

Supplementary Materials: Chemo-enzymatic Synthesis of Chiral Epoxides Ethyl and Methyl (S)-3-(Oxiran-2-yl)propanoates from Renewable Levoglucosenone: An Access to Enantiopure (S)-Dairy Lactone

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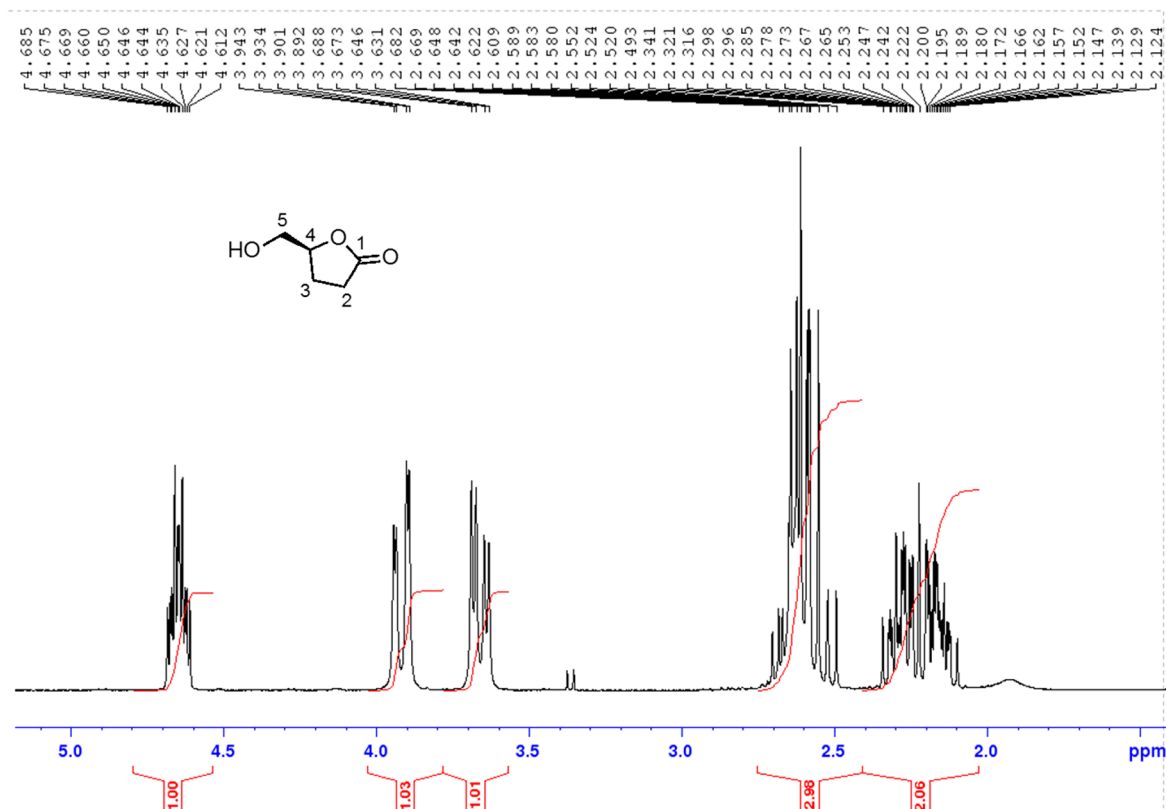


Figure S1. ¹H-NMR spectra for (S)- γ -hydroxymethyl- γ -butyrolactone (2). ¹H 300 MHz in CDCl₃.

