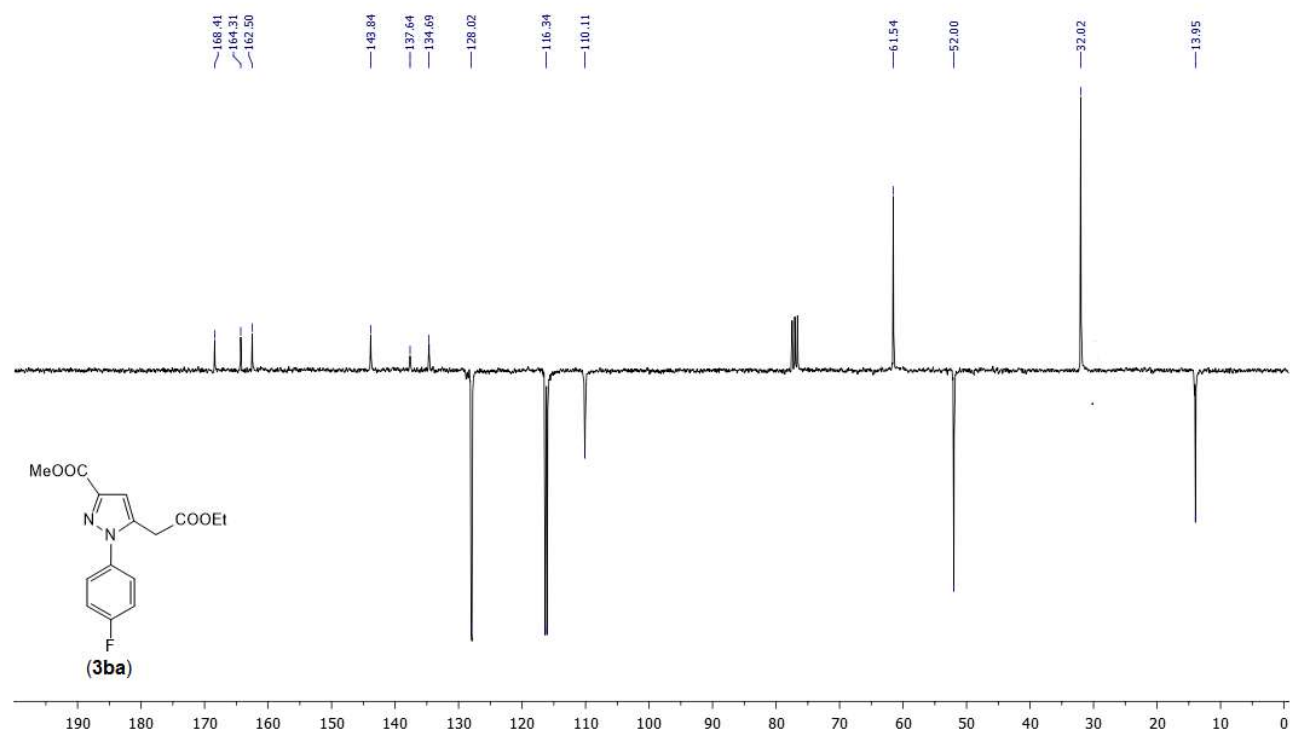
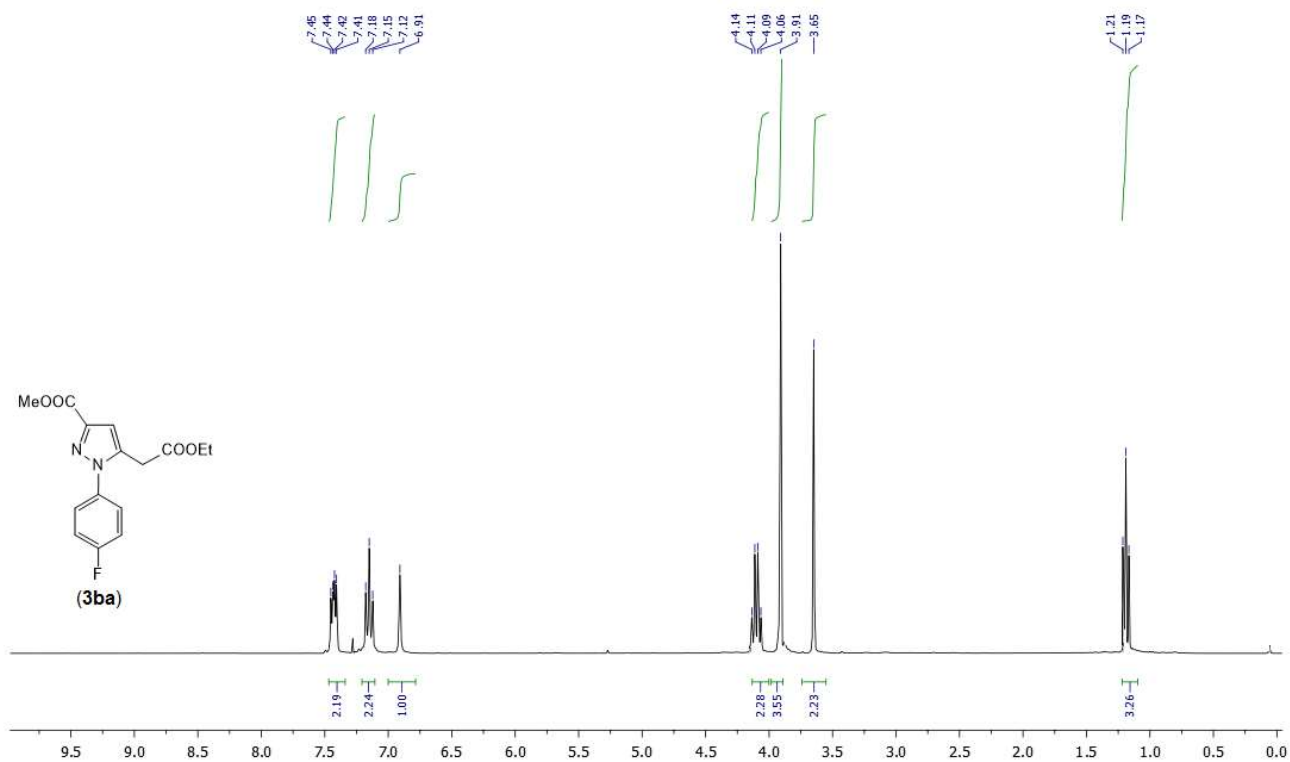
1. Literature references of known 1,3,5-trisubstituted pyrazoles (3ab) and (3ac).

- (a) Pyrazole **3ab**: L. Bruchè and G. Zecchi, *J. Heterocycl. Chem.*, 1983, **20**, 1705-1706.
- (b) Pyrazole **3ac**: G. Broggini and G. Molteni, *J. Chem. Soc., Perkin Trans. 1*, 2000, 1685-1689.

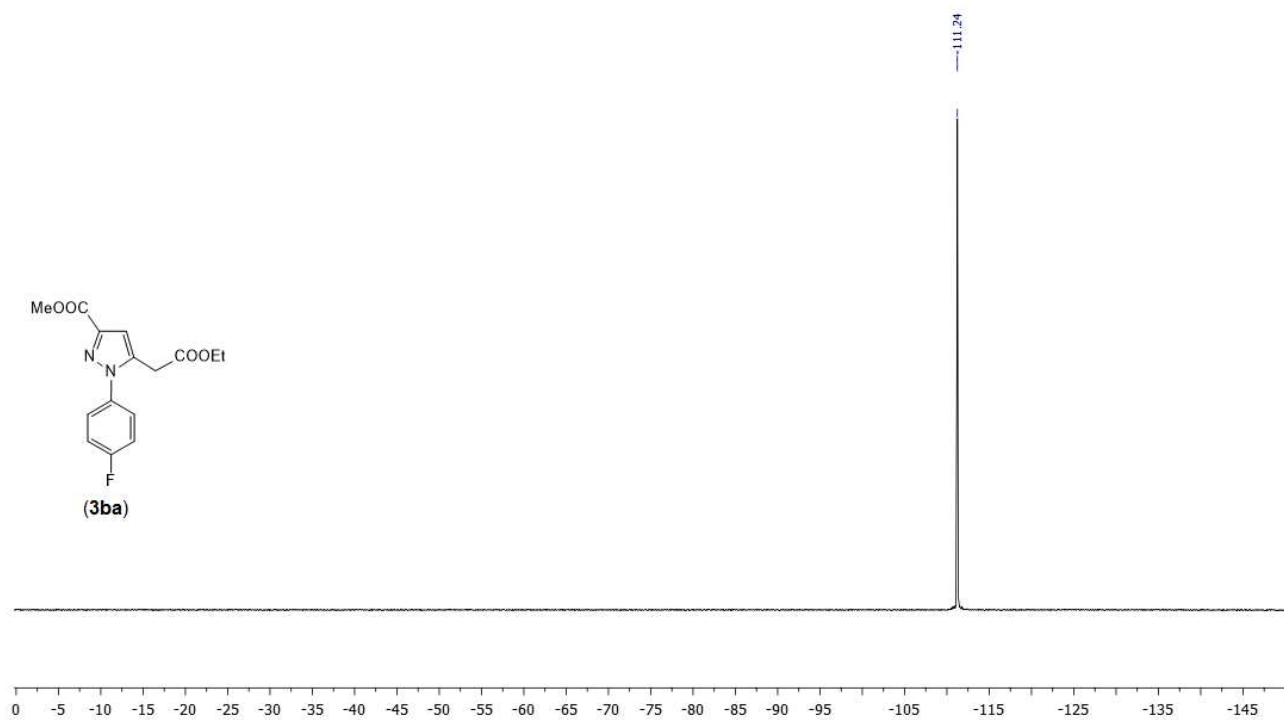
1-Phenyl-3-methoxycarbonyl-5-(ethoxycarbonylmethyl)pyrazole (**3aa**)



