Supporting Information
for
An Efficient Fe-H₂O Medium In-situ Reduction and Cyclization Reaction for the Synthesis of Pyrazolo[3,4-α]acridin-10-one and Pyrazolo[4,3-α]acridin-10-one Derivatives

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(A) General methods:

1. All reagents were purchased from the Merck and Sigma-Aldrich chemical companies and used without further purification. Melting points were determined on XT-5 microscopic melting-point apparatus and were uncorrected. IR spectra were recorded on a FT Bruker Tensor 27 spectrometer. $^1$H NMR and $^{13}$C NMR spectra were obtained from solution in DMSO-$d_6$ with Me$_4$Si as internal standard using a Bruker-400 spectrometer. HRMS spectra were obtained with a Bruker microTOF-Q 134 instrument.

1.1 General procedures:

Aromatic aldehyde 1 (1 mmol), 1,3-cyclohexanedione (dimedone) 2, 6-nitro-1H-indazole or 5-nitro-1H-indazole 3 (1 mmol), Fe (3 mmol), EtOH (6 mL), H$_2$O (1 mL), and HOAc (1 mL) were put into a 25-mL round-bottom flask. Then, the mixture was stirred at 80 °C about 6 h (monitored reactions by TLC). After completion the reaction, 8 mL saturated salt water was added into the reaction system. The mixture was transferred to a separatory funnel, and was extracted with 3x15 mL of ethyl acetate. Organics were combined and washed thoroughly with saturated NaCl (aq), dried over anhydrous Na$_2$SO$_4$, and filtered through Celite. Following reduction of the solvent in vacuo, the material remaining was purified by crystallization from DMF to give the pure product 4 and 6.
(B) Copies of $^1$H NMR and $^{13}$C NMR spectra for the product 4:

![NMR Spectra](image)

Fig 1 $^1$H NMR Spectra of 4a
Fig 2 $^{13}$C NMR Spectra of 4a

Fig 3 $^1$H NMR Spectra of 4b
Fig 4 $^{13}$C NMR Spectra of 4b

Fig 5 $^1$H NMR Spectra of 4c
Fig 6 $^{13}$C NMR Spectra of 4c

Fig 7 $^1$H NMR Spectra of 4d
Fig 8 $^{13}$C NMR Spectra of 4d

Fig 9 $^1$H NMR Spectra of 4e
Fig 10 $^{13}$C NMR Spectra of 4e

Fig 11 $^1$H NMR Spectra of 4f
Fig 12 $^{13}$C NMR Spectra of 4f

Fig 13 $^1$H NMR Spectra of 4g
Fig 14 $^{13}$C NMR Spectra of 4g

Fig 15 $^1$H NMR Spectra of 4h
Fig 16 $^{13}$C NMR Spectra of 4h
Fig 17 $^1$H NMR Spectra of 4i

Fig 18 $^{13}$C NMR Spectra of 4i
Fig 19 $^1$H NMR Spectra of 4j

Fig 20 $^{13}$C NMR Spectra of 4j
Fig 21 $^1$H NMR Spectra of 4k

Fig 22 $^{13}$C NMR Spectra of 4k
Fig 23 $^1H$ NMR Spectra of 4I

Fig 24 $^{13}C$ NMR Spectra of 4I
Fig 25 $^1$H NMR Spectra of 4m

Fig 26 $^{13}$C NMR Spectra of 4m
Fig 27 $^1$H NMR Spectra of 4n

Fig 28 $^{13}$C NMR Spectra of 4n
Fig 29 $^1\text{H}$ NMR Spectra of 4o

Fig 30 $^{13}\text{C}$ NMR Spectra of 4o
Fig 31 $^1$H NMR Spectra of 4p

Fig 32 $^{13}$C NMR Spectra of 4p
Fig 33 $^1$H NMR Spectra of 4q

Fig 34 $^{13}$C NMR Spectra of 4q
Fig 35 $^1$H NMR Spectra of 4r

Fig 36 $^{13}$C NMR Spectra of 4r
Fig 37 $^1$H NMR Spectra of 4s

Fig 38 $^{13}$C NMR Spectra of 4s
Fig 39 $^1$H NMR Spectra of 4t

Fig 40 $^{13}$C NMR Spectra of 4t
Fig 41 $^1$H NMR Spectra of 4u

Fig 42 $^{13}$C NMR Spectra of 4u
(C) Copies of $^1$H NMR and $^{13}$C NMR spectra for the product 6:

![Spectra Image]

Fig 43 $^1$H NMR Spectra of 6a
Fig 44 $^{13}$C NMR Spectra of 6a

Fig 45 $^1$H NMR Spectra of 6b

Fig 46 $^{13}$C NMR Spectra of 6b
Fig 47 $^1$H NMR Spectra of 6c

Fig 48 $^{13}$C NMR Spectra of 6c
Fig 49 $^1$H NMR Spectra of $6d$

Fig 50 $^{13}$C NMR Spectra of $6d$
Fig 51 $^1$H NMR Spectra of 6e

Fig 52 $^{13}$C NMR Spectra of 6e
Fig 53 $^1$H NMR Spectra of 6f

Fig 54 $^{13}$C NMR Spectra of 6f
Fig 55 $^1$H NMR Spectra of 6g

Fig 56 $^{13}$C NMR Spectra of 6g
Fig 57 $^1$H NMR Spectra of 6h
Fig 58 $^{13}$C NMR Spectra of 6h

Fig 59 $^1$H NMR Spectra of 6i
Fig 60 $^{13}$C NMR Spectra of 6i

Fig 61 $^1$H NMR Spectra of 6j
Fig 62 $^{13}$C NMR Spectra of $6j$

Fig 63 $^1$H NMR Spectra of $6k$
Fig 64 $^{13}$C NMR Spectra of 6k

Fig 65 $^{1}$H NMR Spectra of 6l
Fig 66 $^{13}$C NMR Spectra of 6l

Fig 67 $^1$H NMR Spectra of 6m
Fig 68 $^{13}$C NMR Spectra of $6m$

Fig 69 $^1$H NMR Spectra of $6n$
Fig 70 $^{13}$C NMR Spectra of 6n

Fig 71 $^1$H NMR Spectra of 6o
Fig 72 $^{13}$C NMR Spectra of 60