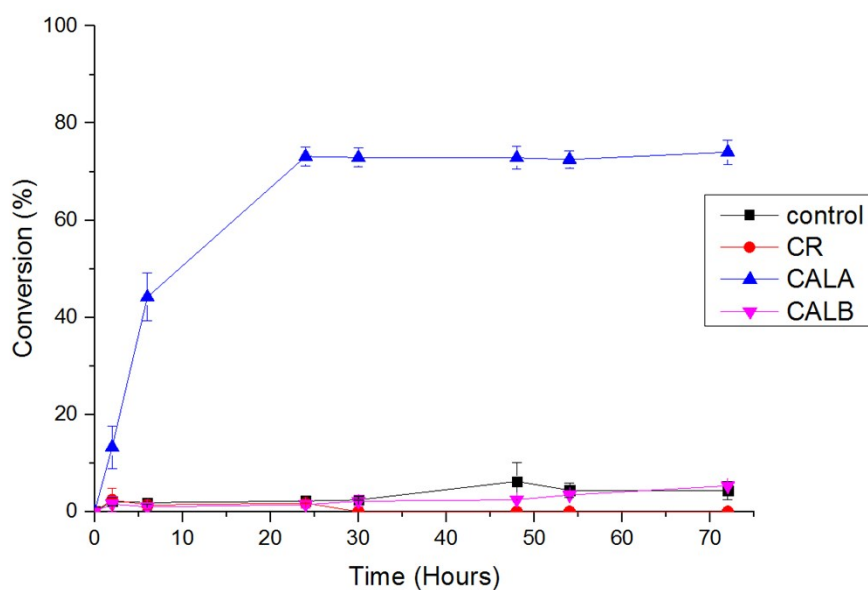


## Synthesis of cholesterol-reducing sterol esters by enzymatic catalysis in bio-based solvents or solvent-free

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**Figure S1.** Kinetic screening of the esterification of  $\beta$ -sitosterol using different lipase enzymes. The control experiment contained no enzyme. CR= *Candida rugosa*, CALA= *Candida antarctica* lipase A, CALB= *Candida antarctica* lipase B.

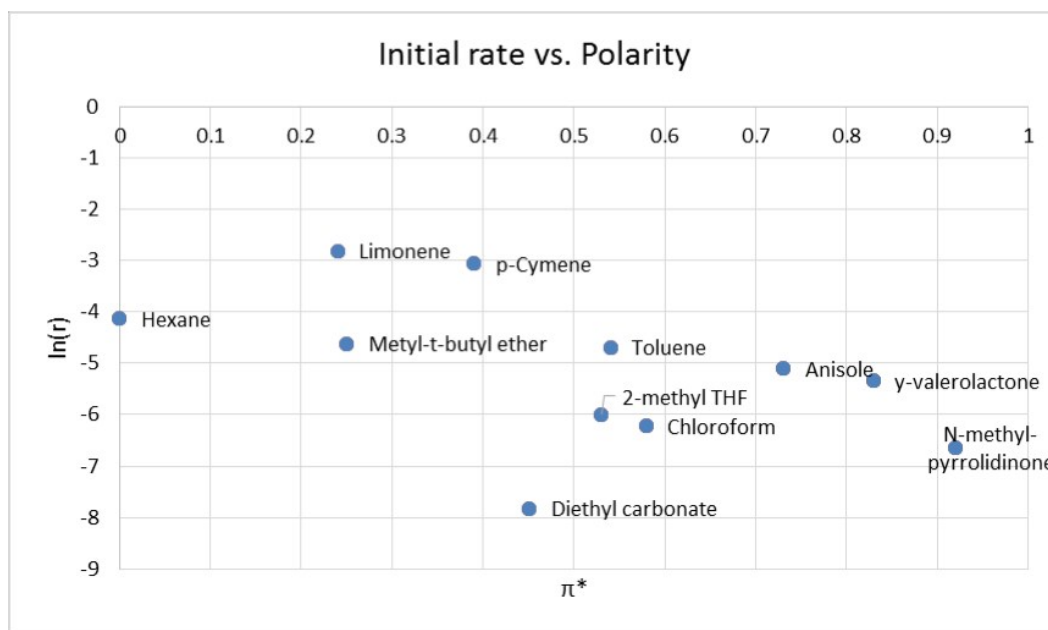


Figure S2: Plot of the natural logarithm of the initial reaction rate in different solvents versus their polarity. No correlation is seen.