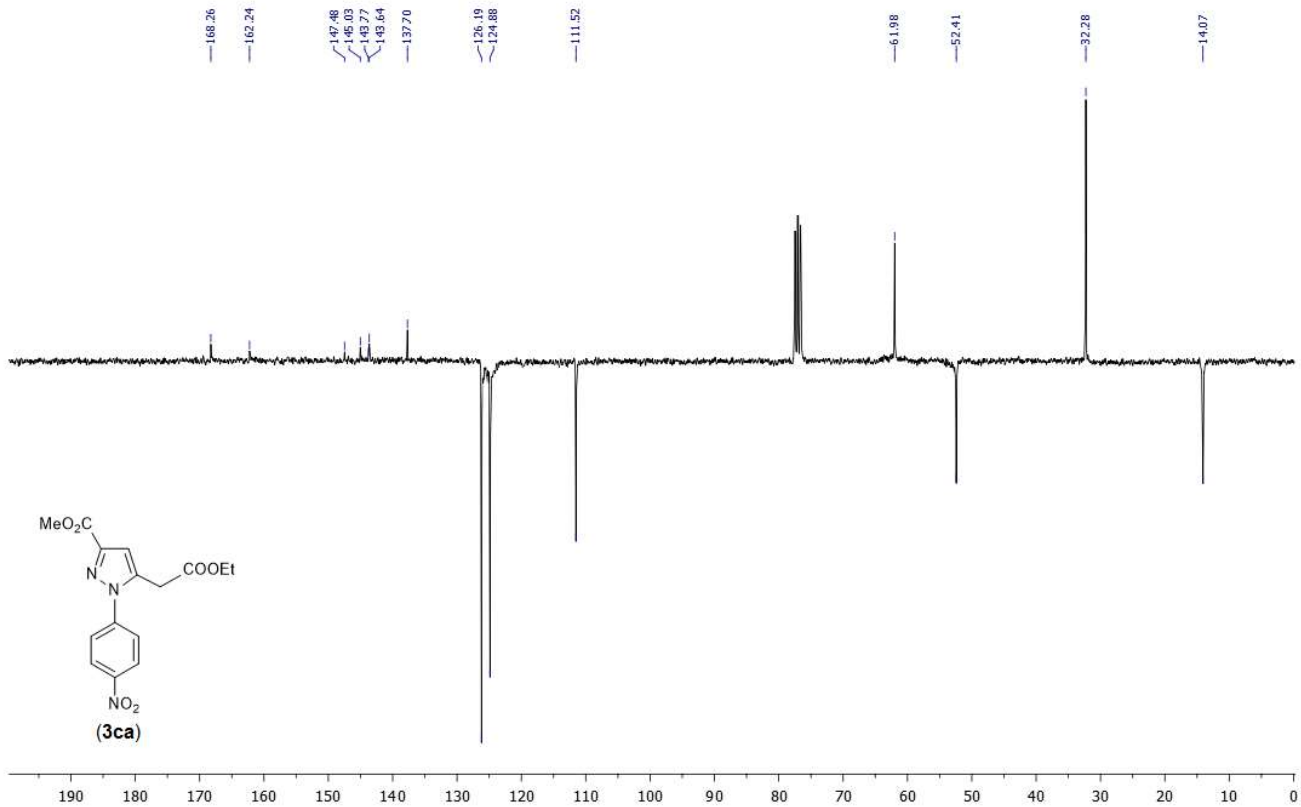
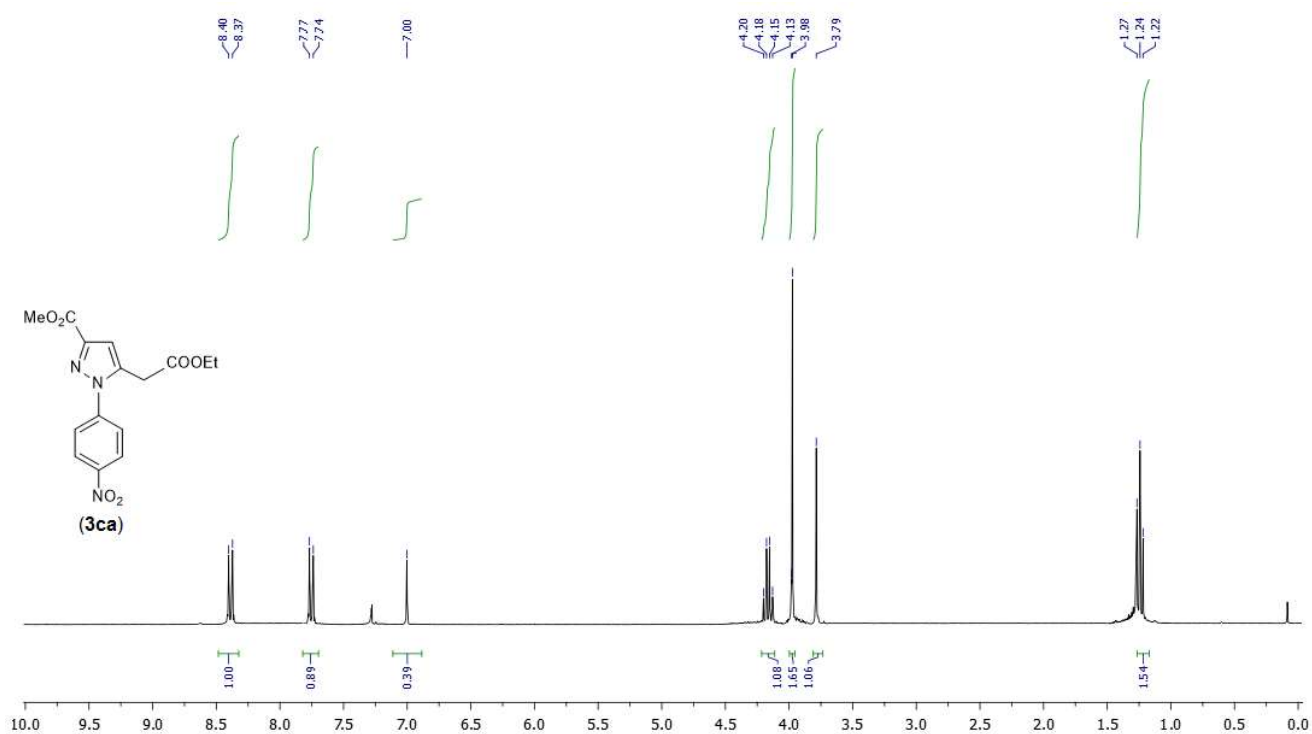
1-(4-Fluorophenyl)-3-methoxycarbonyl-5-(ethoxycarbonyl)methylpyrazole (**3ba**)



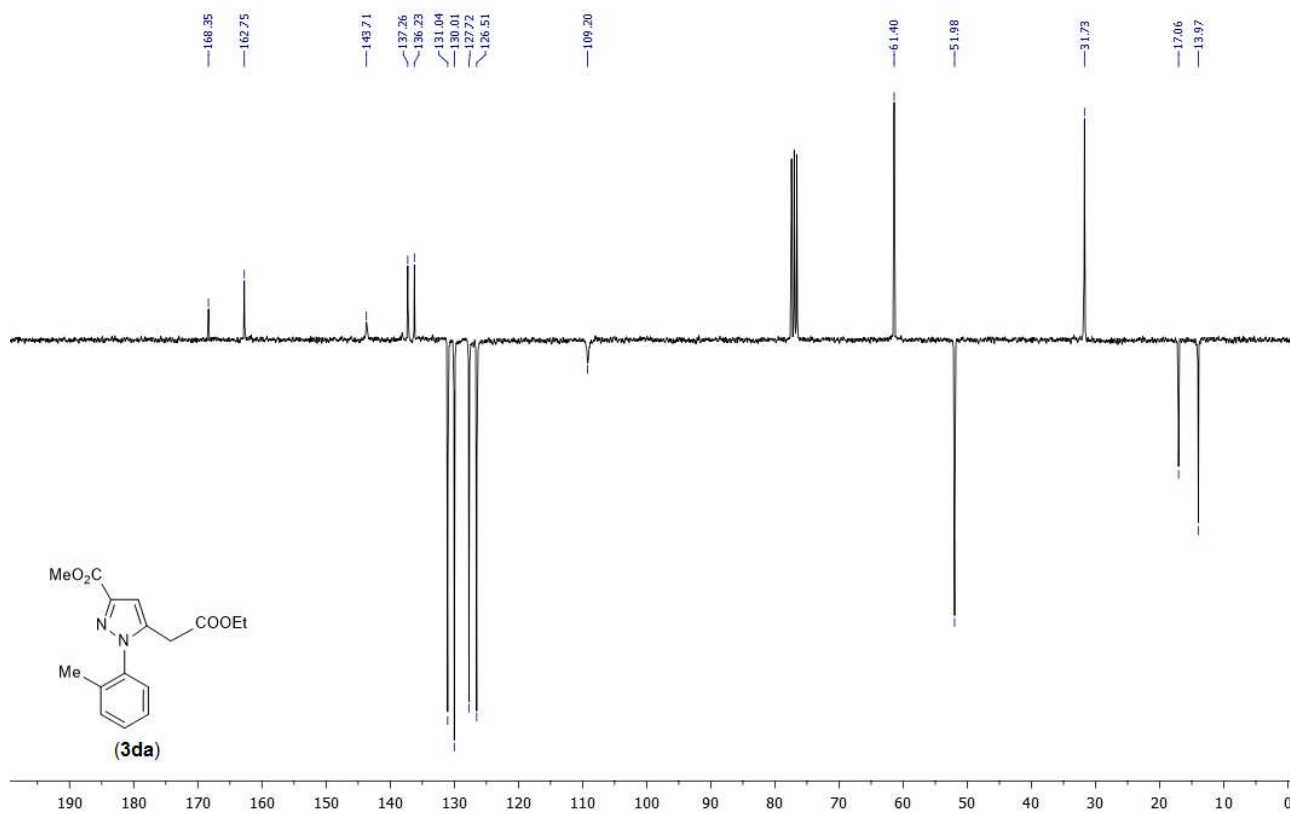
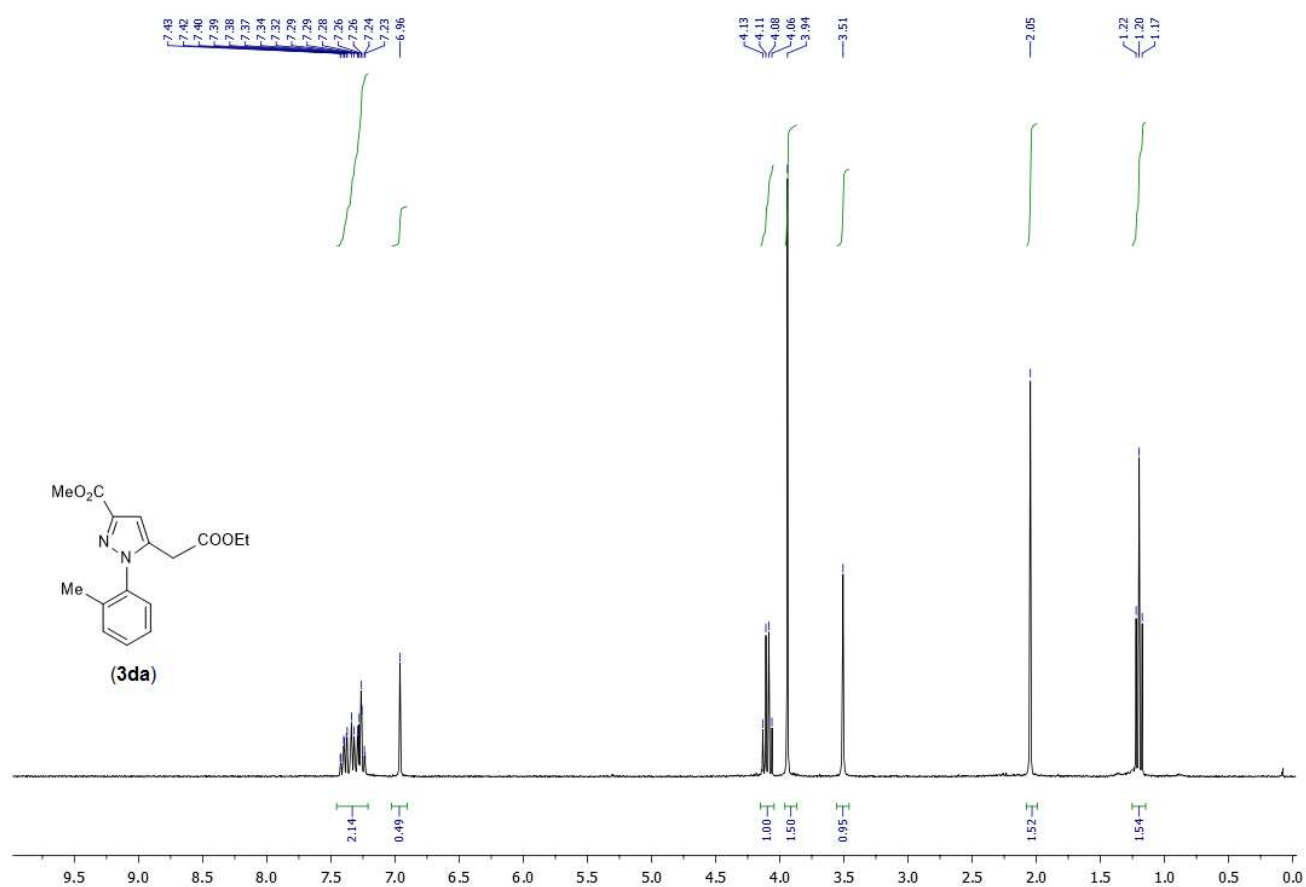
1-(4-Fluorophenyl)-3-methoxycarbonyl-5-(ethoxycarbonylmethyl)pyrazole (**3ba**)



