

## Supplementary materials

### **Green synthesis of three substituted methane derivatives by employing ZnO nanoparticles as a powerful and recyclable catalyst**

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## Supplementary materials

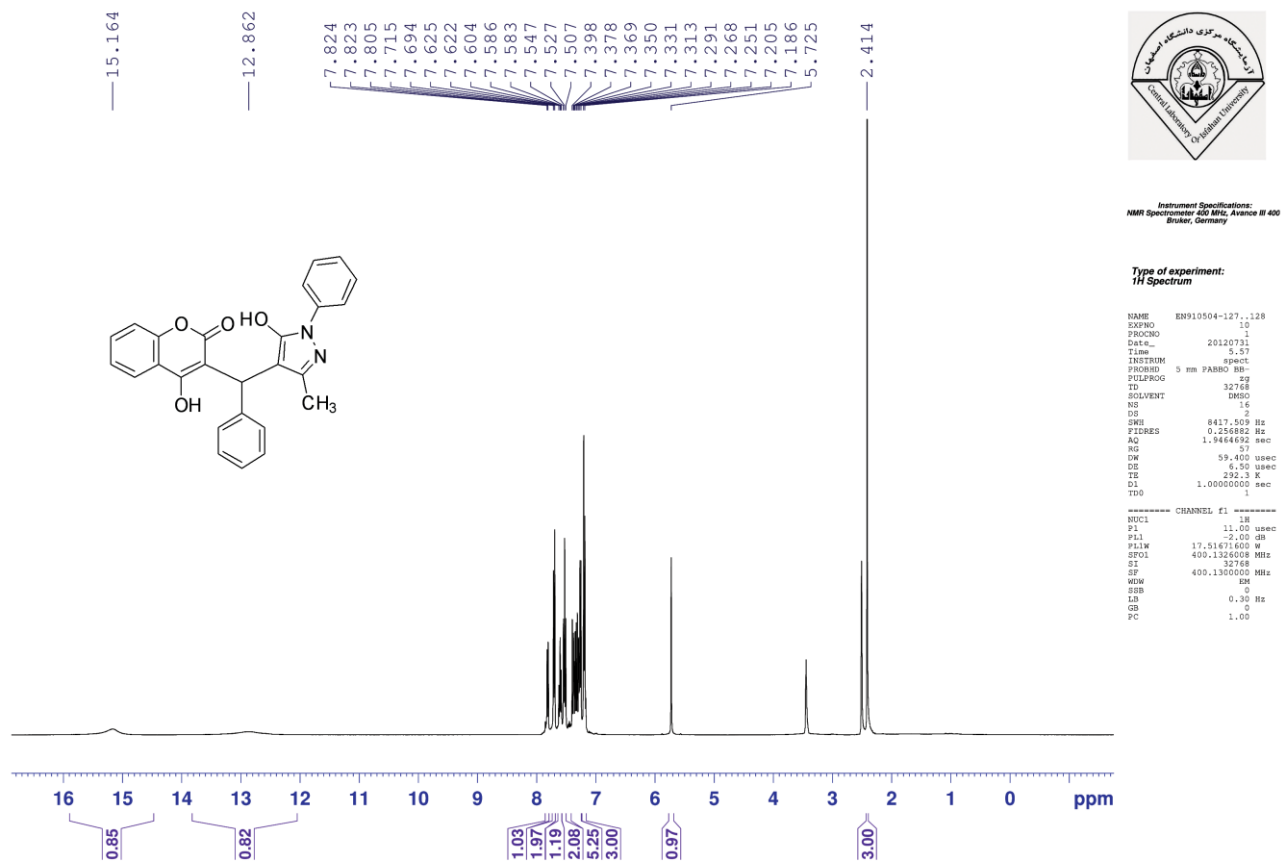


Fig. S1. <sup>1</sup>H NMR spectrum of product 5a

## Supplementary materials

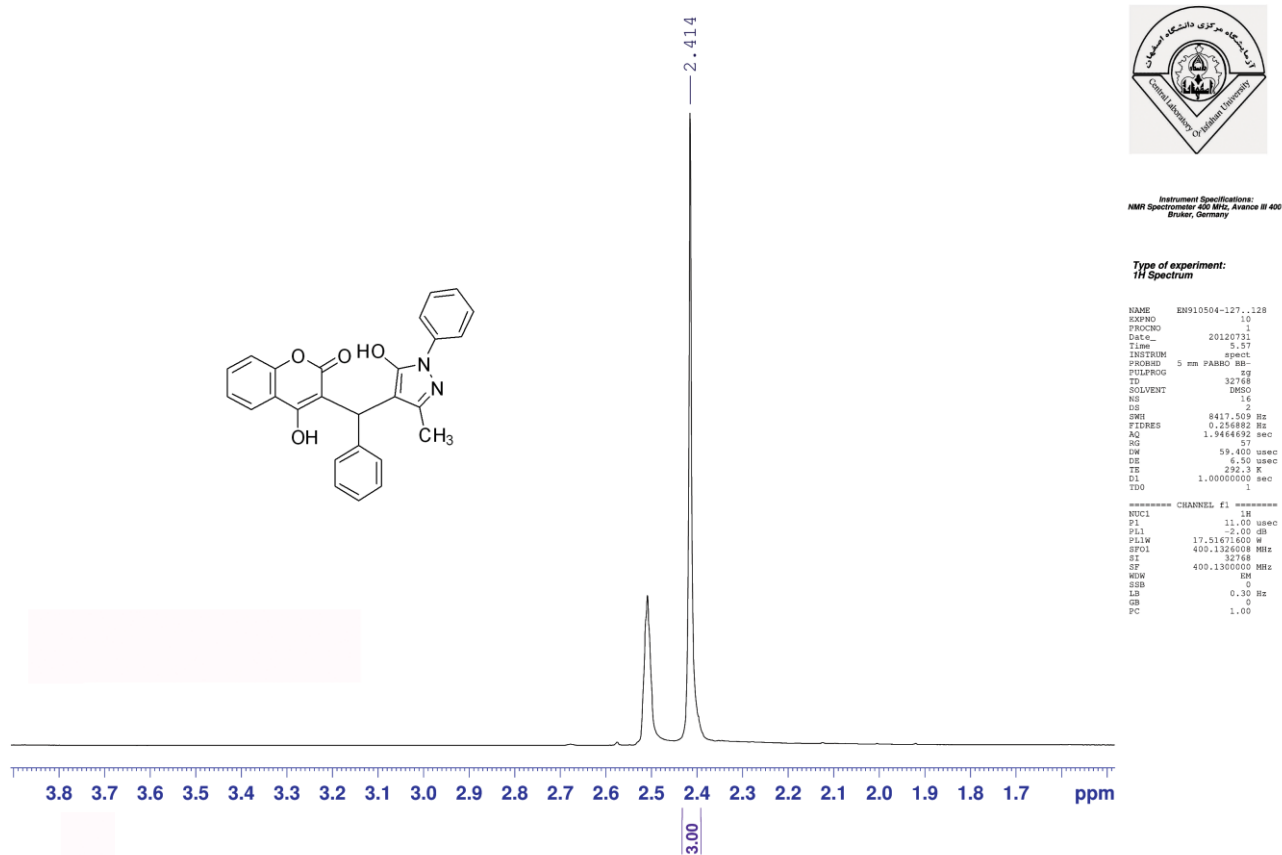


Fig. S2. <sup>1</sup>H NMR spectrum (Expanded) of product 5a

## Supplementary materials

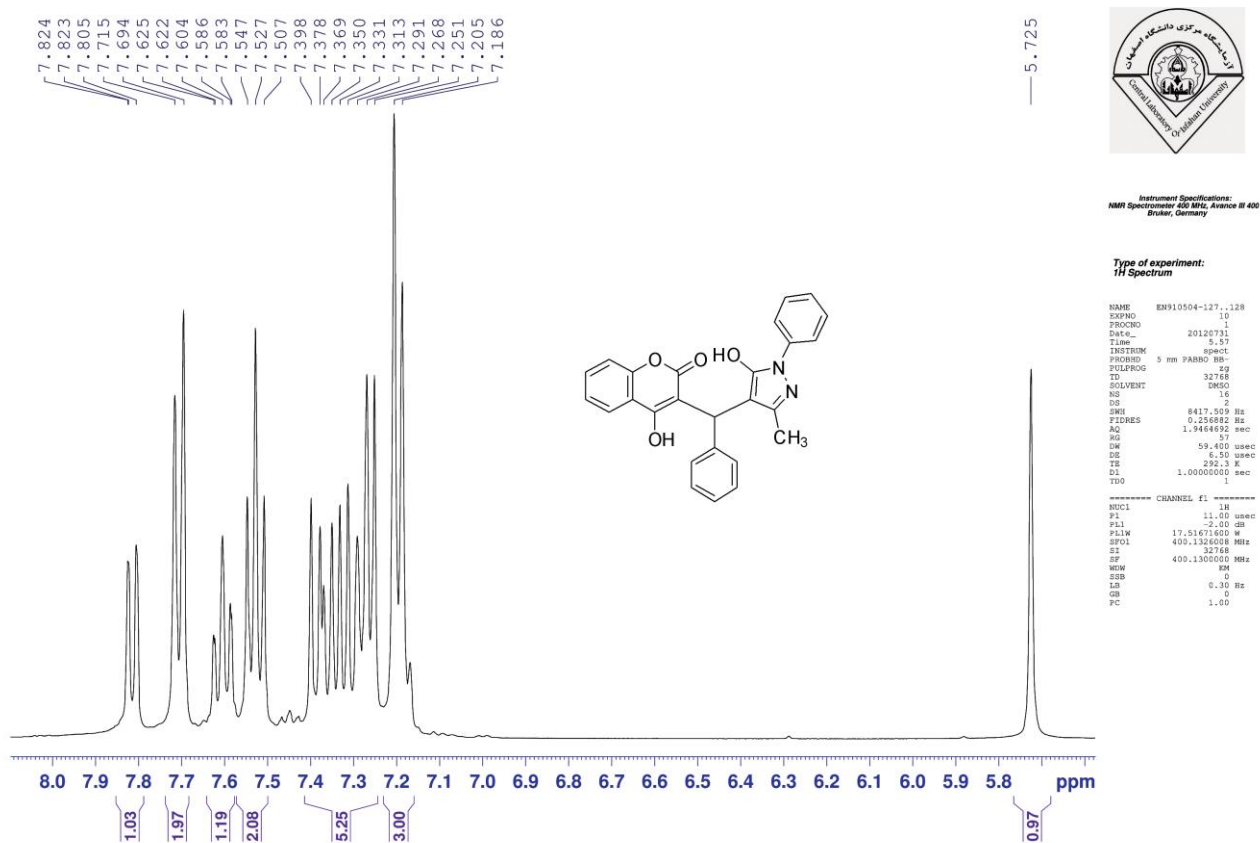


Fig. S3. <sup>1</sup>H NMR spectrum (Expanded) of product **5a**

## Supplementary materials

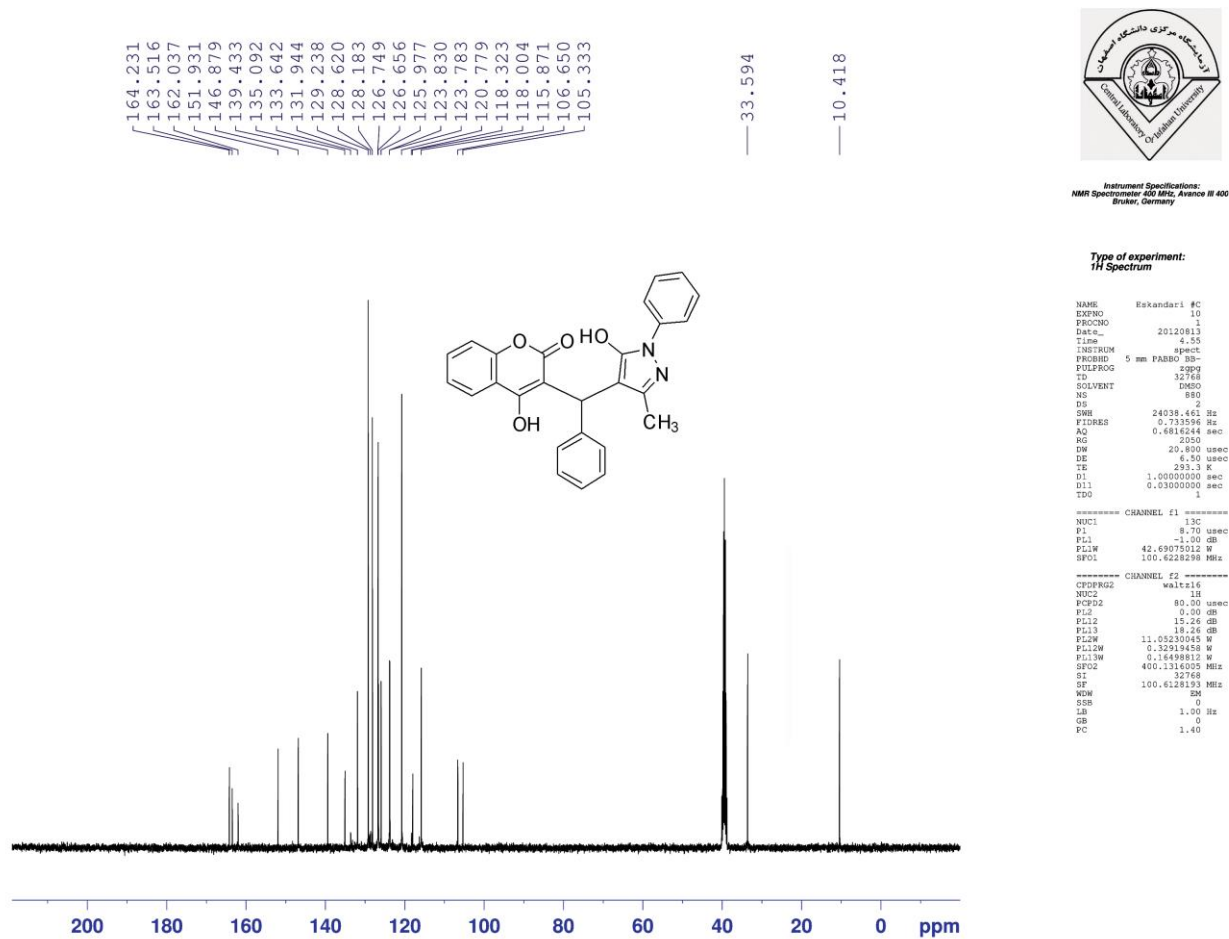


Fig. S4. <sup>13</sup>CNMR spectrum of product 5a

## Supplementary materials



Instrument Specifications:  
NMR Spectrometer 400 MHz, Avance III 400  
Bruker, Germany

Type of experiment:  
1H Spectrum

```
NAME      Eskandari #C
EXPNO     10
PROCNO    1
Date_     20120813
Time      4.55
INSTRUM   spect
PROBHD    5 mm PABBO BB-
PULPROG   zgpg30
TD         32768
SOLVENT   DMSO
NS         880
DS         2
SWH        24038.461 Hz
FIDRES    0.733596 Hz
AQ         0.6816245 sec
RG         2050
DW         20.800 usec
DE         5.50 usec
TE         293.3 K
D1         1.00000000 sec
D11        0.03000000 sec
TD0        1
----- CHANNEL f1 -----
NUC1       13C
P1          8.70 usec
PL1        -1.00 dB
PL1W       42.69075012 W
SFO1       100.6282939 MHz
----- CHANNEL f2 -----
CPDPRG2   waltz16
NUC2       1H
PCPD2     80.00 usec
PL2        0.00 dB
PL12       15.26 dB
PL13       15.26 dB
PL2W       11.05230045 W
PL12W      0.32919468 W
PL13W      0.16498812 W
SFO2       400.1316005 MHz
SI         32768
SF         100.6128193 MHz
RG         28
SBB        0
LB         1.00 Hz
GB         0
PC         1.40
```