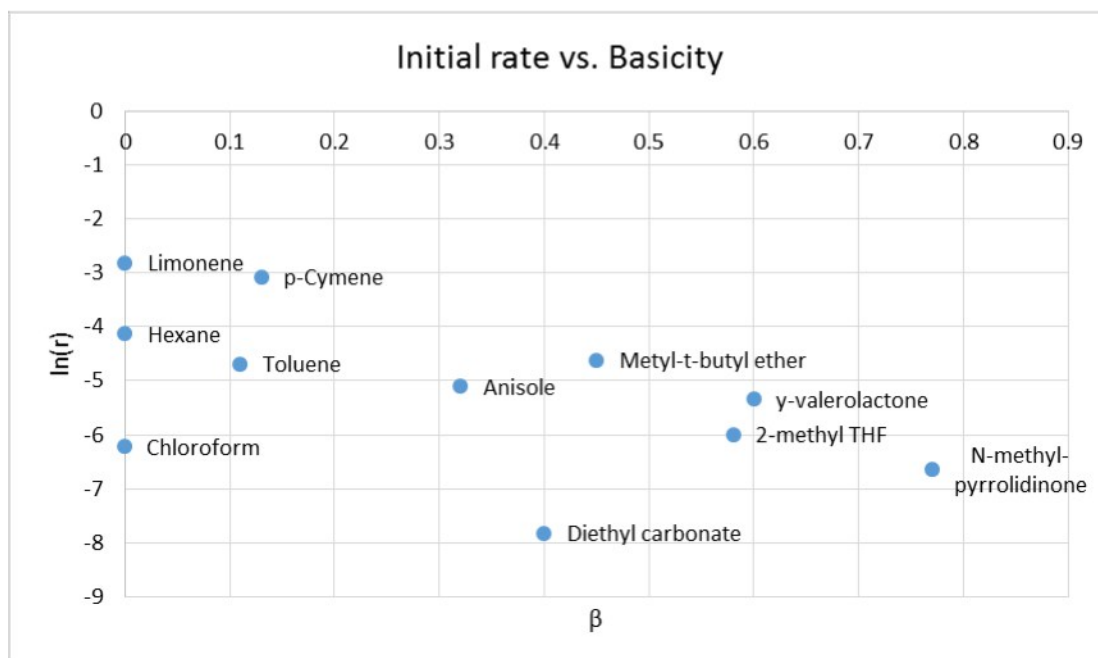


Figure S3: Plot of the natural logarithm of the initial reaction rate in different solvents versus their basicity. No correlation is seen.

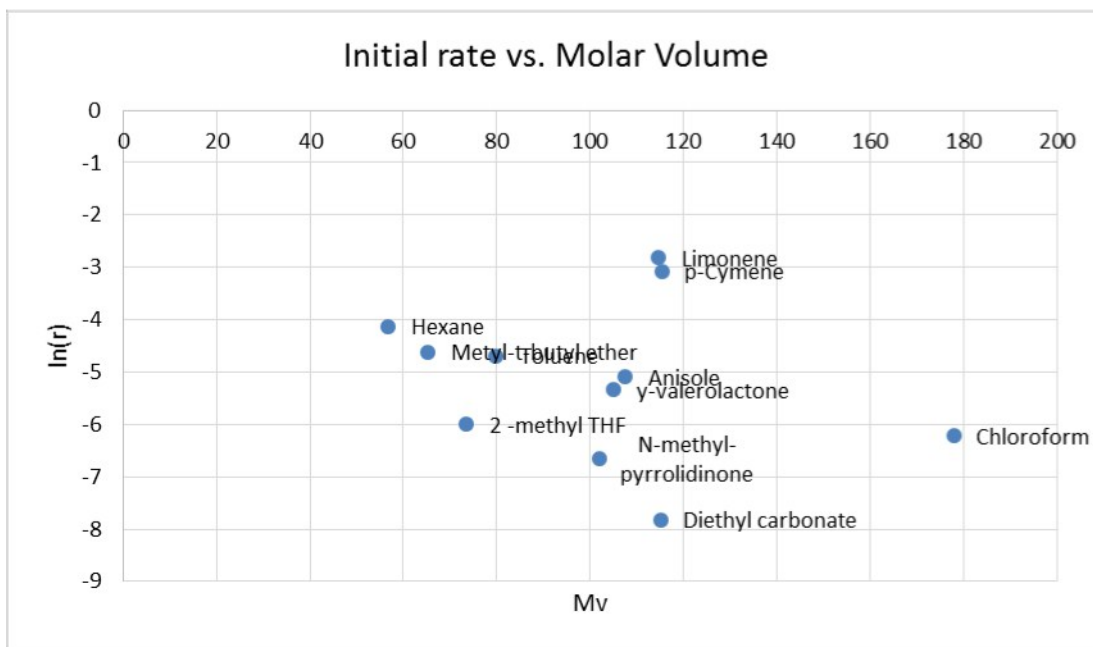


Figure S4: Plot of the natural logarithm of the initial reaction rate in different solvents versus their molar volume. No correlation is seen.