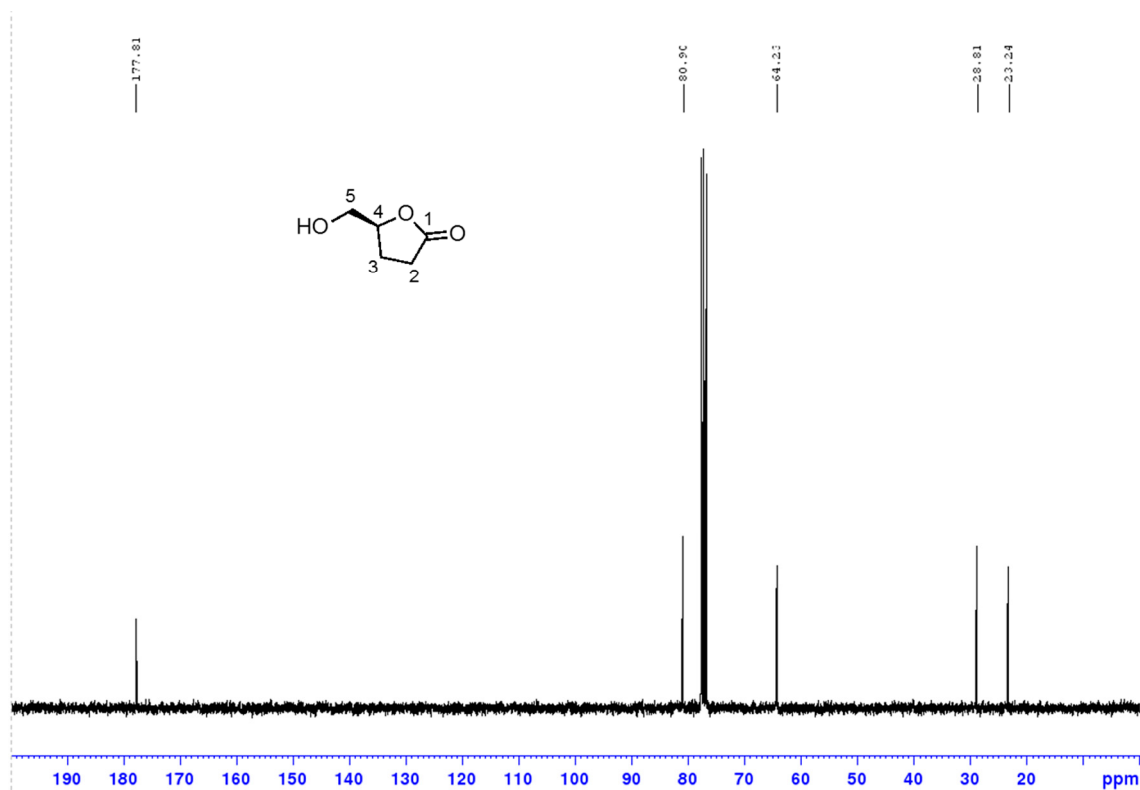


Figure S2. ^{13}C -NMR spectra for (S)- γ -hydroxymethyl- γ -butyrolactone (2). ^{13}C 75 MHz in CDCl_3 .