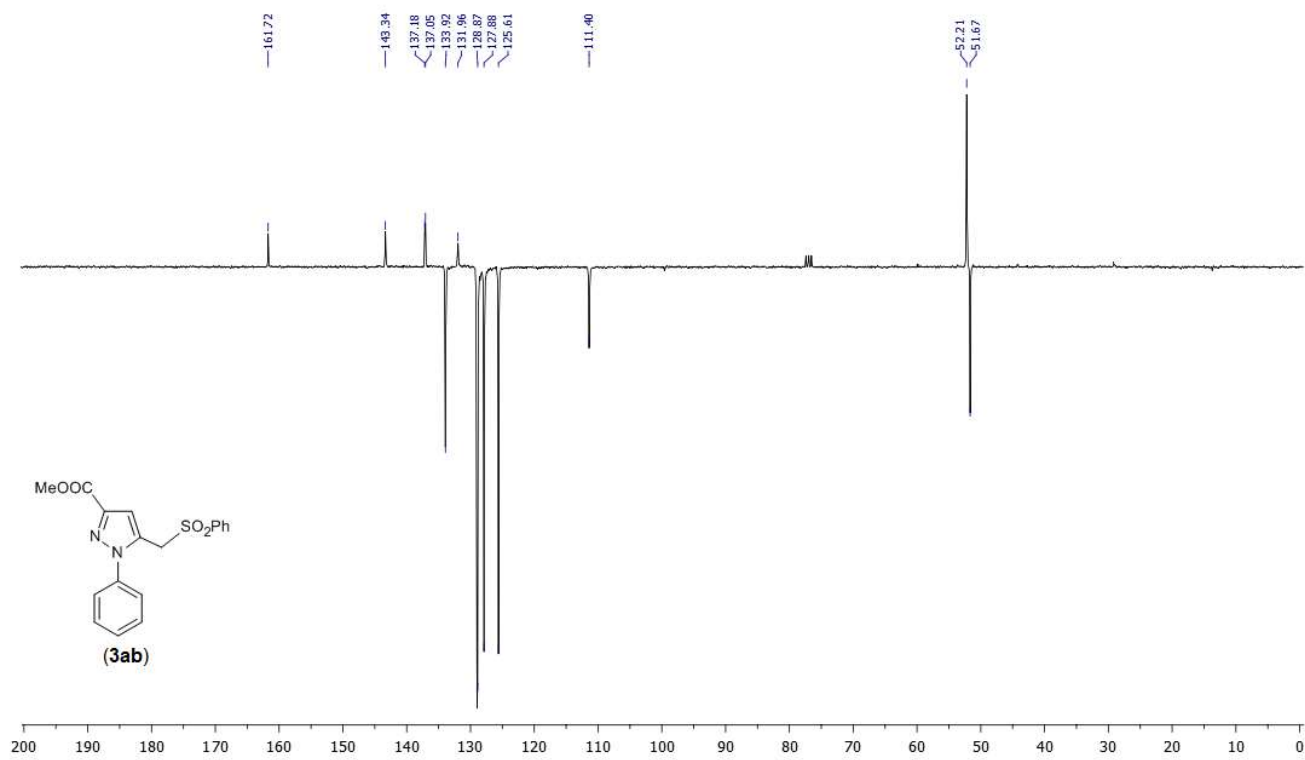
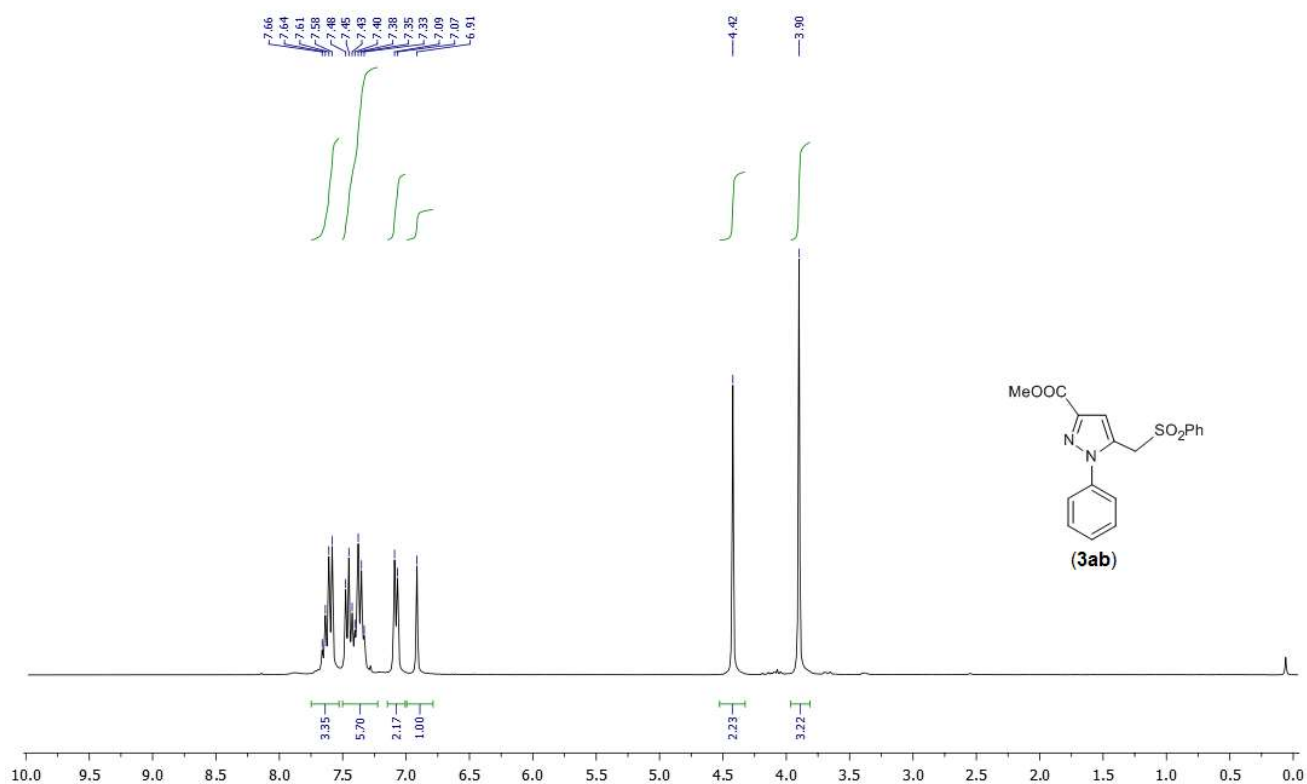
1-(4-Nitrophenyl)-3-methoxycarbonyl-5-(ethoxycarbonylmethyl)pyrazole (**3ca**)



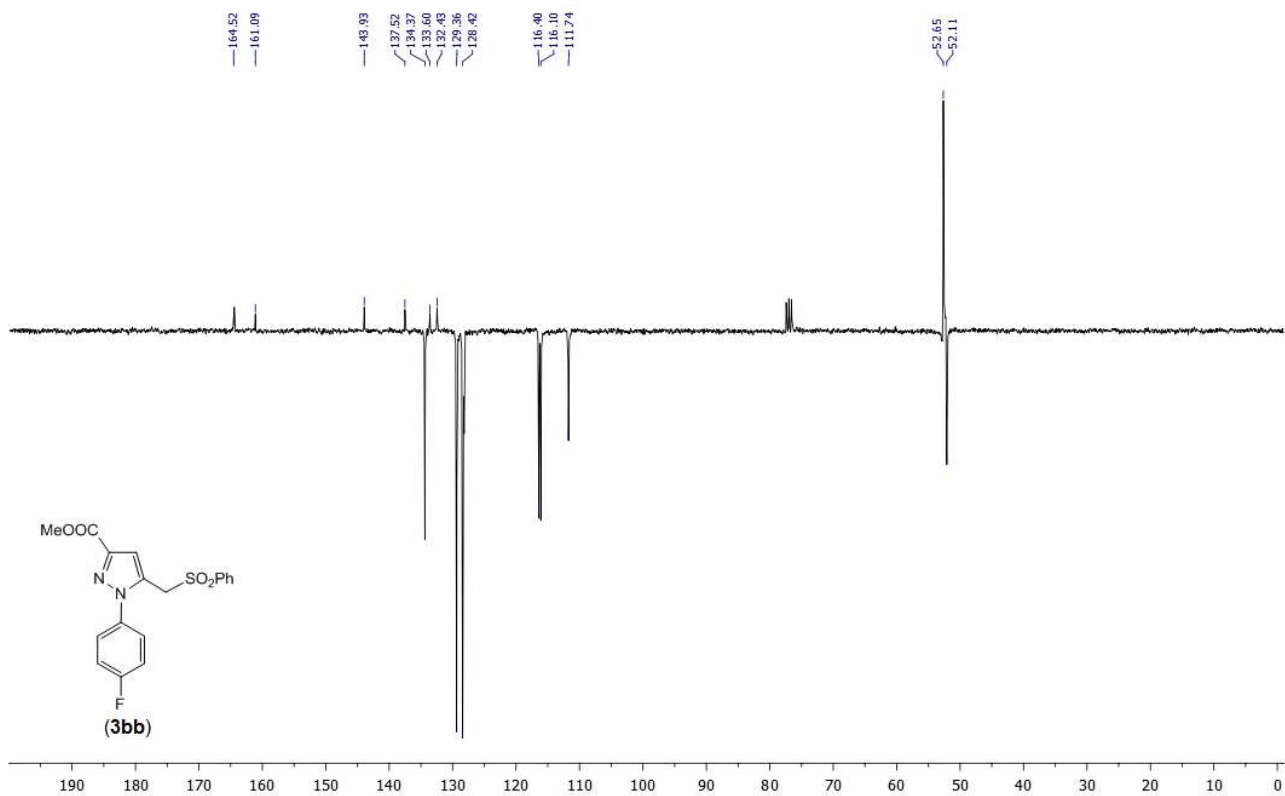
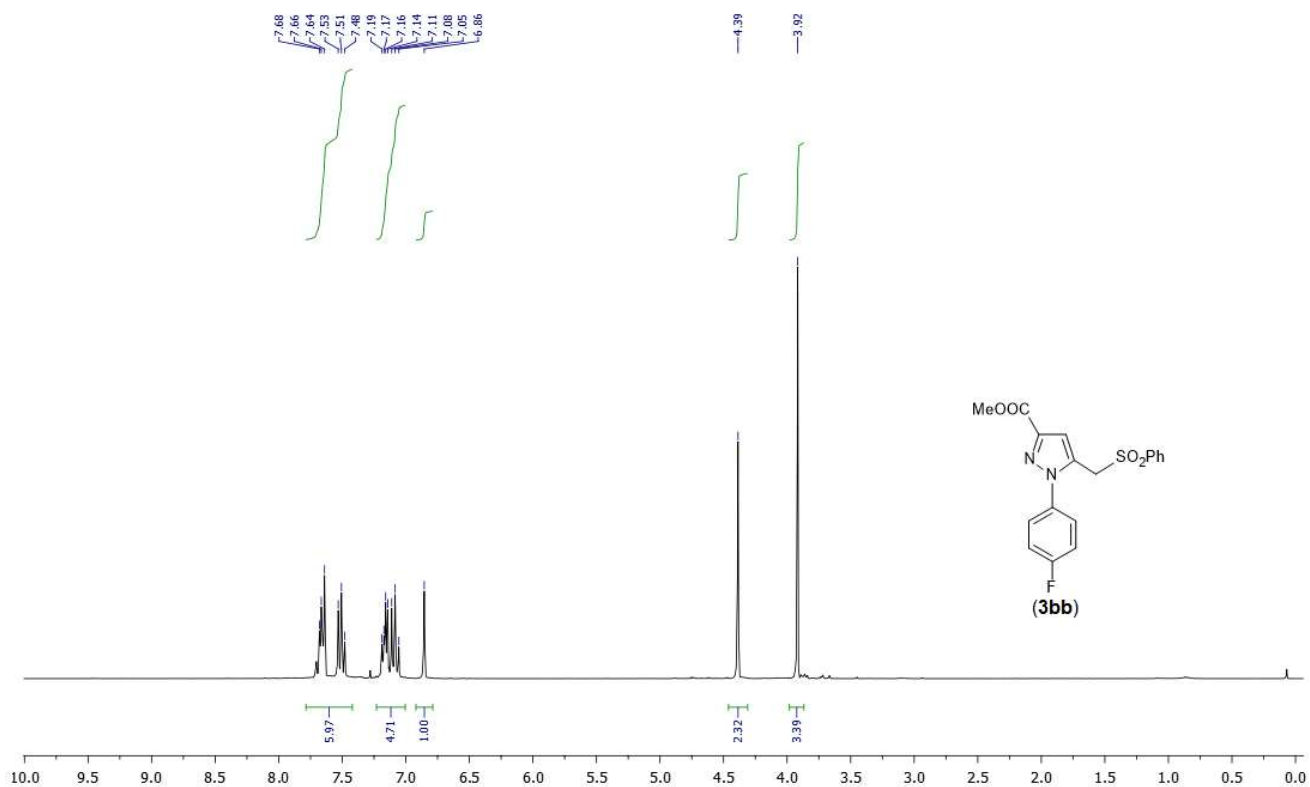
1-(2-Methylphenyl)-3-methoxycarbonyl-5-(ethoxycarbonyl)methylpyrazole (**3da**)