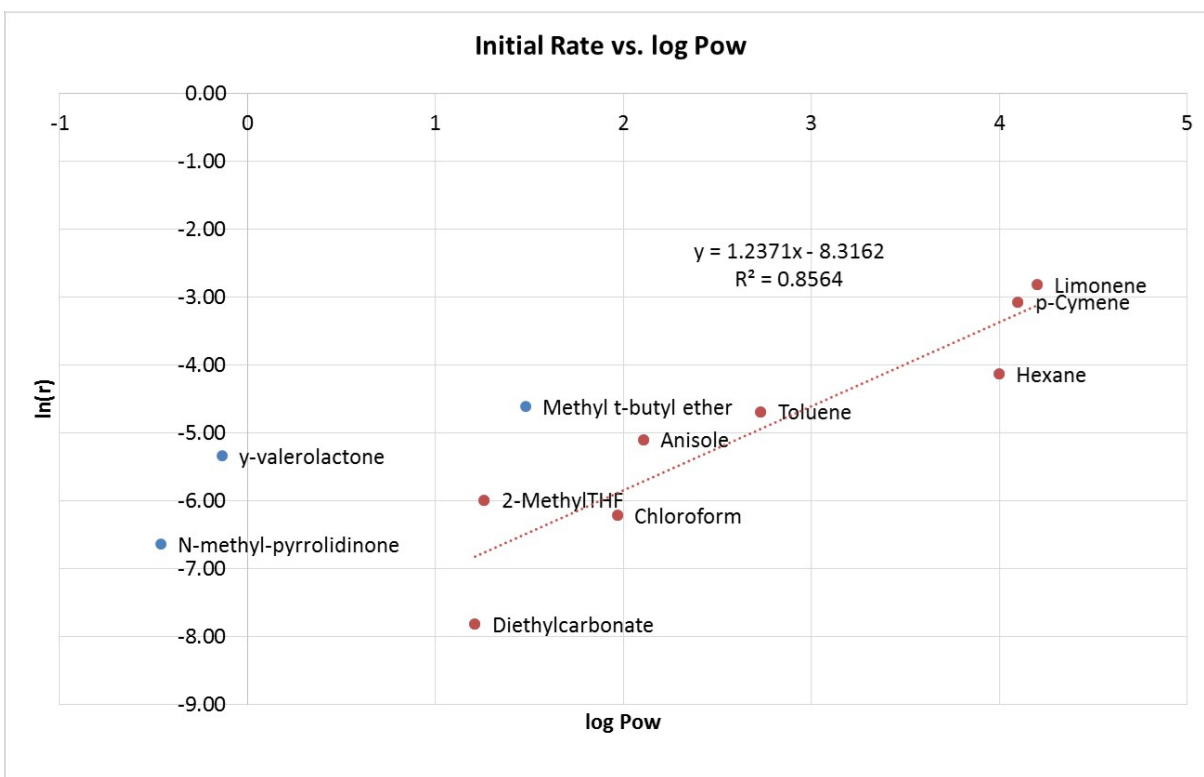


Figure S5: Plot of the natural logarithm of the initial reaction rate in different solvents versus

their partitioning coefficient. A correlation is seen with an  $R^2 = 0.86$ . The solvents that follow the trend are shown in red. The three outliers are shown in blue.

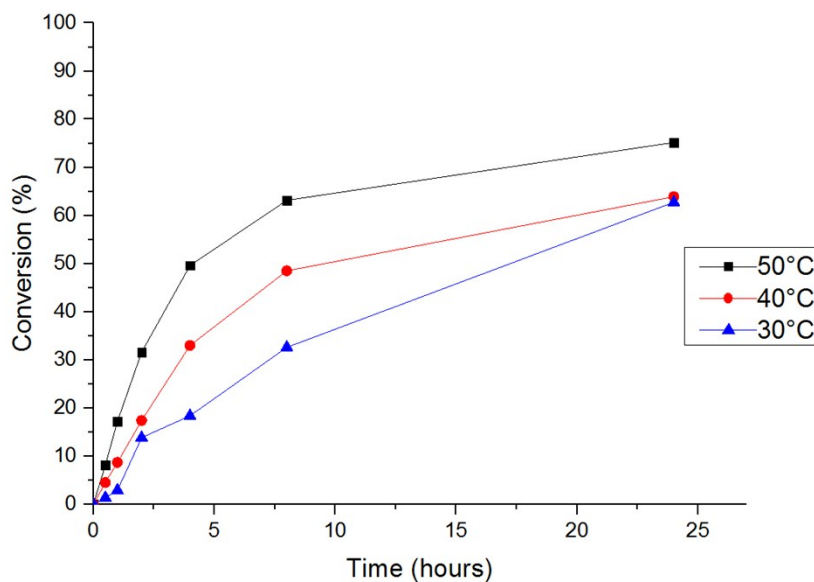


Figure S6. Kinetic study of the esterification of  $\beta$ -sitosterol at different reaction temperatures.

