CSA-Catalyzed Three-component Synthesis of Fused Polycyclic Pyrazolo[4,3-e]pyridines Under Ultrasonic Irradiation and Their Antioxidant Activity

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Supplementary Material

Figure 1S: FTIR spectrum of compound 4a.
Figure 2S: $^1$H NMR spectrum of compound 4a.
Figure 3S: MS spectrum of compound 4a. (a) Zoom of the spectrum between m/z 300-350, (b) Full range.
**Figure 4S**: FTIR spectrum of compound 4b.
Figure 5S: $^1$H NMR spectrum of compound 4b.
Figure 6S: APT NMR spectrum of compound 4b.
Figure 7S: MS spectrum of compound 4b. (a) Zoom of the spectrum between m/z 300-400. (b) Full range.
Figure 8S: FTIR spectrum of compound 5c.
Figure 9S: $^1$H NMR spectrum of compound $5c$. 
**Figure 10S:** APT NMR spectrum of compound 5c.
Figure 11S: MS spectrum compound of 5c. (a) Zoom of spectrum between m/z 300-400. (b) Full range.
Figure 12S: FTIR spectrum of compound 5d.
Figure 13S: $^1$H NMR spectrum of compound 5d.
Figure 14S: MS spectrum of compound 5d. (a) Zoom of the spectrum between m/z 300-400. (b) Full range.
Figure 15S: FTIR spectrum of compound 5e.
Figure 16S: MS spectrum of compound 5e. (a) Zoomed spectrum between m/z 320-370. (b) Full range.
Figure 17S: FTIR spectrum of compound 7a.
Figure 18S: $^1$H NMR spectrum of compound 7a.
Figure 19S: APT NMR spectrum of compound 7a.
Figure 20S: MS spectrum of compound 7a. (a) Zoomed spectrum between m/z 300-400. (b) Full range.
Figure 21S: $^1$H NMR spectrum of compound 7b.
Figure 22S: APT NMR spectrum of compound 7b.
**Figure 23S**: MS spectrum of compound 7b. (a) Zoomed spectrum between m/z 400-500. (b) Full range.