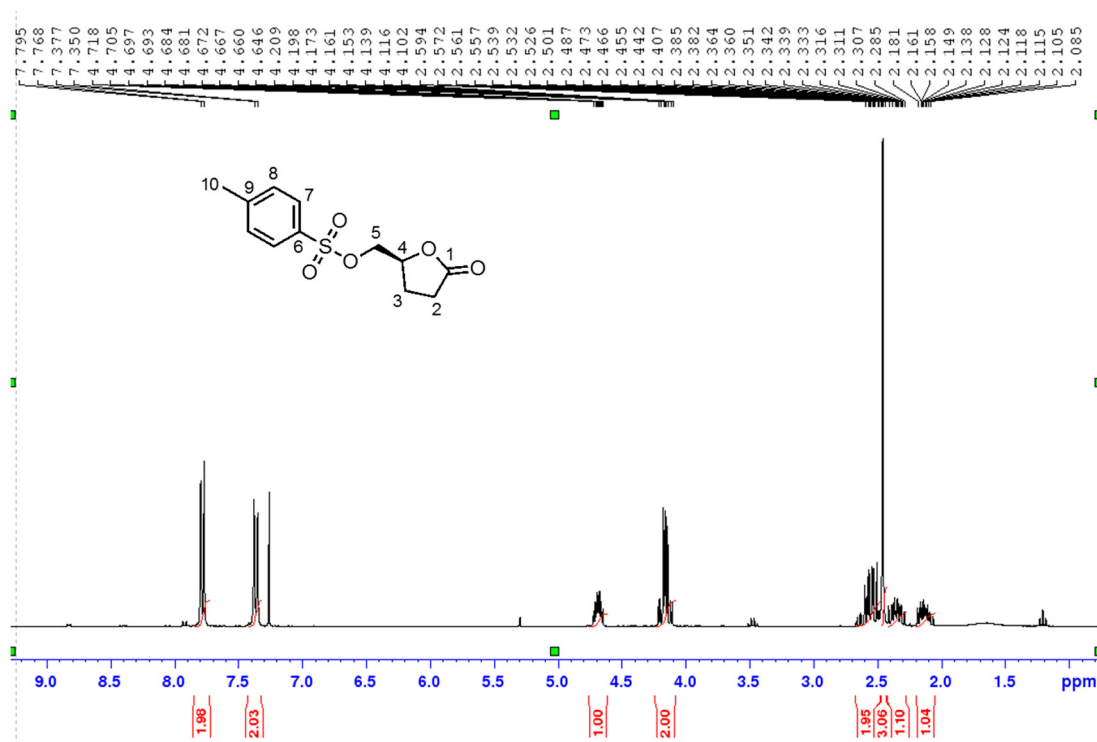


Figure S3. ^1H -NMR spectra for (S)- γ -tosyloxymethyl- γ -butyrolactone (3a). ^1H 300 MHz in CDCl_3 .



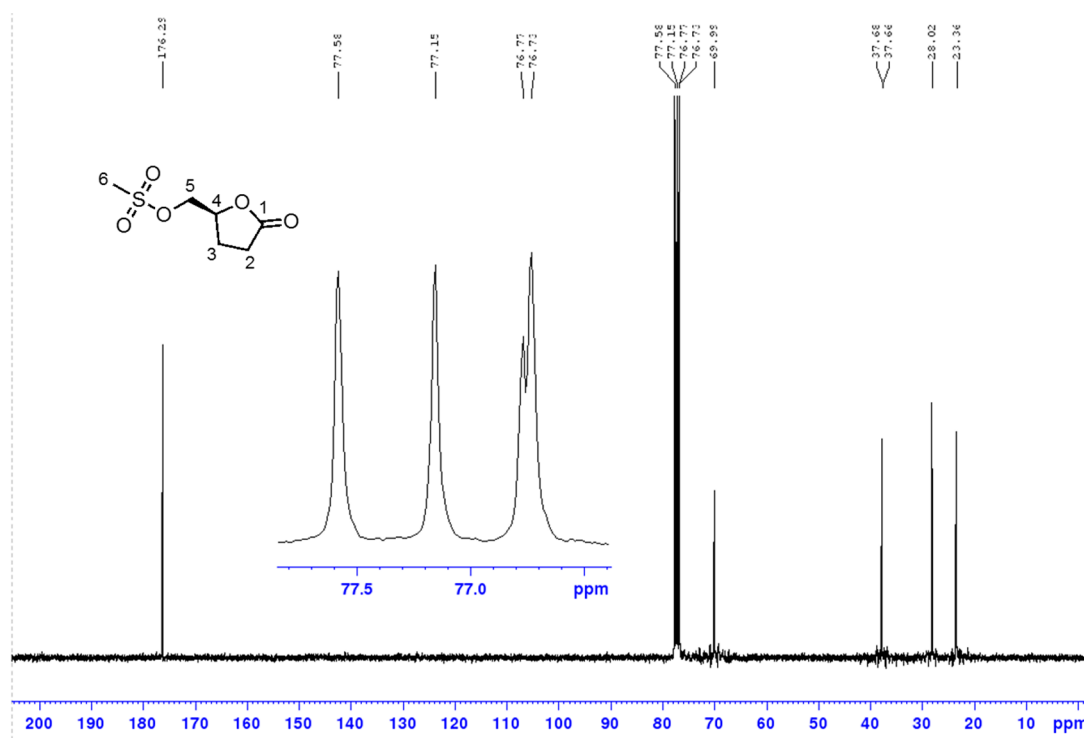


Figure S6. ¹³C-NMR spectra for (S)-γ-mesyloxymethyl-γ-butyrolactone (3b). ¹³C 75 MHz in CDCl₃.