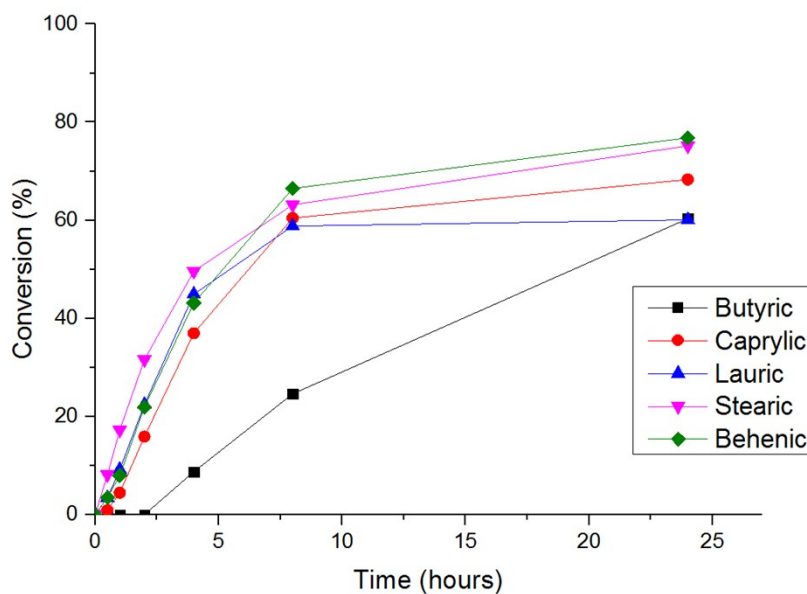


Figure S7. Kinetic study of the esterification of  $\beta$ -sitosterol with different acyl donors. Butyric acid (C4:0); Caprylic acid (C8:0); Lauric acid (C12:0); Stearic acid (C16:0) and Behenic acid (C22:0).

