Regioselective One-pot Multi-component Green Synthesis of Substituted Benzo[c]pyrazolo[2,7]naphthyridines

Abida Ashraf,ab Zahid Shafiq,a Khalid Mahmood, a Muhammad Yaqub*a Waqar Raufc

a Institute of Chemical Sciences, Bahauddin Zakariya University, Multan Pakistan.
b Department of Chemistry, Kutchery Campus, The Women University Multan, Multan
60000, Pakistan
c National Institute of Biotechnology and Genetic Engineering (NIBGE), P.O. Box 577, Faisalabad, Pakistan.
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Figure S1: Absorption spectra for 6a (2 x 10^{-3} \text{ mol L}^{-1}) in DMSO:H_{2}O (1:5 v/v) with addition of different cations (1 x 10^{-3} \text{ mol L}^{-1}).
Figure S2  The proposed ESI fragmentation pattern (positive mode) of compound 6k.
Figure S3  Comparison of $^1$HNMR and $^{13}$CNMR of 10m, 6m and 11f.
10a

[Chemical structure diagram]

[Graphical representation of the chemical structure with peaks and values on the x-axis and y-axis.

10a

[Chemical structure diagram]
16
42
The image contains a diagram of a molecule labeled as 6g. The molecule has the following structural features:

- Two nitrogen atoms (N) with attached hydrogen (H) atoms.
- An oxygen atom (O).
- A trifluoromethoxy group (OCF₃).

Additionally, there are mass spectra graphs with peaks at various m/z values, indicating the molecular ion masses and fragment ions for compound 6g.
6h
6h
Ab-68_16-04-2019 #1  RT: 0.00  AV: 1  NL: 6.67E4
T: ITMS + p ESI Full ms [100.00-1000.00]

Ab-68_16-04-2019 #196  RT: 0.81  AV: 1  NL: 1.56E4
T: ITMS + p ESI Full ms2 279.00@clid28.00 [75.00-1000.00]
| Mass     | Theoretical Mass [ppm] | Delta [ppm] | Delta [mu] | RDB | Composition       |
|----------|-------------------------|-------------|------------|-----|------------------|
| 298.0722 | 298.0715                | 2.2         | 0.7        | 17.0| C_{14}H_{10}N_{6} |
| 298.0734 | 298.0734                | -3.9        | -1.2       | 12.0| C_{14}H_{11}N_{6}Cl_{3} |
| 298.0783 | 298.0783                | -28.3       | -5.1       | 20.0| C_{24}H_{10}    |
| 298.0657 | 298.0657                | 21.9        | 6.5        | 20.5| C_{12}H_{12}N_{4} |
| 298.0699 | 298.0699                | 39.3        | 11.4       | 12.5| C_{12}H_{12}N_{2}Cl_{3} |
6m
\[ \text{11c} \]
