Supplementary Information

Synthesis of 2,3-Dihydro-4-pyranones from Epoxides via Intermolecular [4+2] Cycloaddition Reaction

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Experimental Section

General
All the reagents are commercially obtained. BF$_3$·Et$_2$O was distilled over CaH$_2$ prior to use.$^1$H NMR spectra were recorded in CDCl$_3$ on Varian AS 400 (400 MHz) spectrometer using TMS as internal standard. The $^{13}$C spectra were obtained on Varian AS 400 operating at 100 MHz. IR spectra were recorded on Nicolet Impact 410 FT-IR spectrometer. HRMS spectra were recorded using ESI mode. Melting points were measured in open capillary tubes and are uncorrected. All 3-ethoxy cyclobutanones are prepared by the following literature methods.

Ref:
1H NMR spectrum of 1

cis:trans = 1:8
$^{13}$C NMR spectrum of 1

![Spectrum Diagram](image-url)
$^1$H NMR spectrum of 2

cis:trans = 1:8
$^{13}$C NMR spectrum of 2
$^1$H NMR spectrum of 3

cis:trans = 1:9
$^{13}$C NMR spectrum of 3
$^1$H NMR spectrum of 4
$^{13}$C NMR spectrum of 4
$^1$H NMR spectrum of 5
$^{13}$C NMR spectrum of 5
$^1$H NMR spectrum of 6
$^{13}$C NMR spectrum of 6
$^1H$ NMR spectrum of 7
$^{13}$C NMR spectrum of 7
$^1$H NMR spectrum of 8
$^{13}$C NMR spectrum of 8
$^1$H NMR spectrum of 9
$^{13}$C NMR spectrum of 9
\( ^1H \text{ NMR spectrum of 10} \)
$^{13}$C NMR spectrum of 10
$^1$H NMR spectrum of 13
\(^{13}\text{C}\) NMR spectrum of 13
$^1$H NMR spectrum of 14

cis:trans = 1:12
$^{13}$C NMR spectrum of 14
$^1$H NMR spectrum of 15
$^{13}$C NMR spectrum of 15

![Diagram of a molecular structure with $^{13}$C NMR spectrum]
$^1$H NMR spectrum of 16
$^{13}$C NMR spectrum of 16
$^1H$ NMR spectrum of 17
$^{13}$C NMR spectrum of 17
$^1$H NMR spectrum of 18

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$^{13}$C NMR spectrum of 18