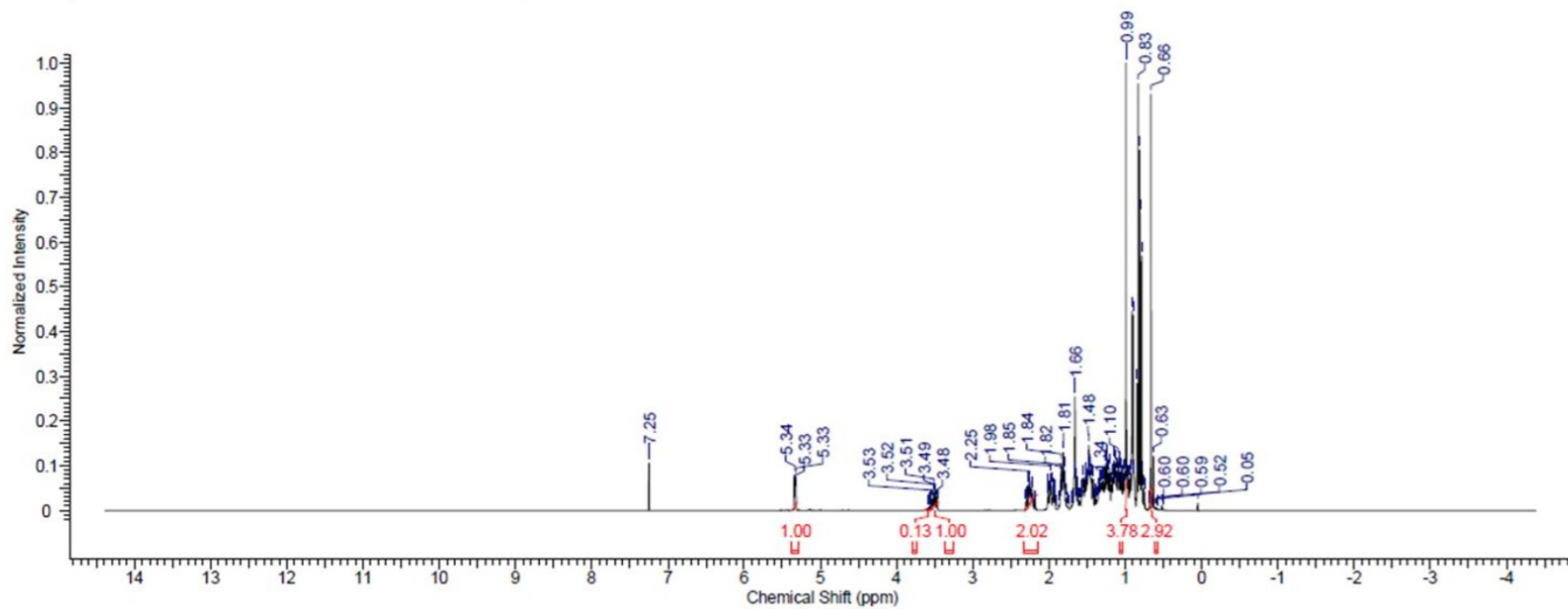


Figure S8. <sup>1</sup>H NMR spectrum of β-sitosterol.

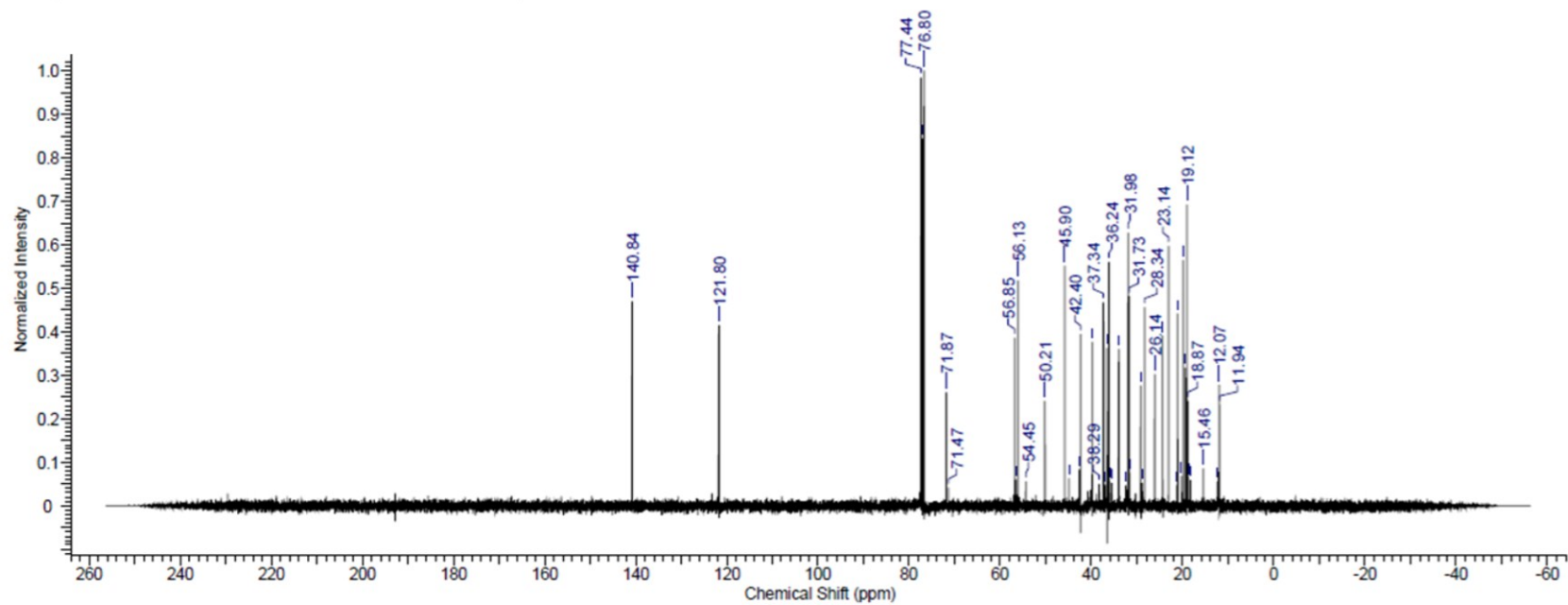


Figure S9. <sup>13</sup>C NMR spectrum of β-sitosterol.