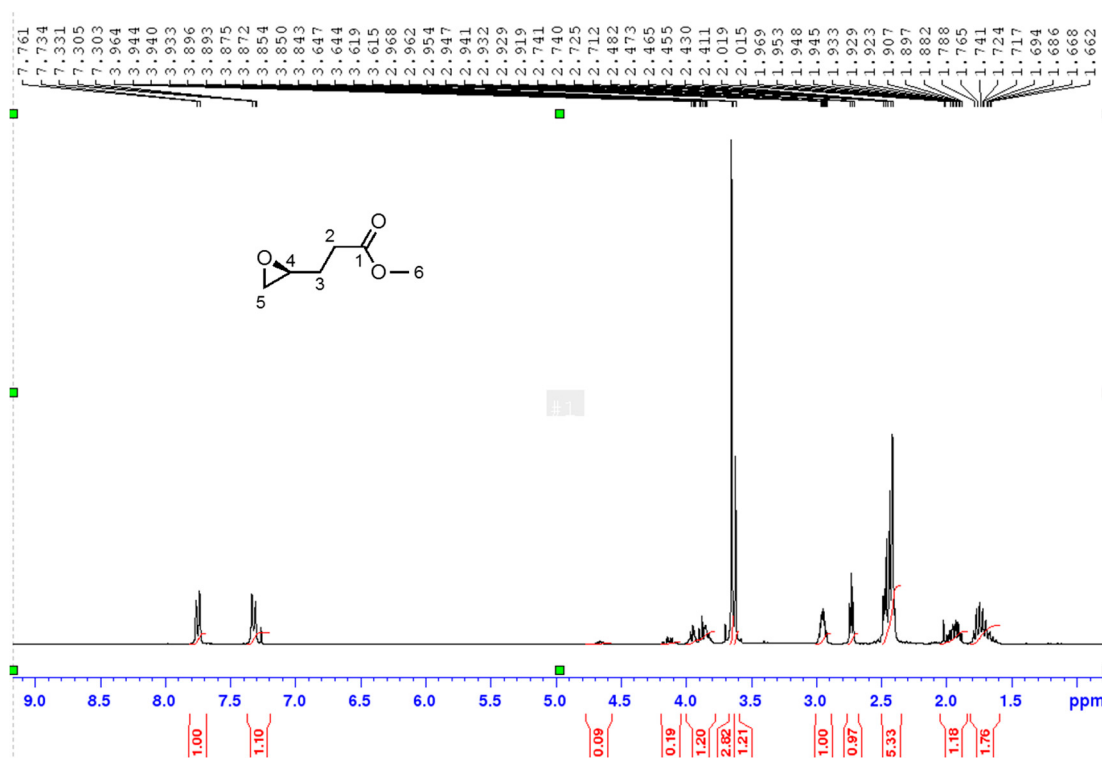


Figure S7. ¹H-NMR spectra for (S)-Methyl 4,5-epoxypentanoate ((S)-1a) crude. ¹H 300 MHz in CDCl₃.