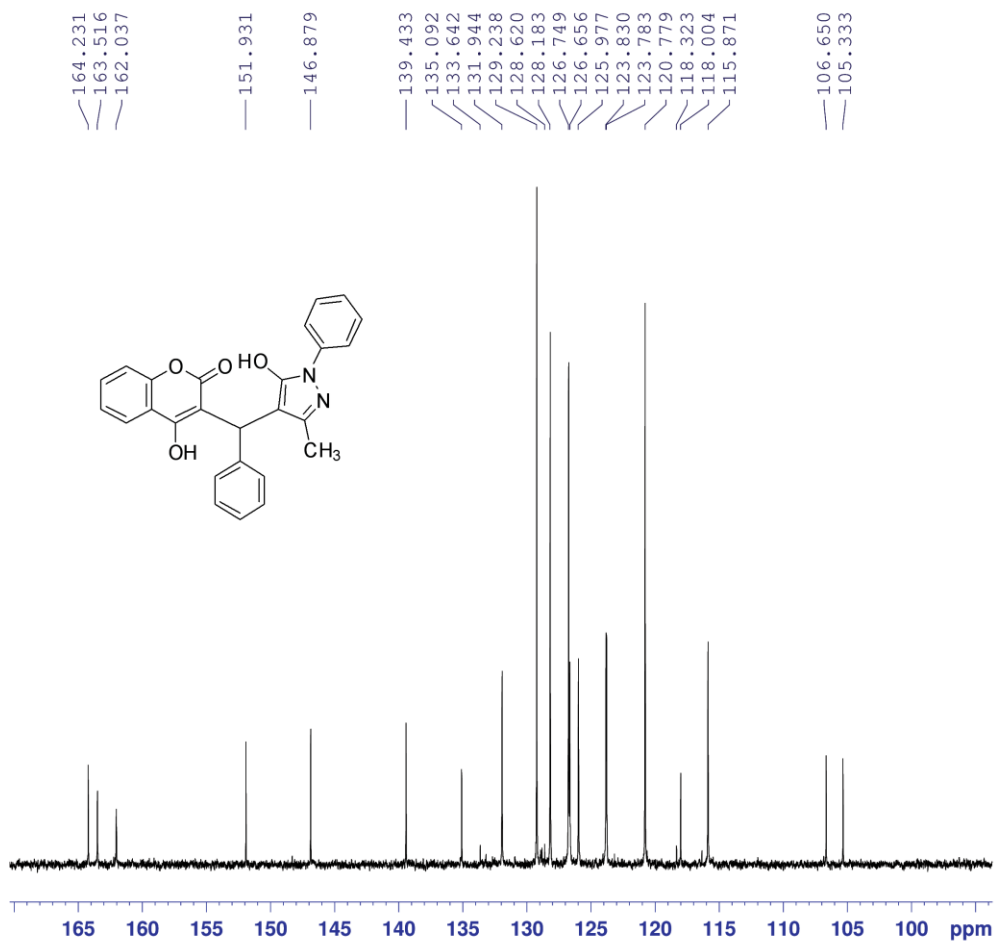


Fig. S5. <sup>13</sup>CNMR spectrum (Expanded) of product 5a

## Supplementary materials

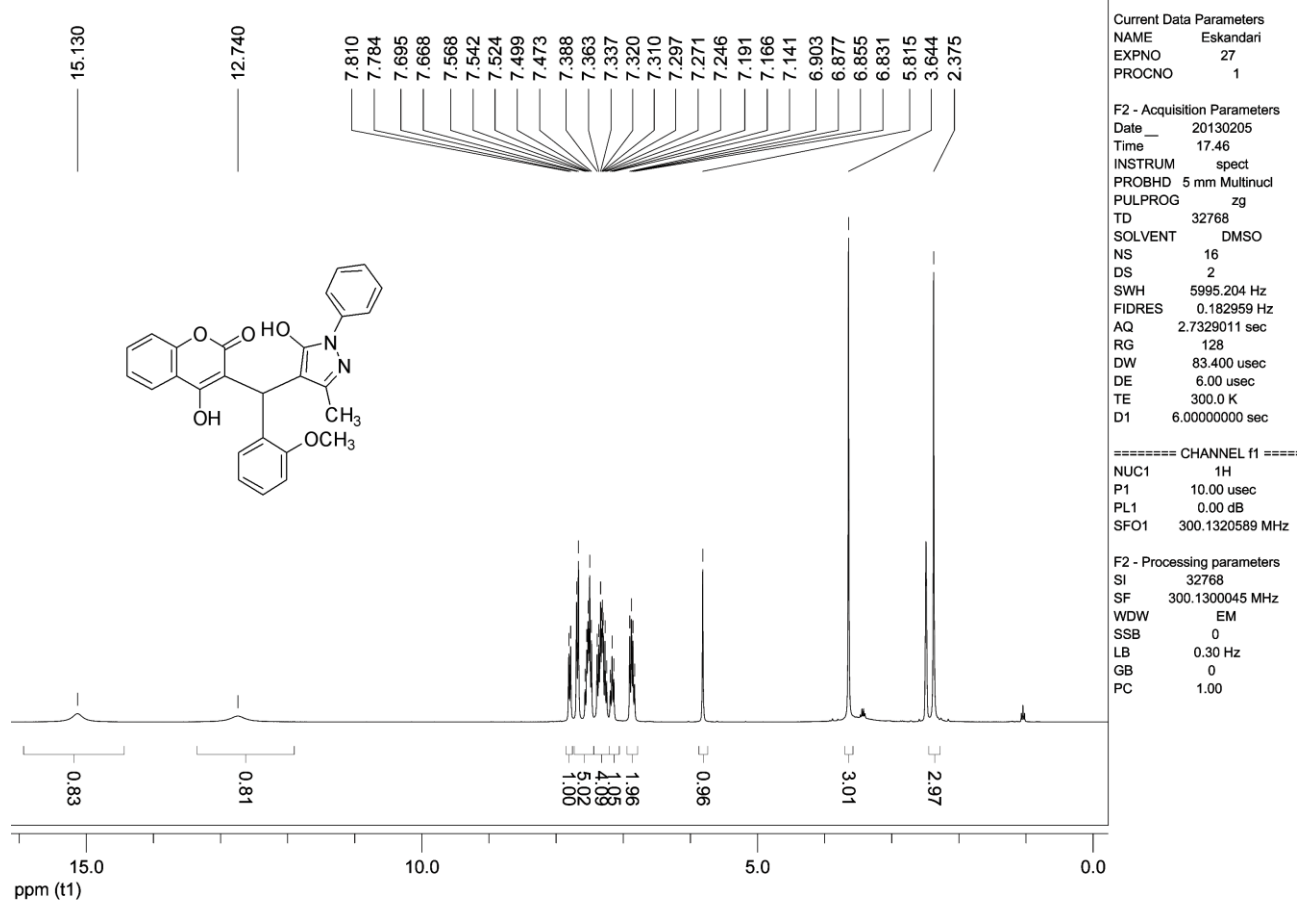