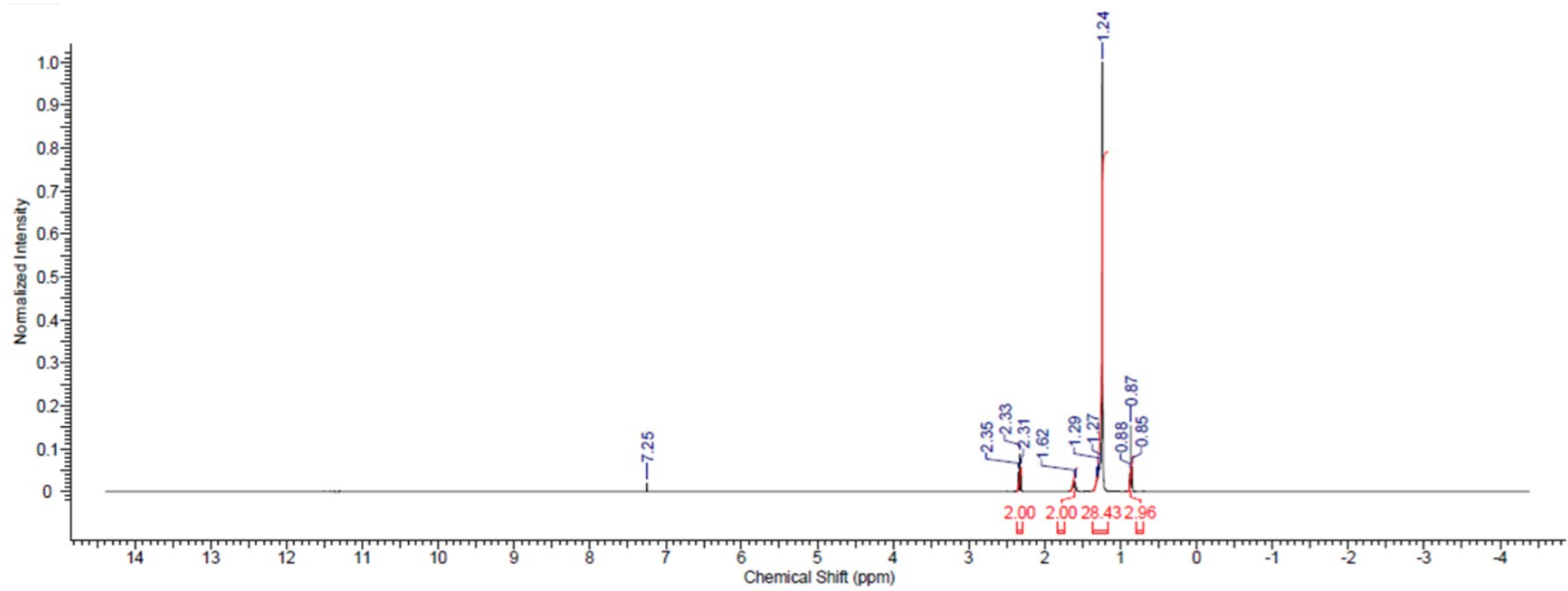


Figure S10.  $^1\text{H}$  NMR spectrum of Stearic acid.