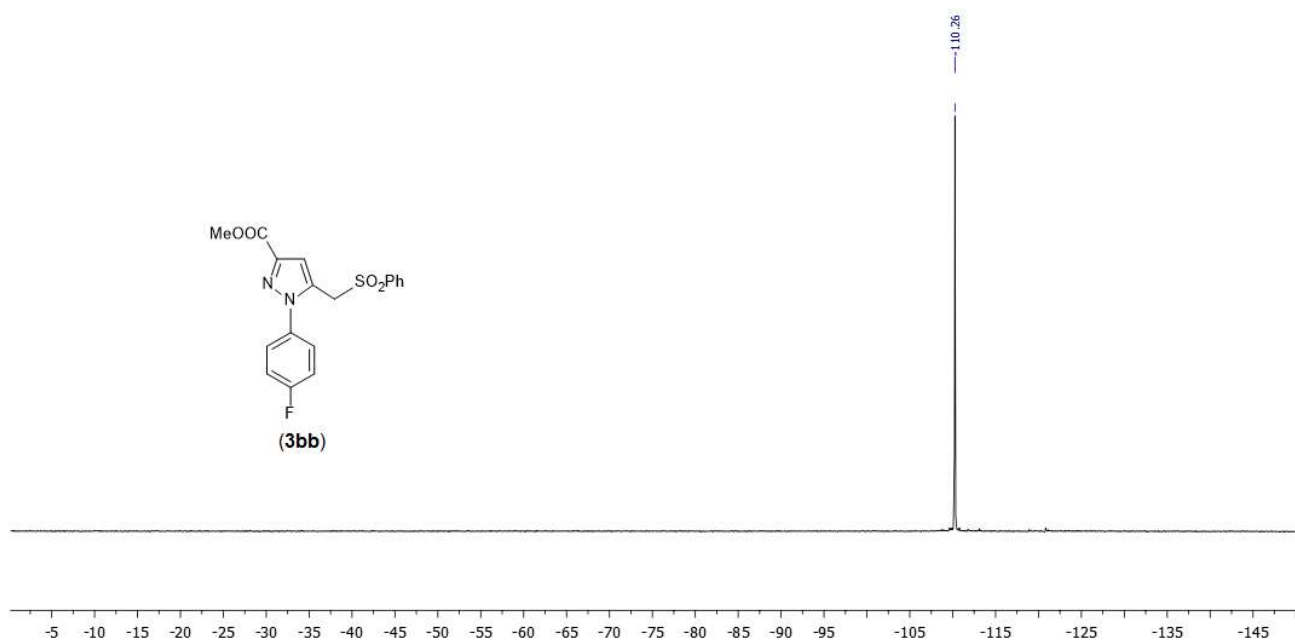
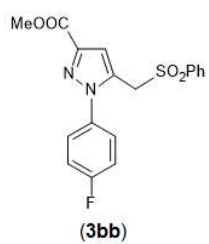
1-Phenyl-3-methoxycarbonyl-5-(phenylsulfonyl)methylpyrazole (**3ab**)



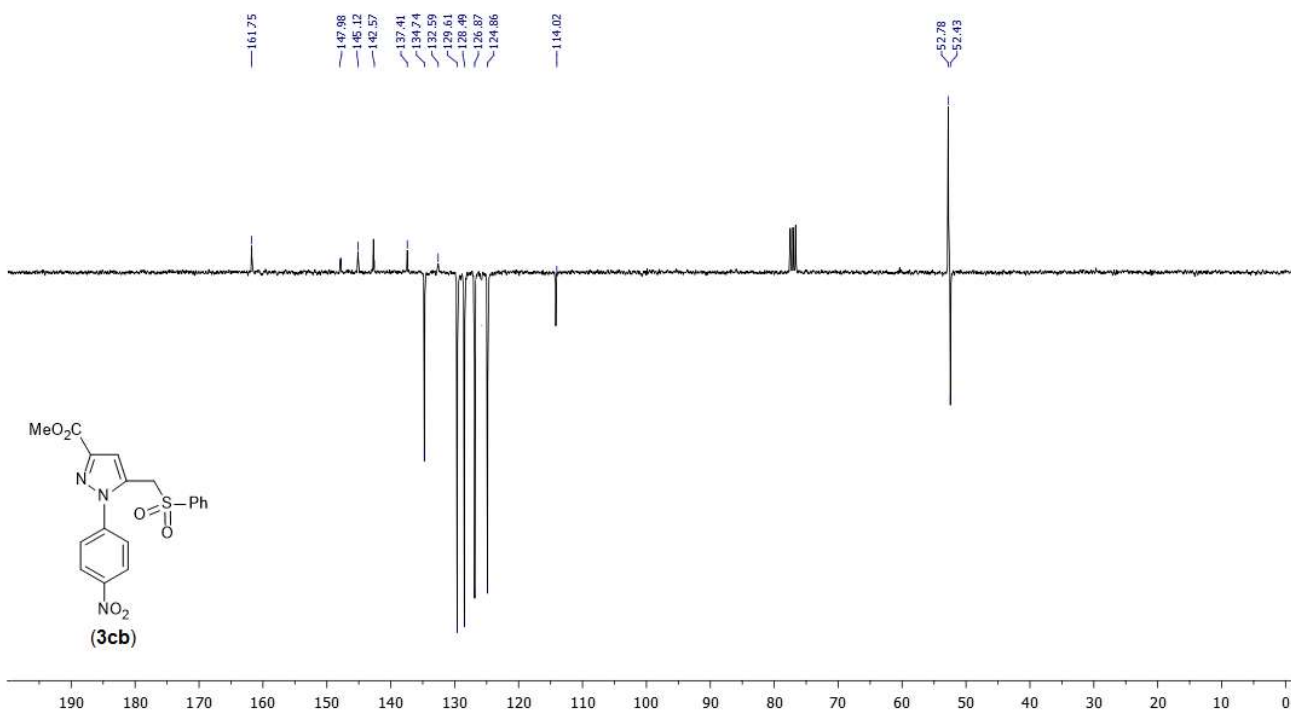
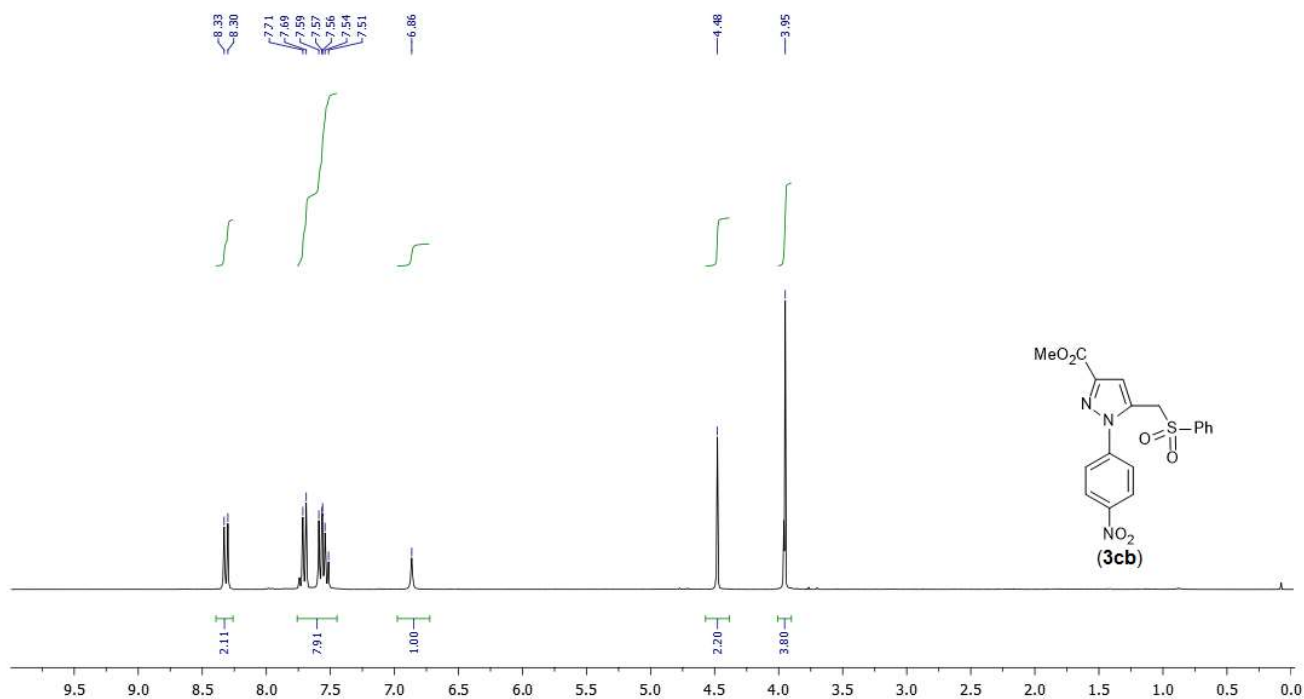
1-(4-Fluorophenyl)-3-methoxycarbonyl-5-(phenylsulfonyl)methylpyrazole (**3bb**)



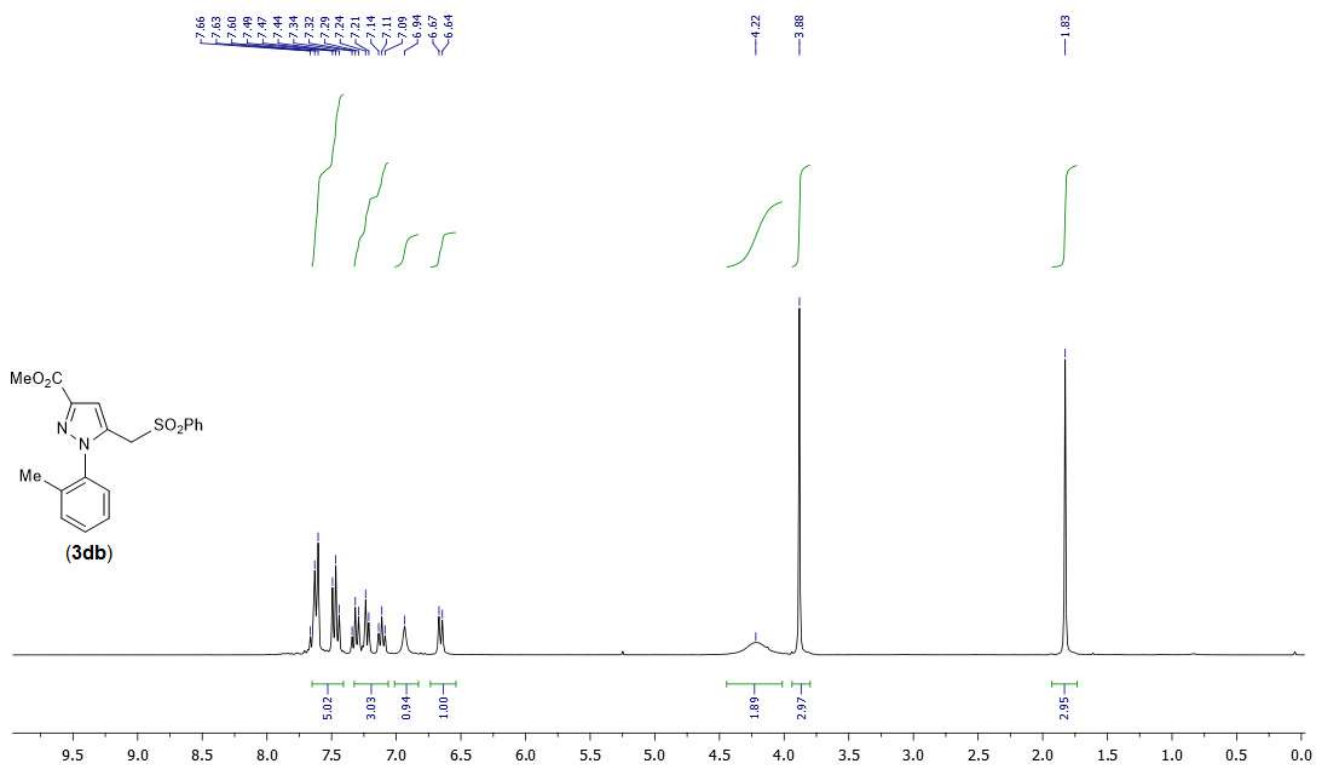
1-(4-Fluorophenyl)-3-methoxycarbonyl-5-(phenylsulfonyl)methylpyrazole (**3bb**)