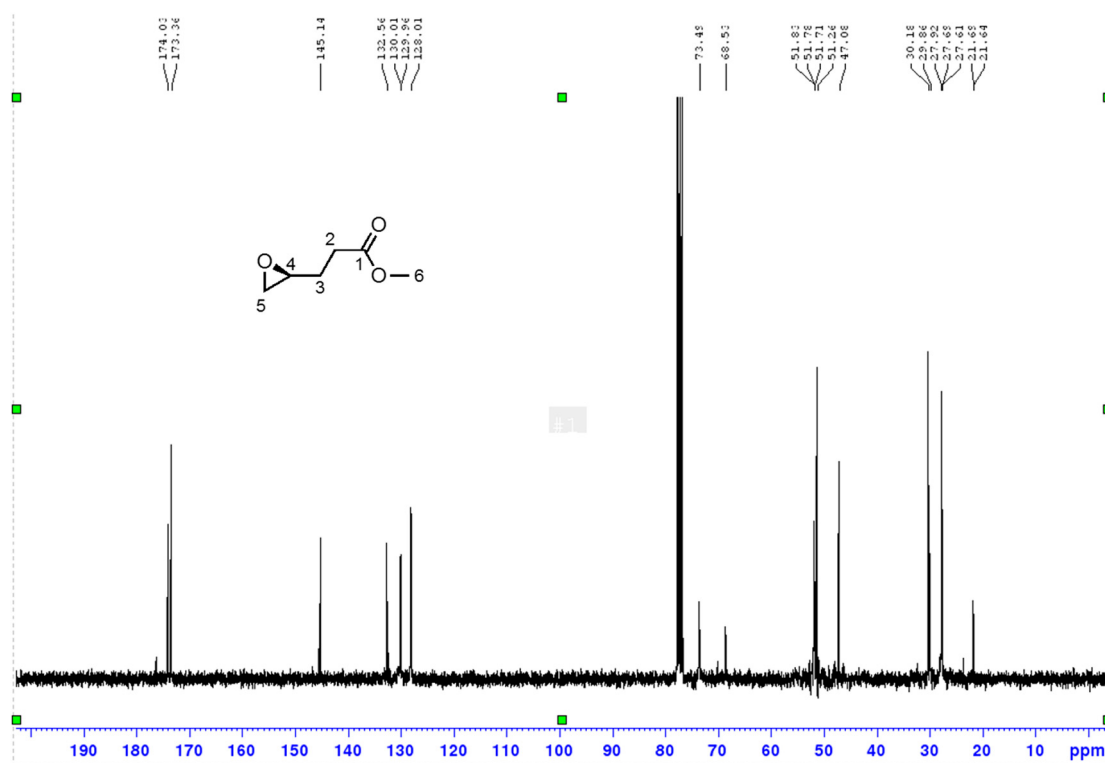


Figure S8. ¹³C-NMR spectra for (S)-Methyl 4,5-epoxypentanoate ((S)-1a) crude. ¹³C 75 MHz in CDCl₃.

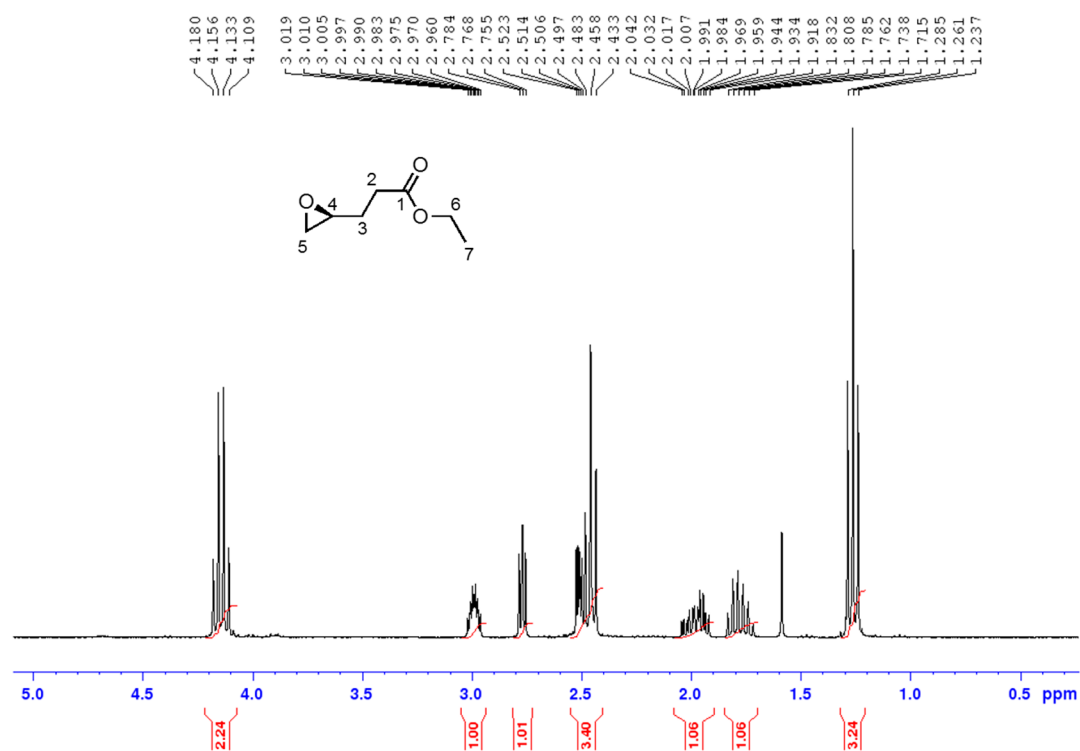


Figure S9. ¹H-NMR spectra for (S)-Ethyl 4,5-epoxypentanoate ((S)-1b) crude. ¹H 300 MHz in CDCl₃.