Fig. S6. <sup>1</sup>H NMR spectrum of product **5c**

## Supplementary materials

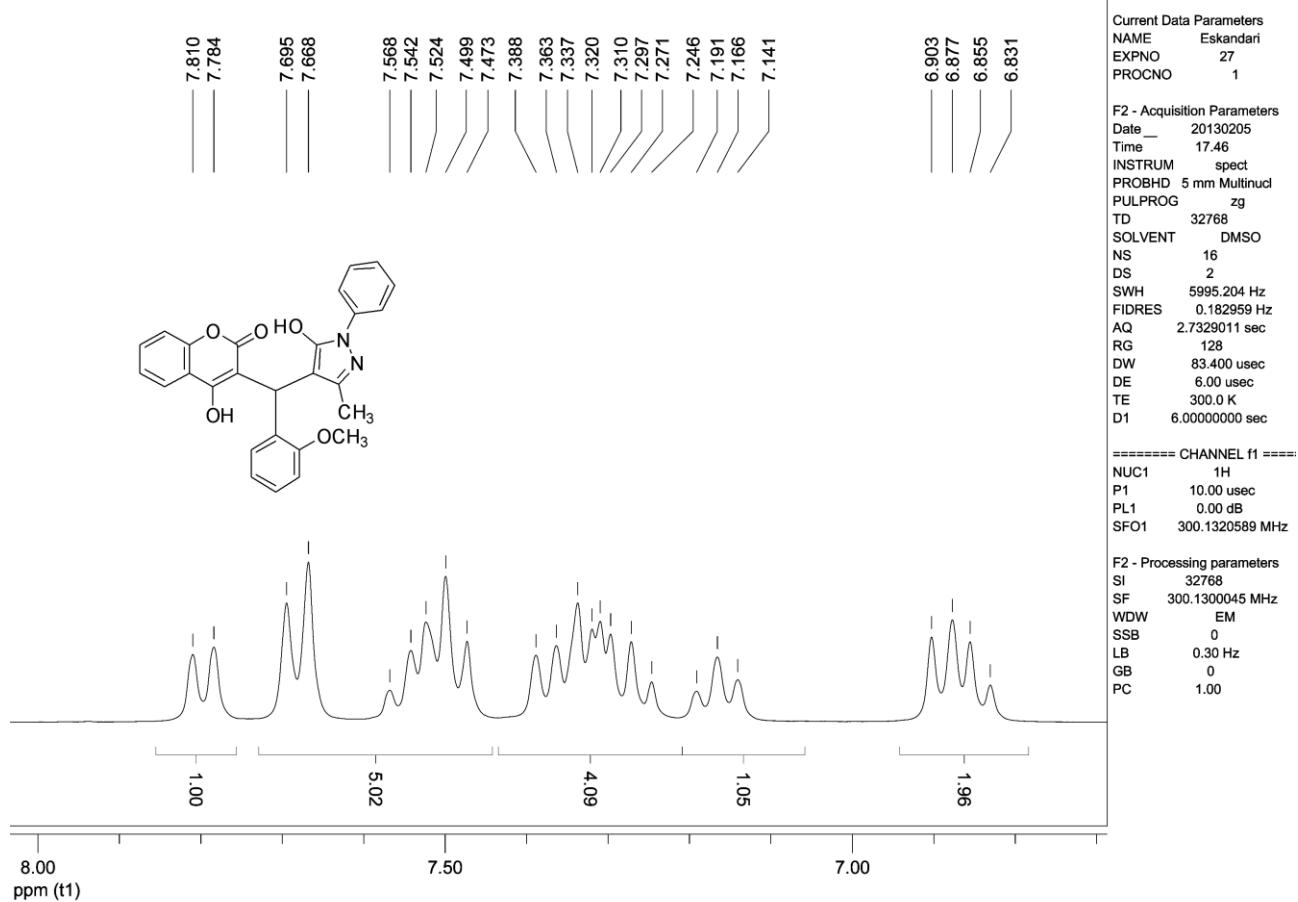