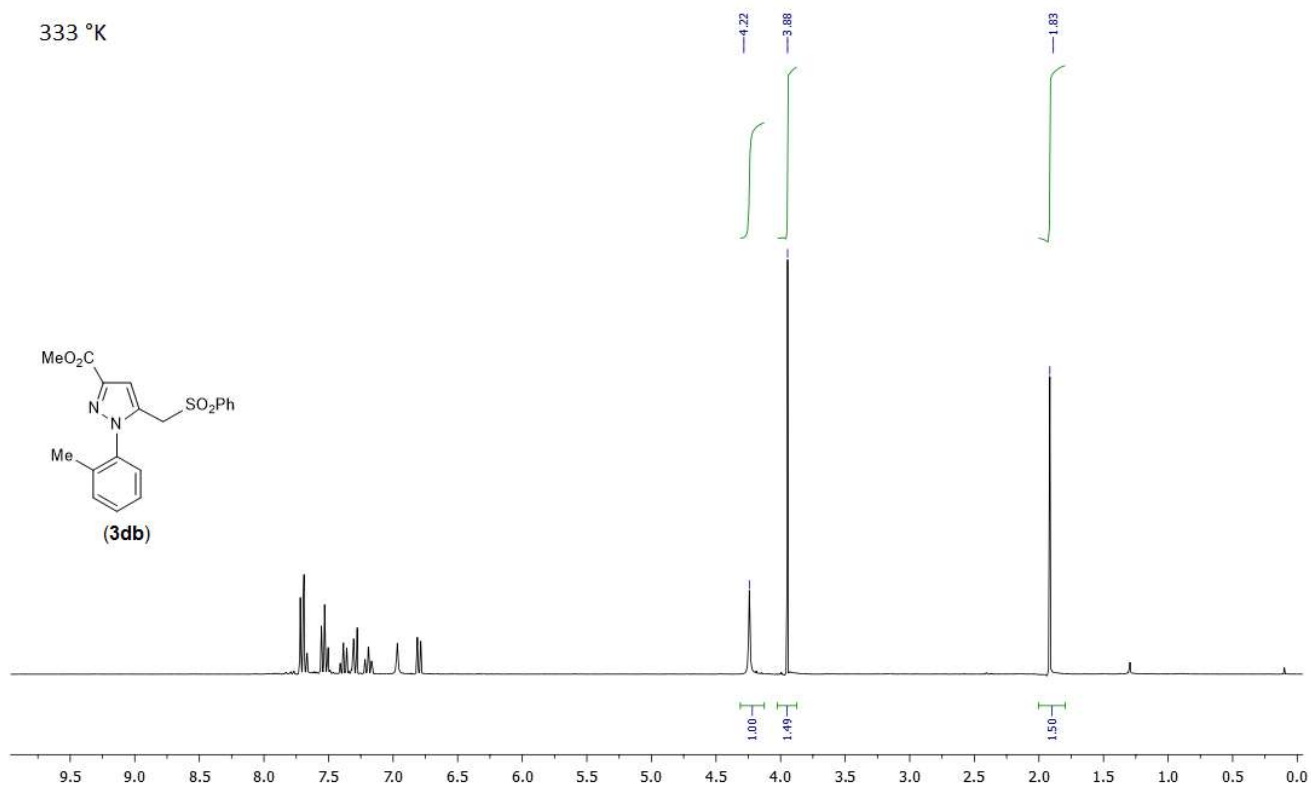
1-(4-Nitrophenyl)-3-methoxycarbonyl-5-(phenylsulfonyl)methylpyrazole (**3cb**)



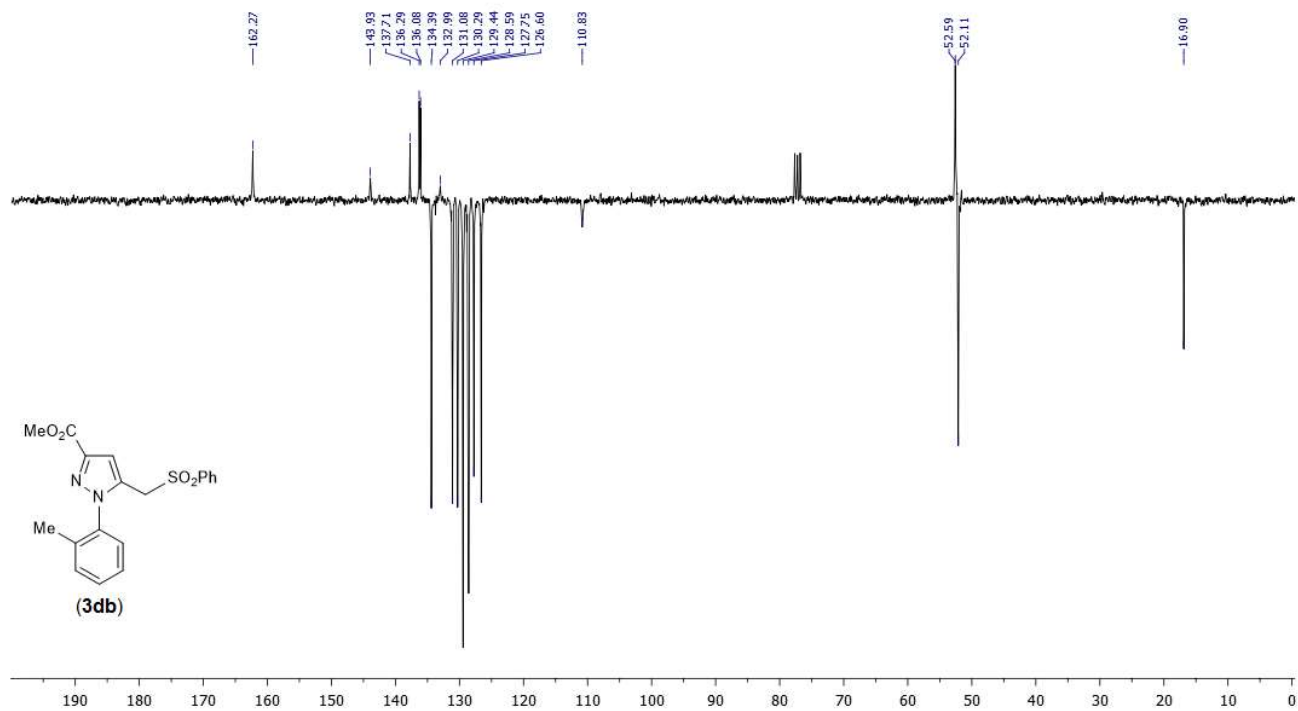
1-(2-Methylphenyl)-3-methoxycarbonyl-5-(phenylsulfonyl)methylpyrazole (**3db**)



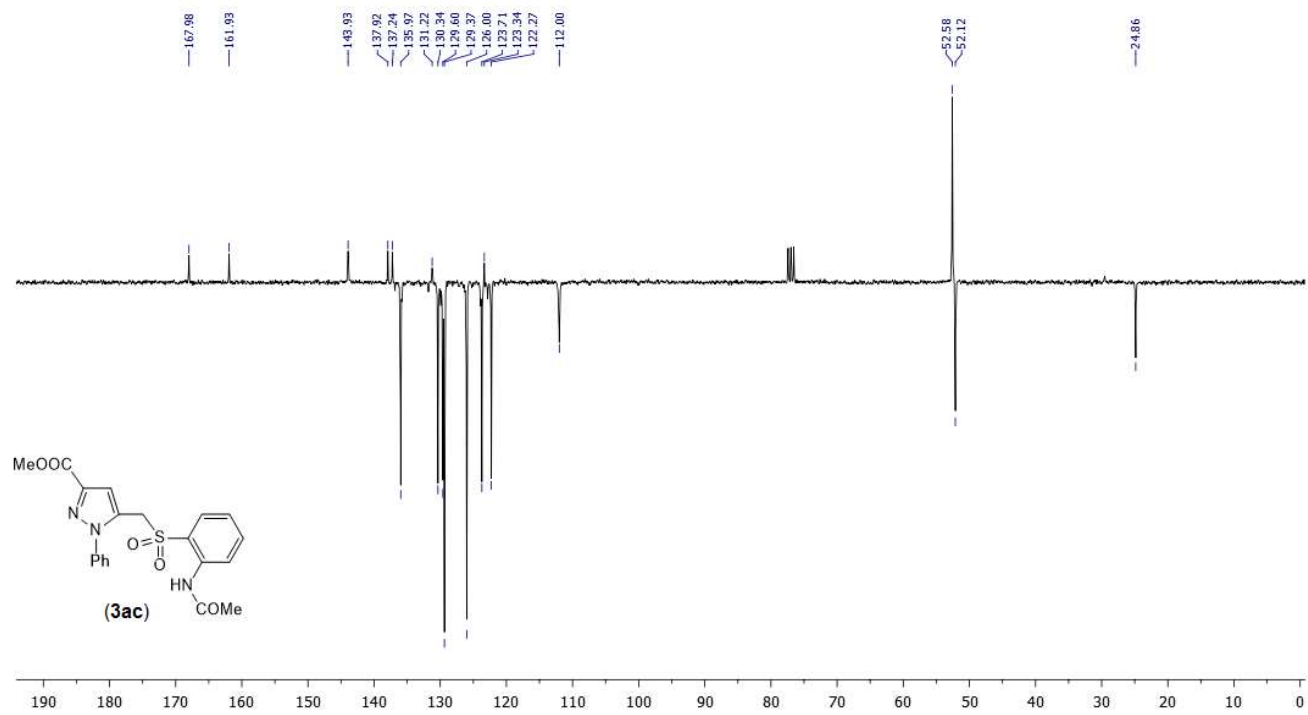
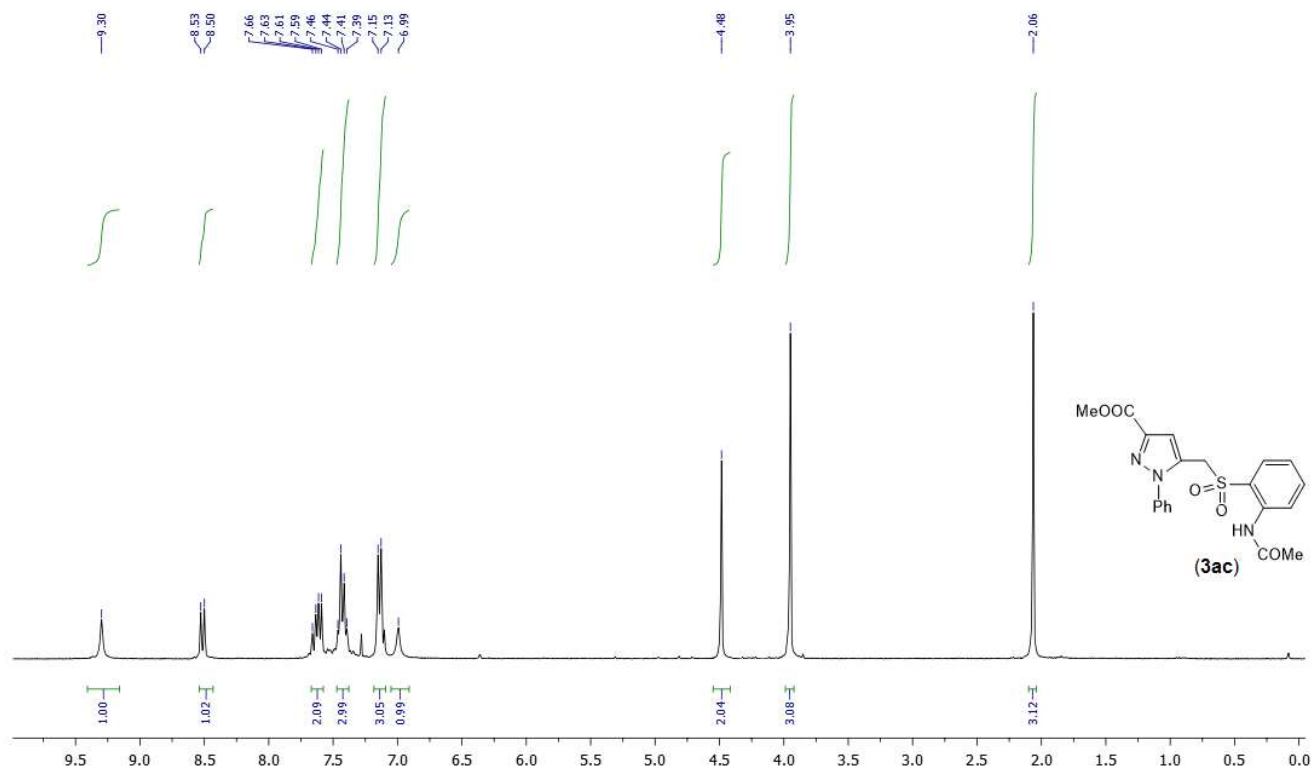
333 °K