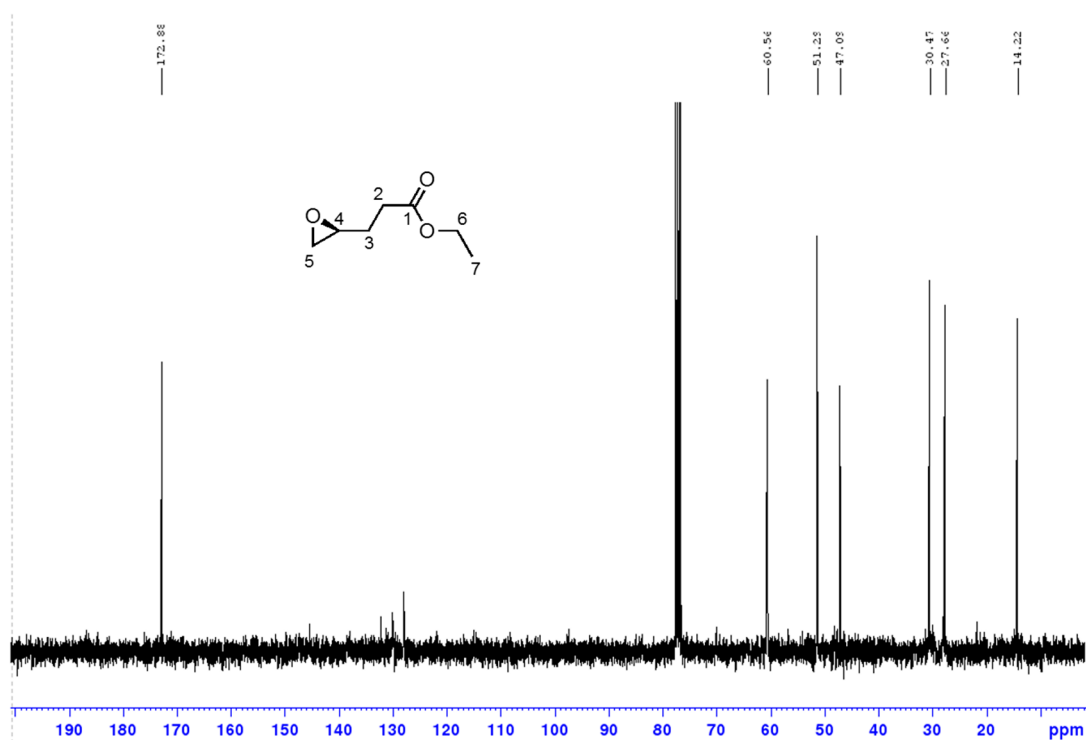


Figure S10. ¹³C-NMR spectra for (S)-Ethyl 4,5-epoxypentanoate (**S-1b**) crude. ¹³C 75 MHz in CDCl₃.

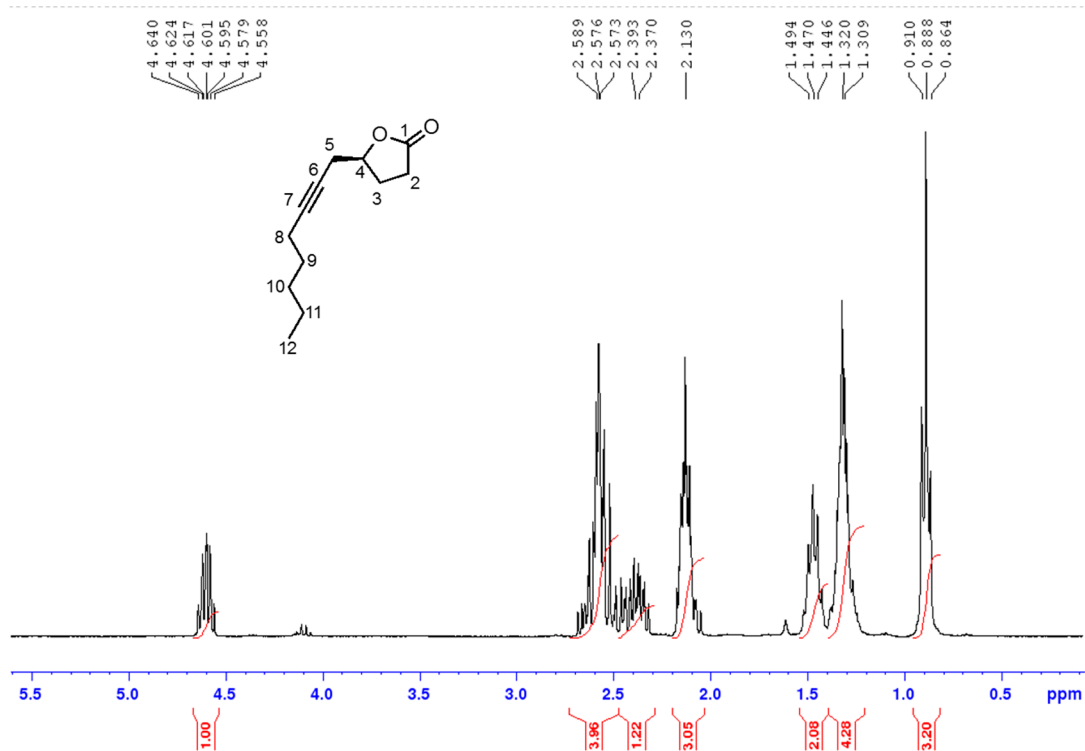


Figure S11. ¹H-NMR spectra for (S)-5-(Oct-2-yn-1-yl)-γ-Butyrolactone (**5**). ¹H 300 MHz in CDCl₃.