Fig. S7. <sup>1</sup>H NMR spectrum (Expanded) of product 5c



## Supplementary materials

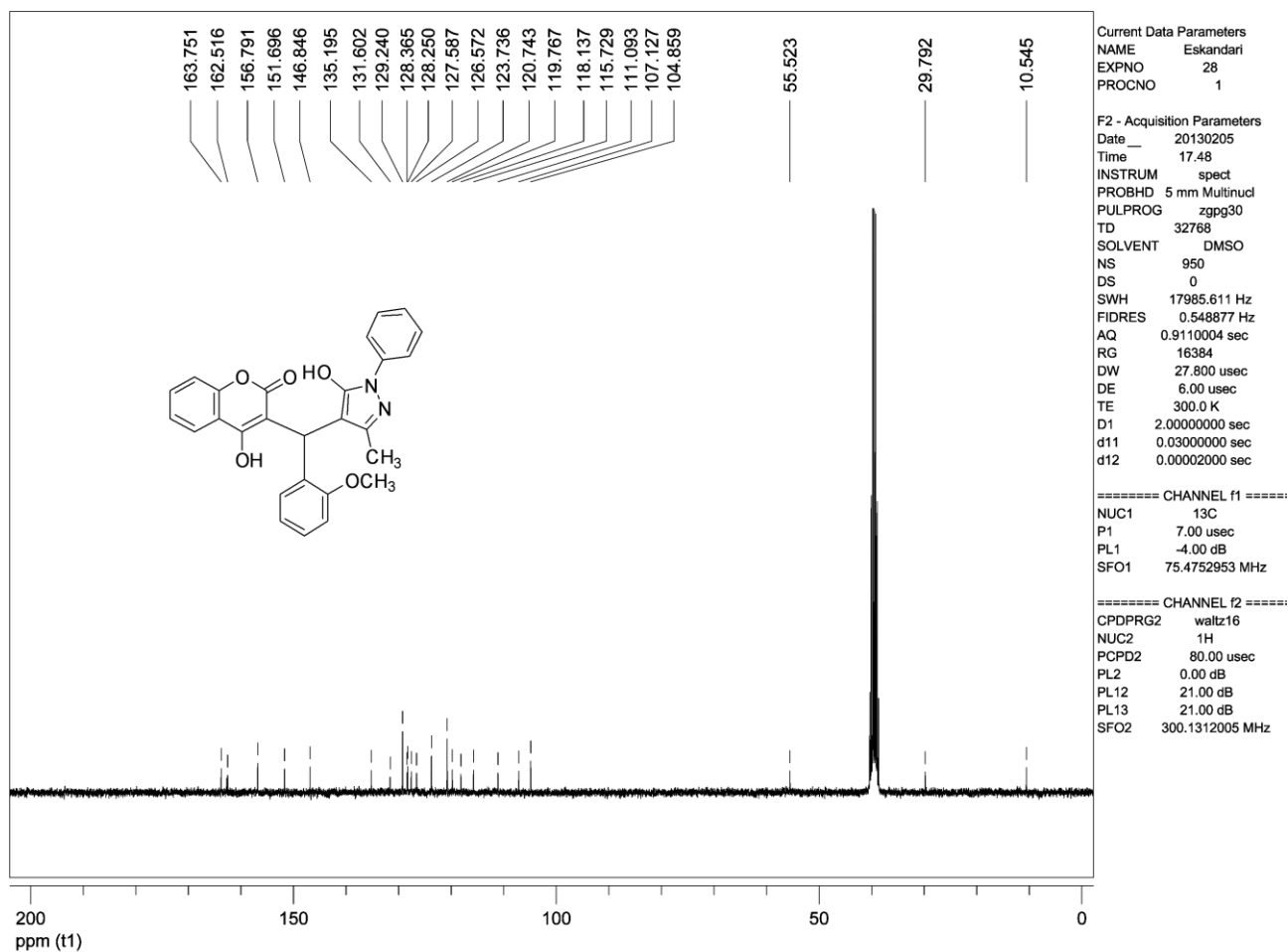
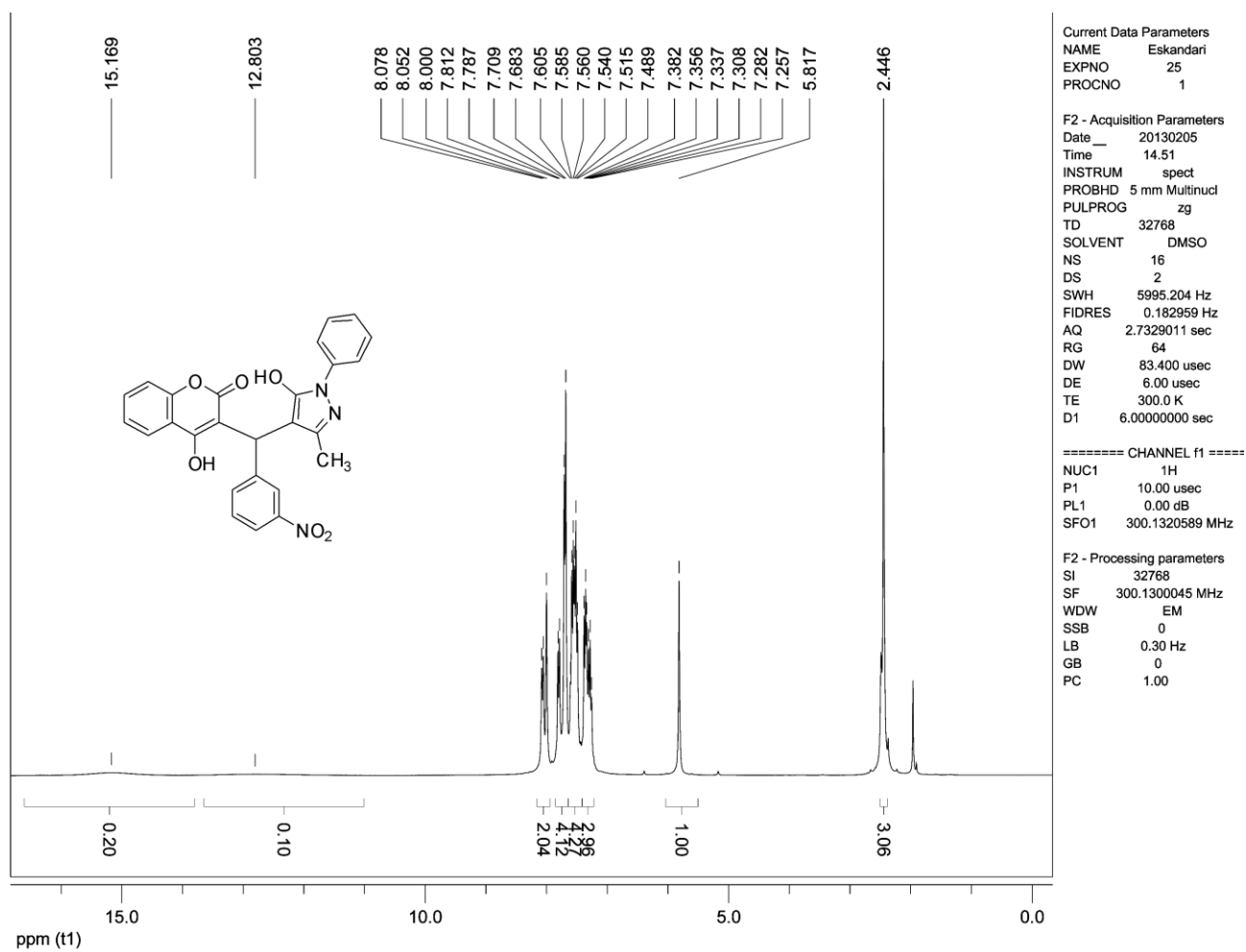