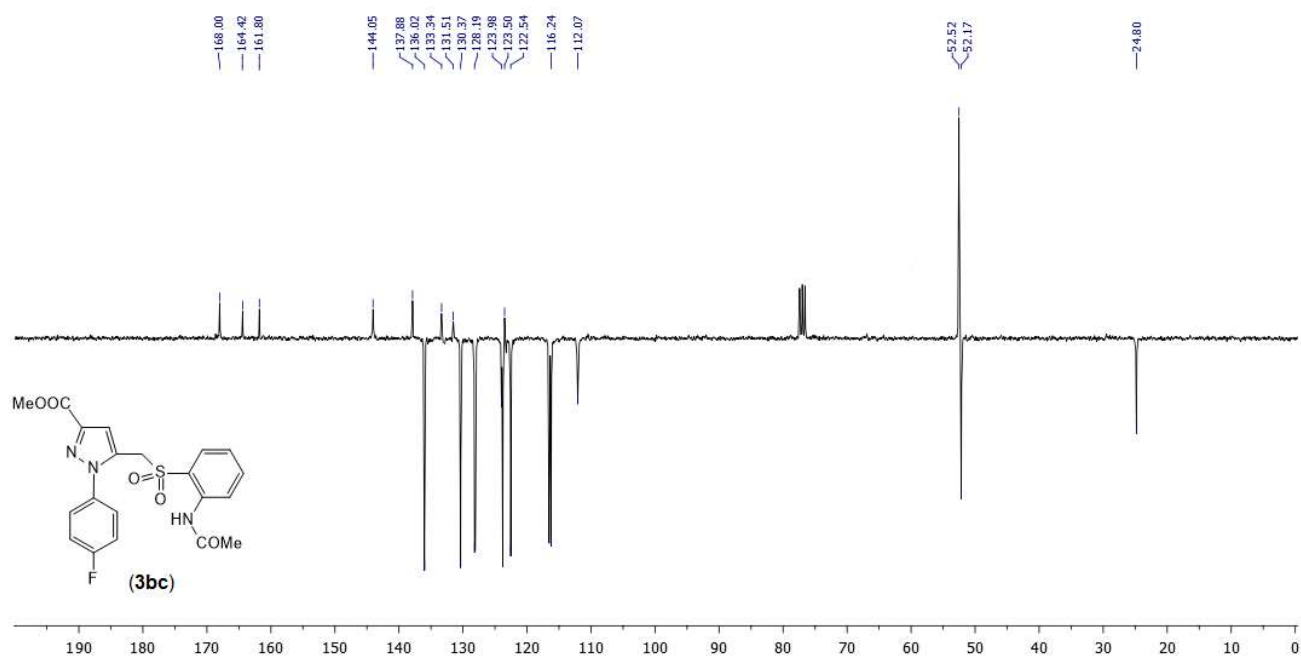
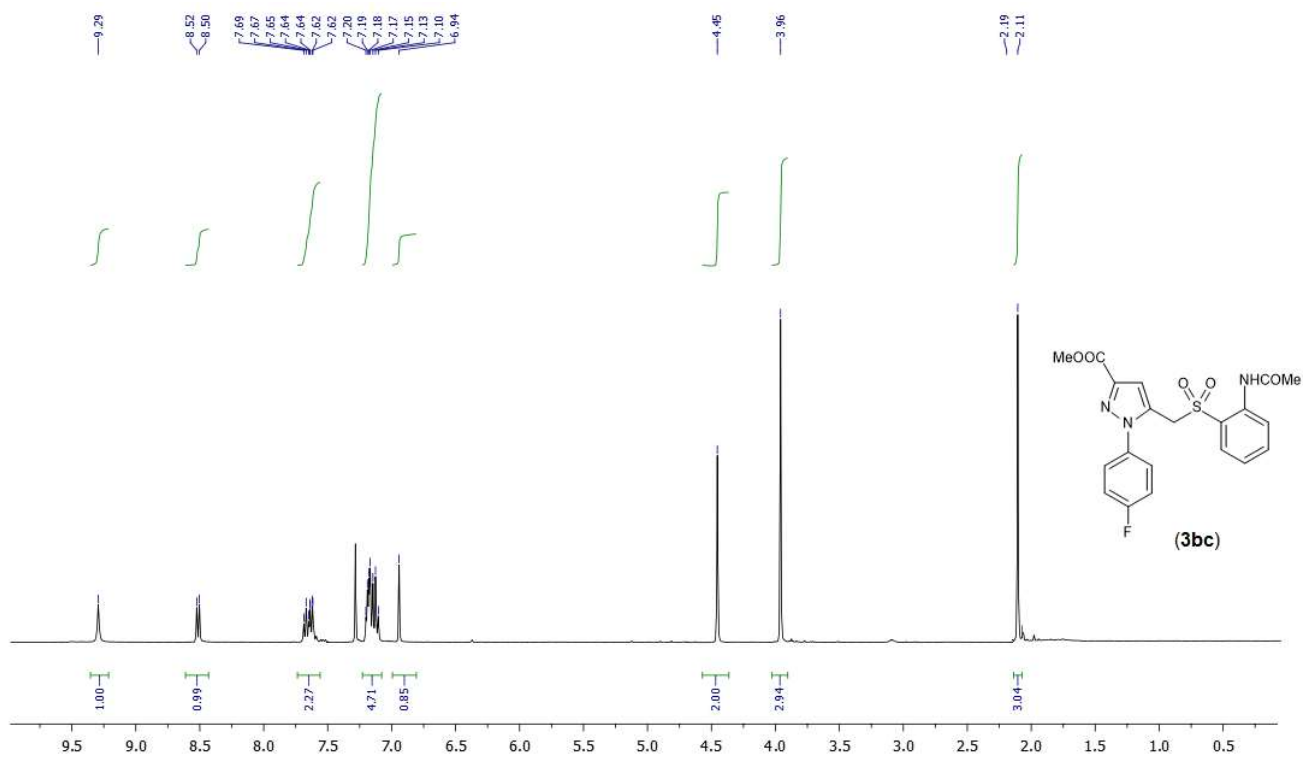
1-(2-Methylphenyl)-3-methoxycarbonyl-5-(phenylsulfonyl)methylpyrazole (**3db**)



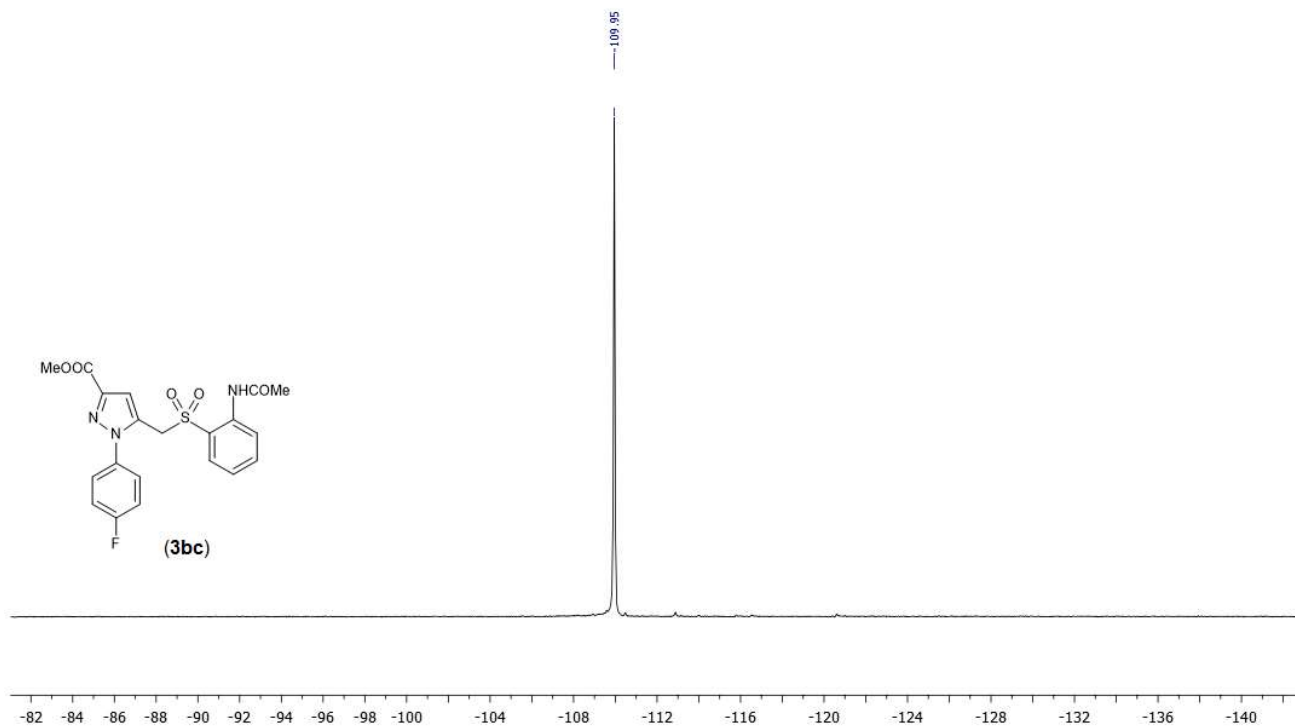
1-Phenyl-3-methoxycarbonyl-5-[(2-acetylamminophenyl)sulfonyl]methylpyrazole (**3ac**)