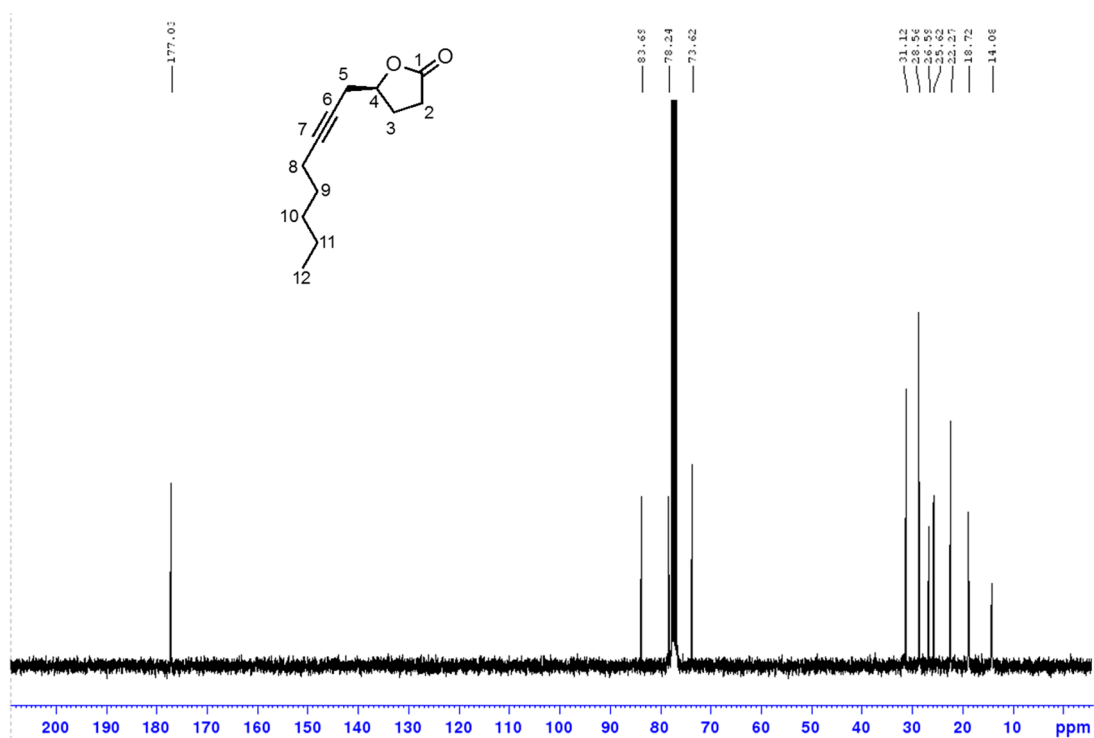


Figure S12. ¹³C-NMR spectra for (S)-5-(Oct-2-yn-1-yl)-γ-Butyrolactone (5). ¹³C 75 MHz in CDCl₃.