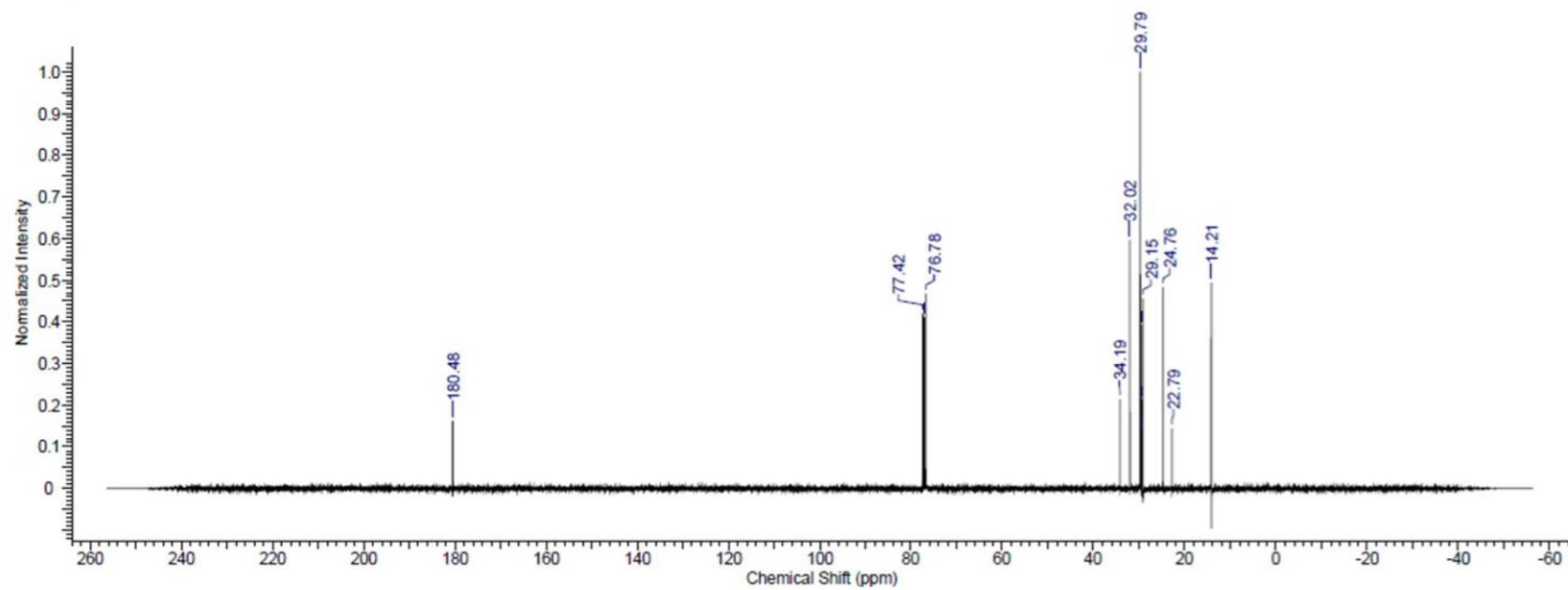


Figure S11.  $^{13}\text{C}$  NMR spectrum of Stearic acid.