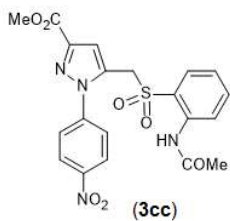
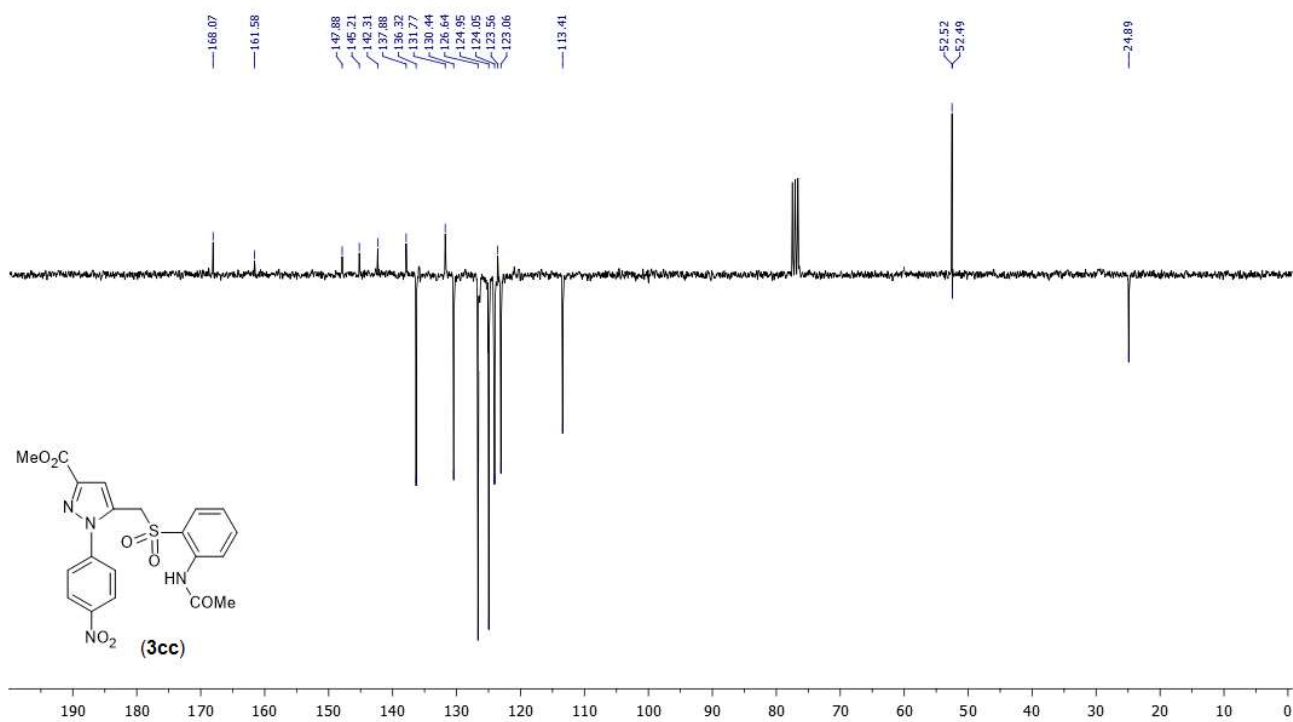
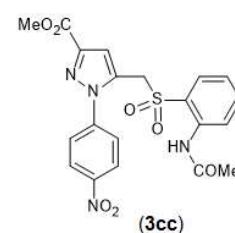
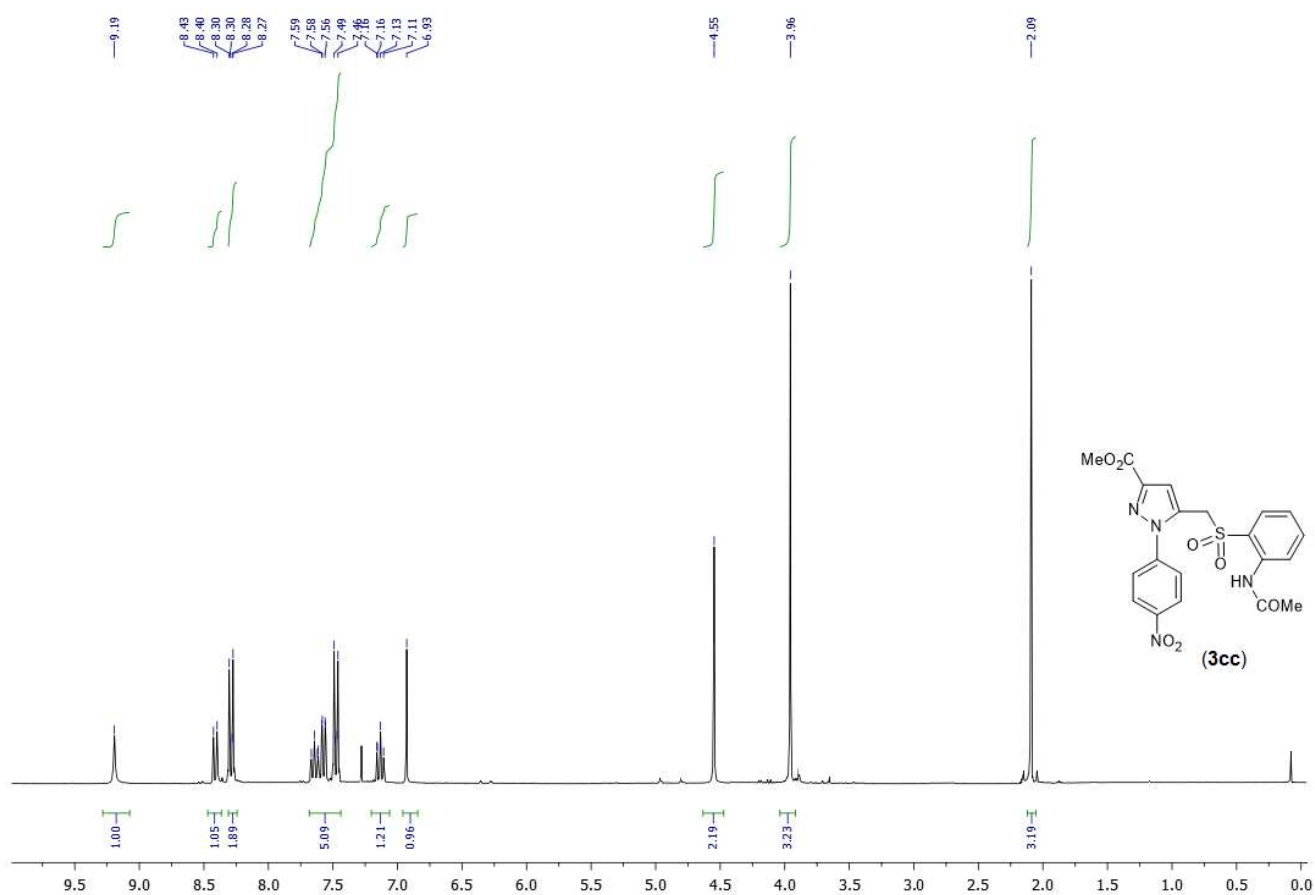
1-(4-Fluorophenyl)-3-methoxycarbonyl-5-[(2-acetylamminophenyl)sulfonyl]methylpyrazole (**3bc**)



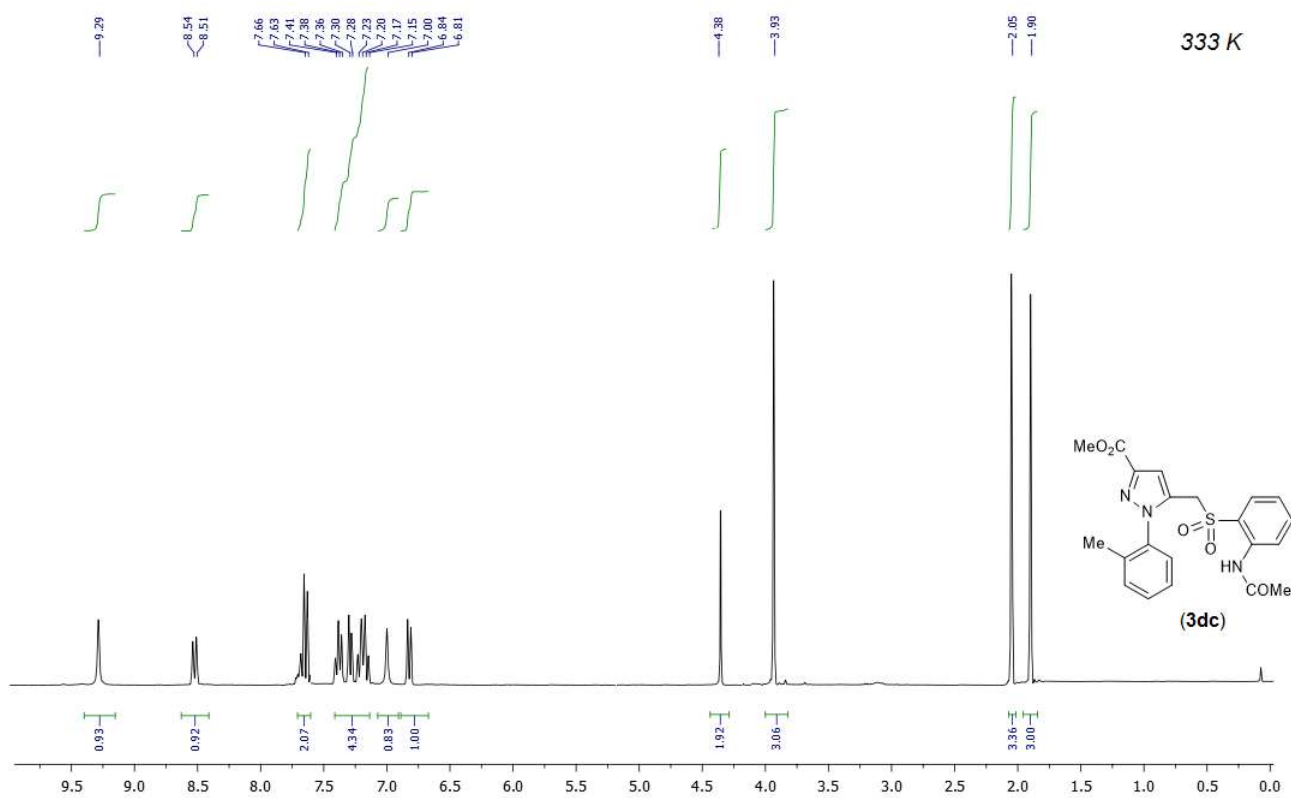
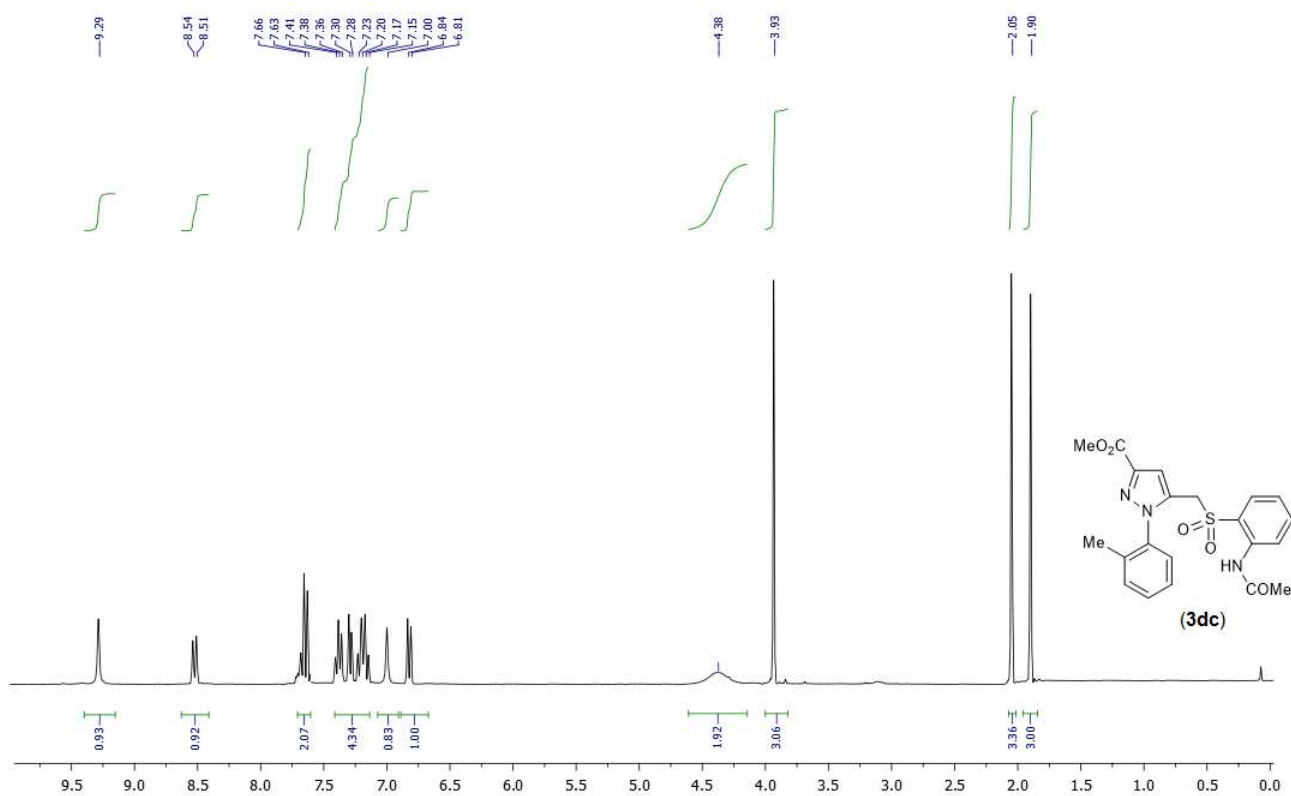
1-(4-Fluorophenyl)-3-methoxycarbonyl-5-[(2-acetylamminophenyl)sulfonyl]methylpyrazole (**3bc**)