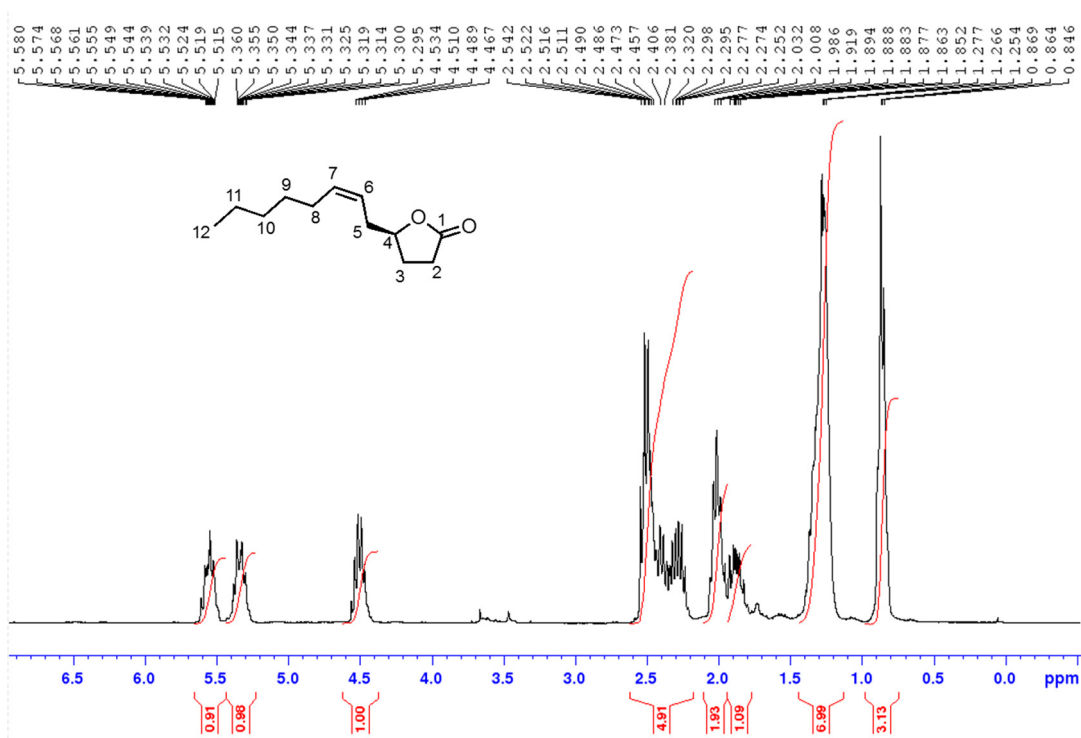


Figure S13. ¹H-NMR spectra for (S)-Dairy lactone (6). ¹H 300 MHz in CDCl₃.

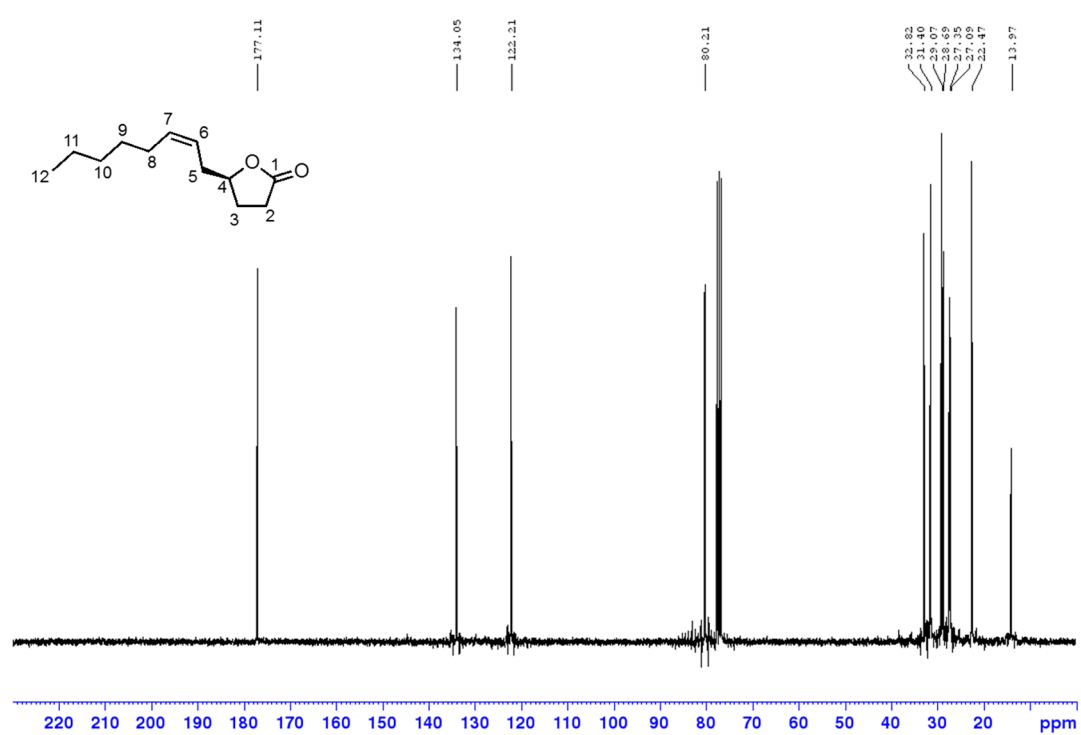


Figure S14. ¹³C-NMR spectra for (S)-Dairy lactone (6). ¹³C 75 MHz in CDCl₃.