Fig. S8.  $^{13}\text{C}$ NMR spectrum of product **5c**

## Supplementary materials



**Fig. S9.** <sup>1</sup>H NMR spectrum of product **5g**

## Supplementary materials

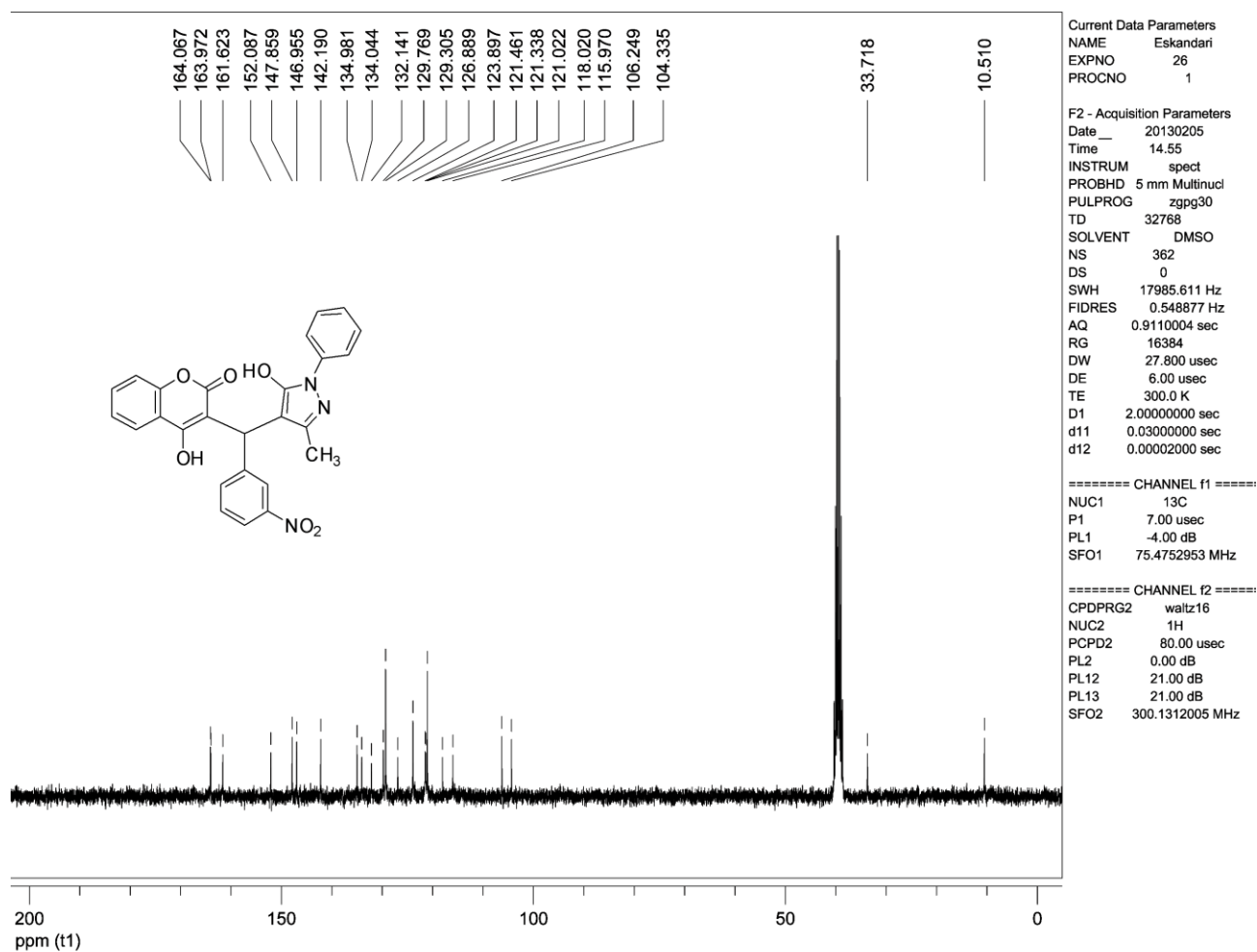


Fig. S10.  $^{13}\text{C}$ NMR spectrum of product **5g**