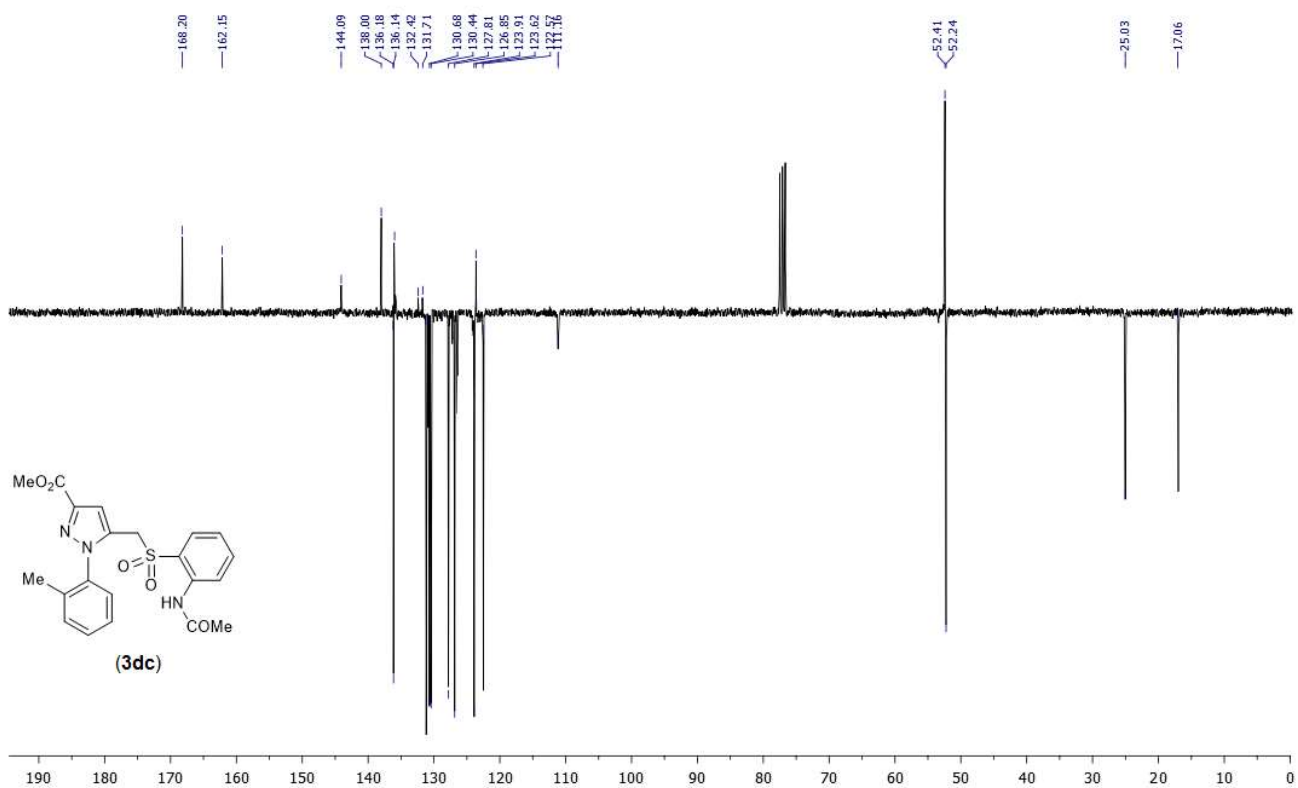
1-(4-Nitrophenyl)-3-methoxycarbonyl-5-[(2-acetylamminophenyl)sulfonyl]methylpyrazole (**3cc**)



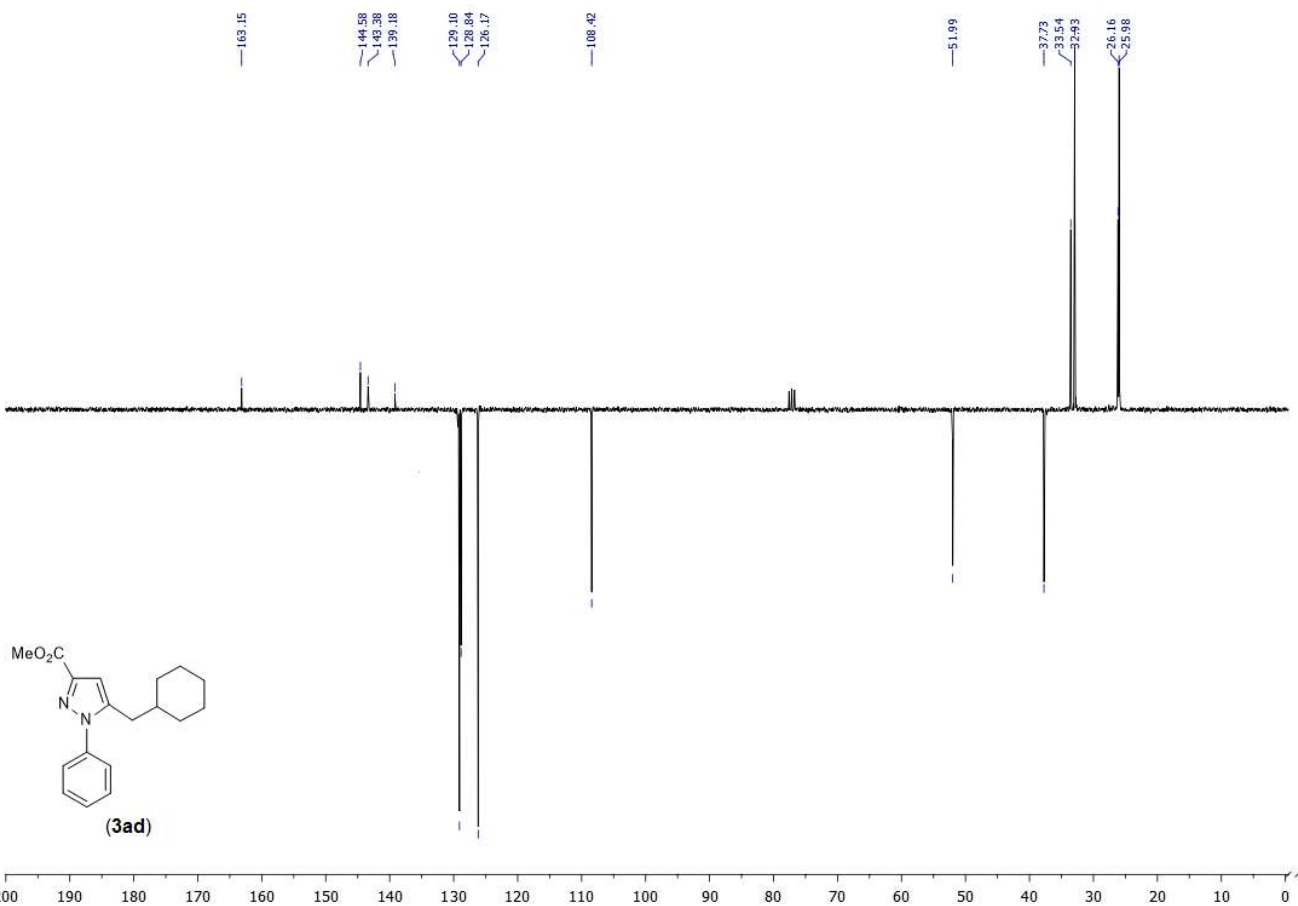
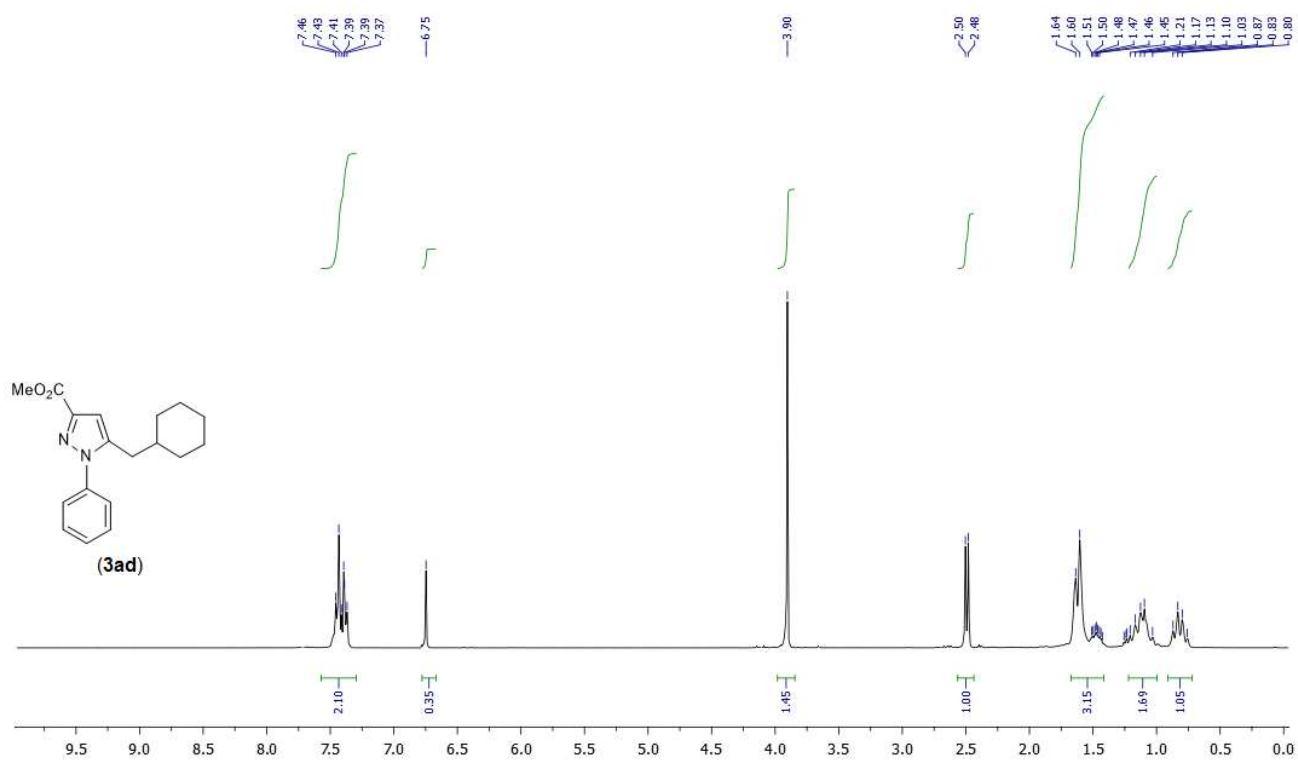
1-(2-Methylphenyl)-3-methoxycarbonyl-5-[(2-acetylaminophenyl)sulfonyl]methylpyrazole (**3dc**)



1-(2-Methylphenyl)-3-methoxycarbonyl-5-[(2-acetylamminophenyl)sulfonyl]methylpyrazole (**3dc**)



1-Phenyl-3-methoxycarbonyl-5-(cyclohexyl)methylpyrazole (**3ad**)



1-Phenyl-3-methoxycarbonyl-5-(methoxy)methylpyrazole (**3ae**)