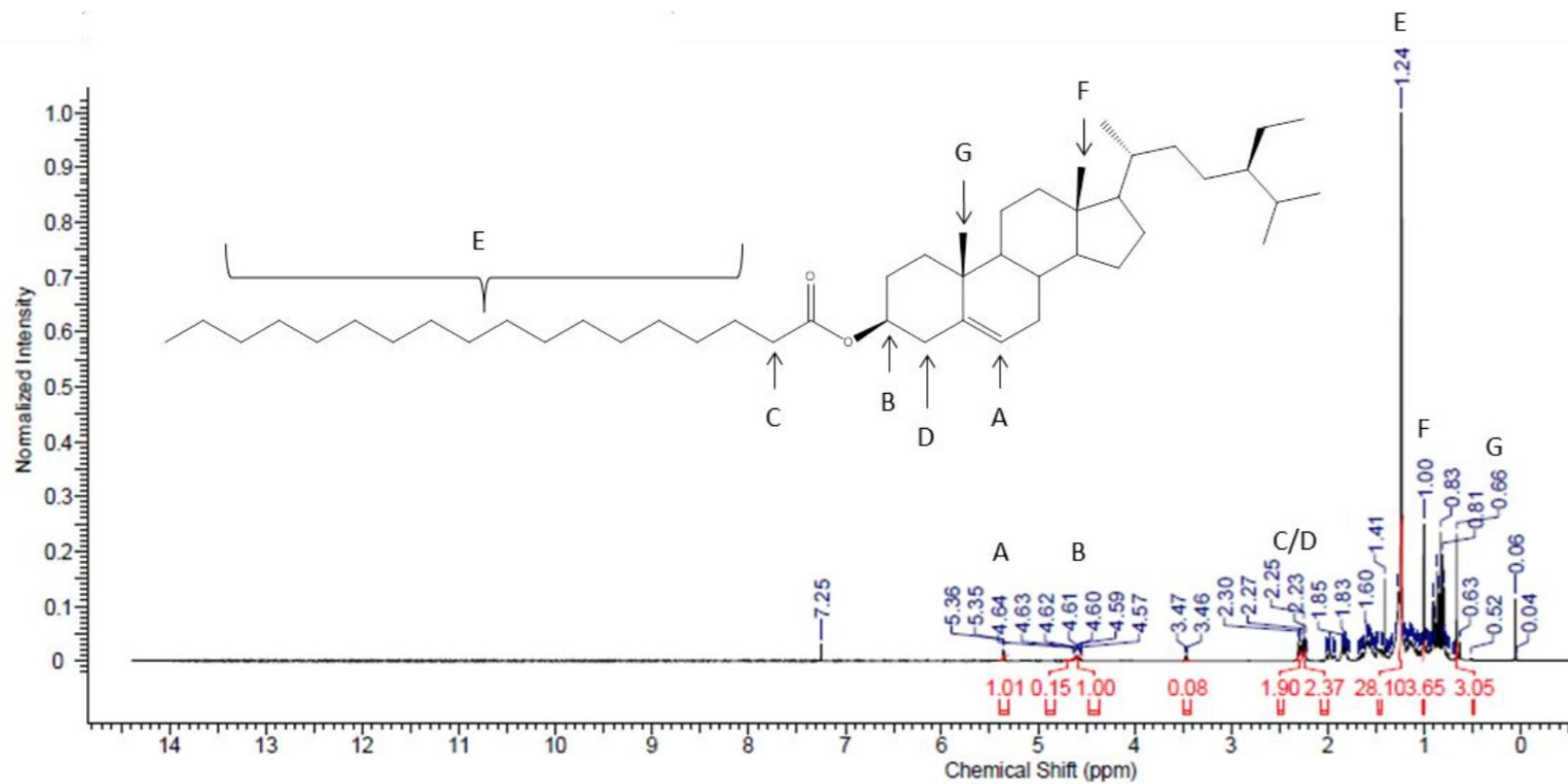


Figure S12. <sup>1</sup>H NMR spectrum of β-sitosterol ester. Characteristic peaks assigned to protons by A-F.

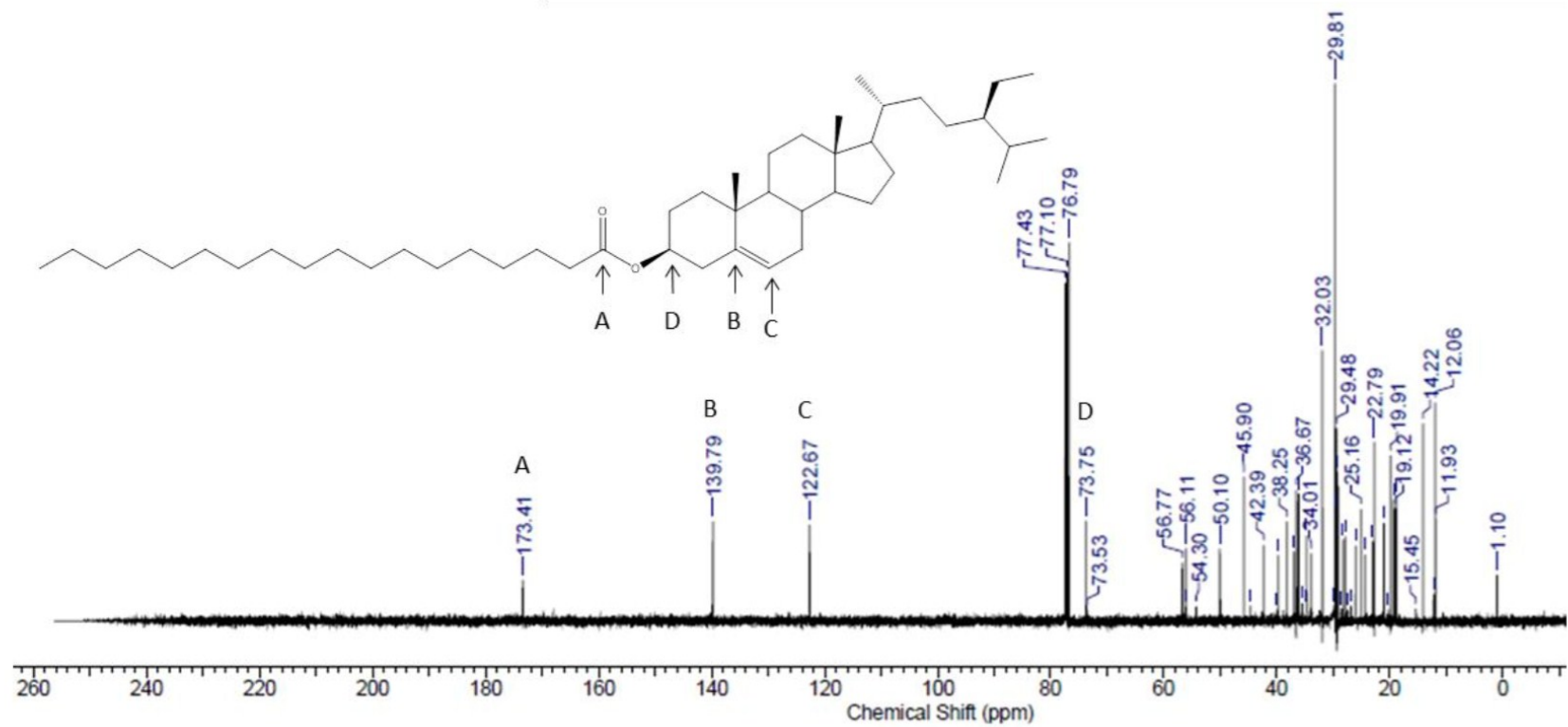


Figure S13.  $^{13}\text{C}$  NMR spectrum  $\beta$ -sitosterol ester. Characteristic peaks assigned to carbons by A-D.