## Supplementary materials

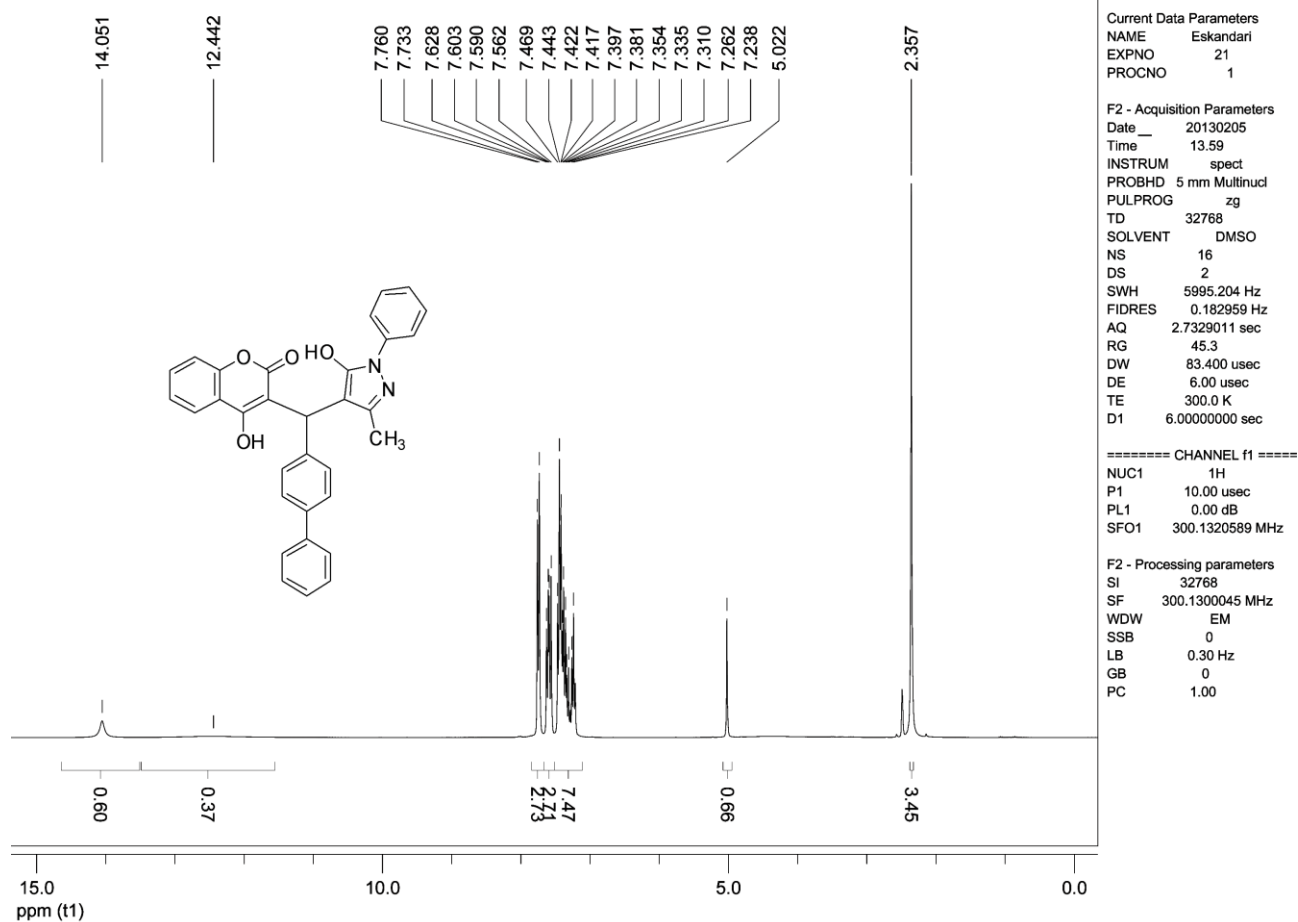


Fig. S11. <sup>1</sup>H NMR spectrum of product **5h**

## Supplementary materials

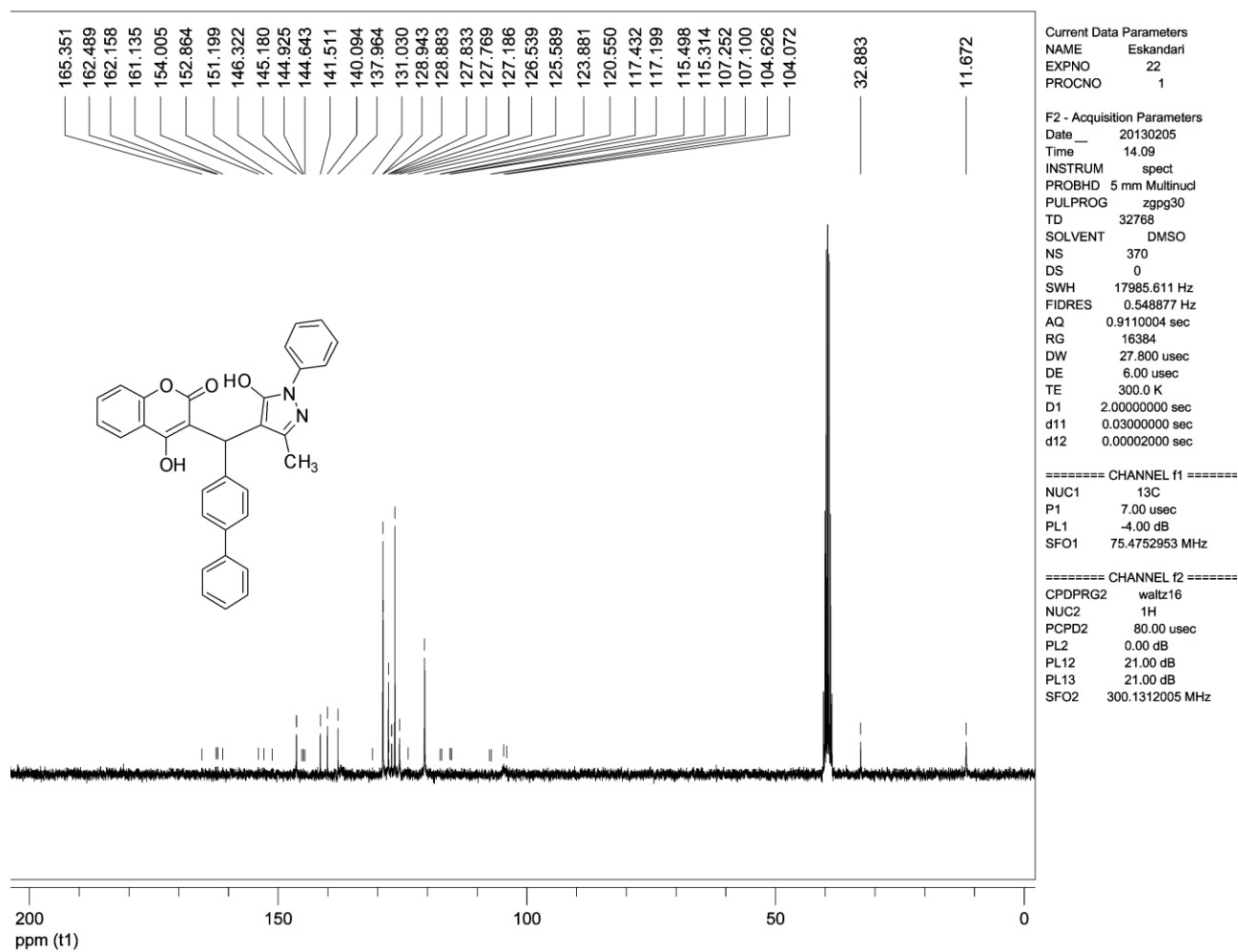
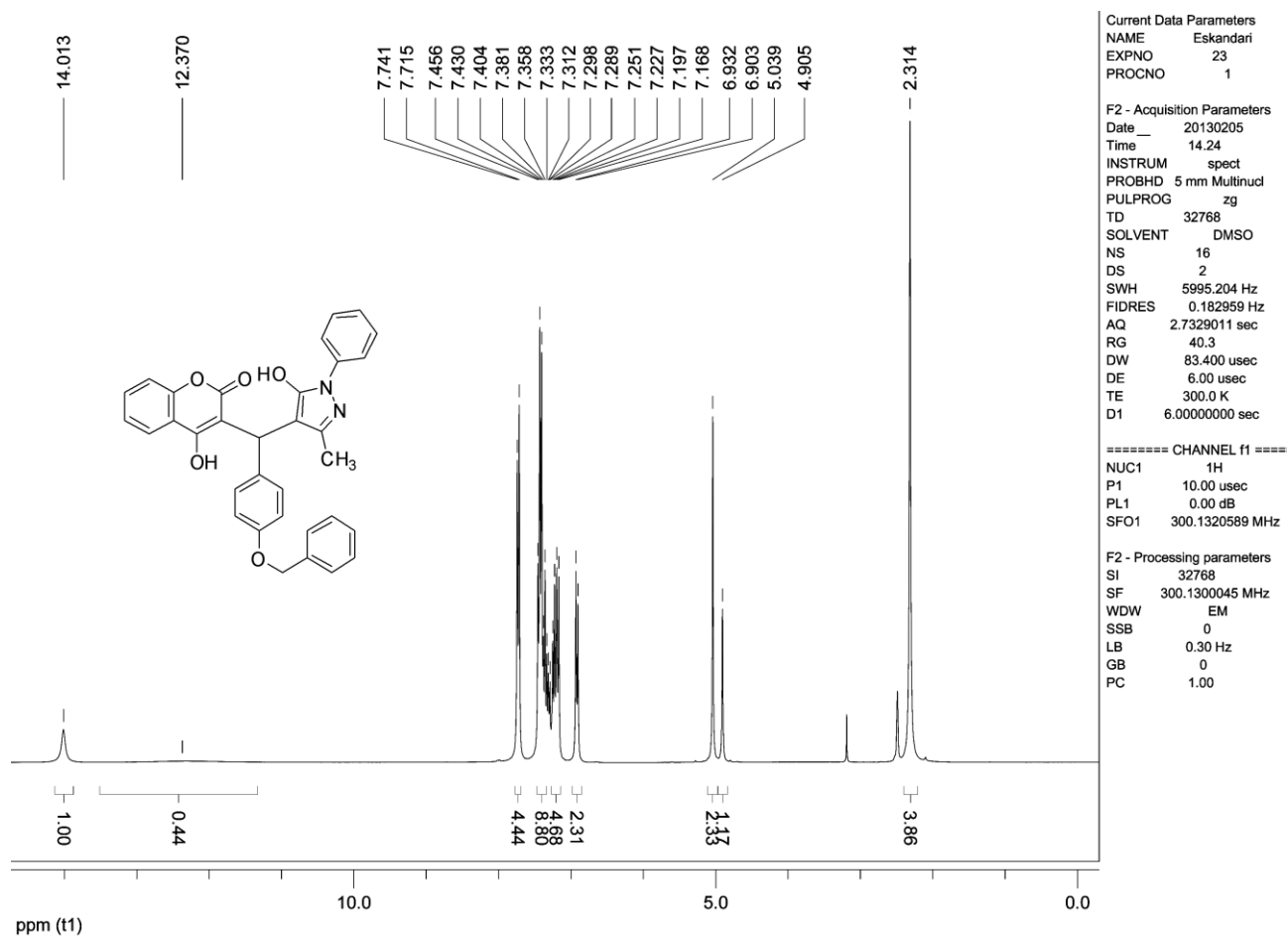


Fig. S12.  $^{13}\text{C}$ NMR spectrum of product **5h**

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**Fig. S13.**  $^1\text{H}$ NMR spectrum of product **5i**

## Supplementary materials

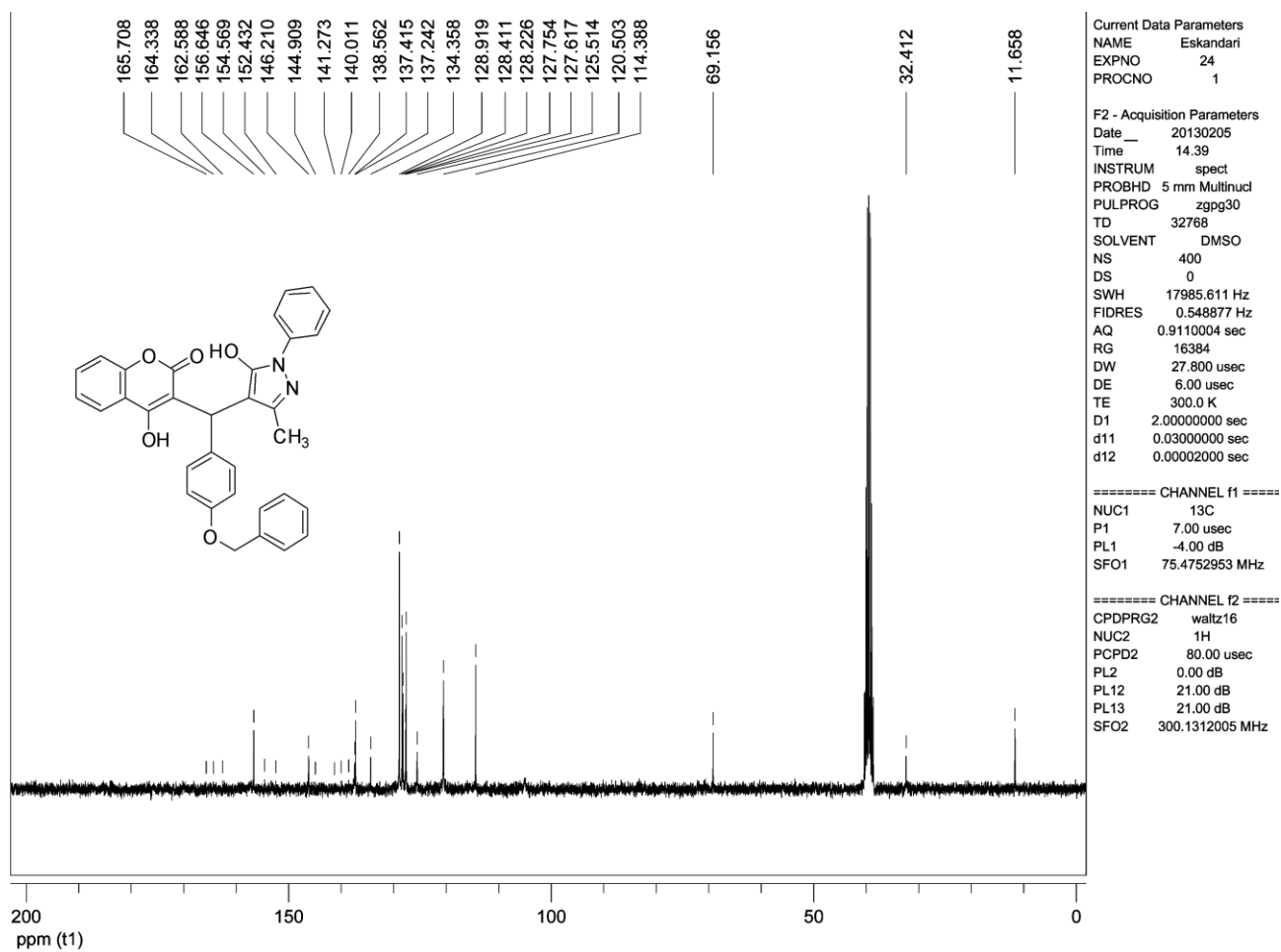


Fig. S14.  $^{13}\text{C}$ NMR spectrum of product **5i**