

New Ferulic Acid and Amino Acid Derivatives with Increased Cosmeceutical and Pharmaceutical Potential

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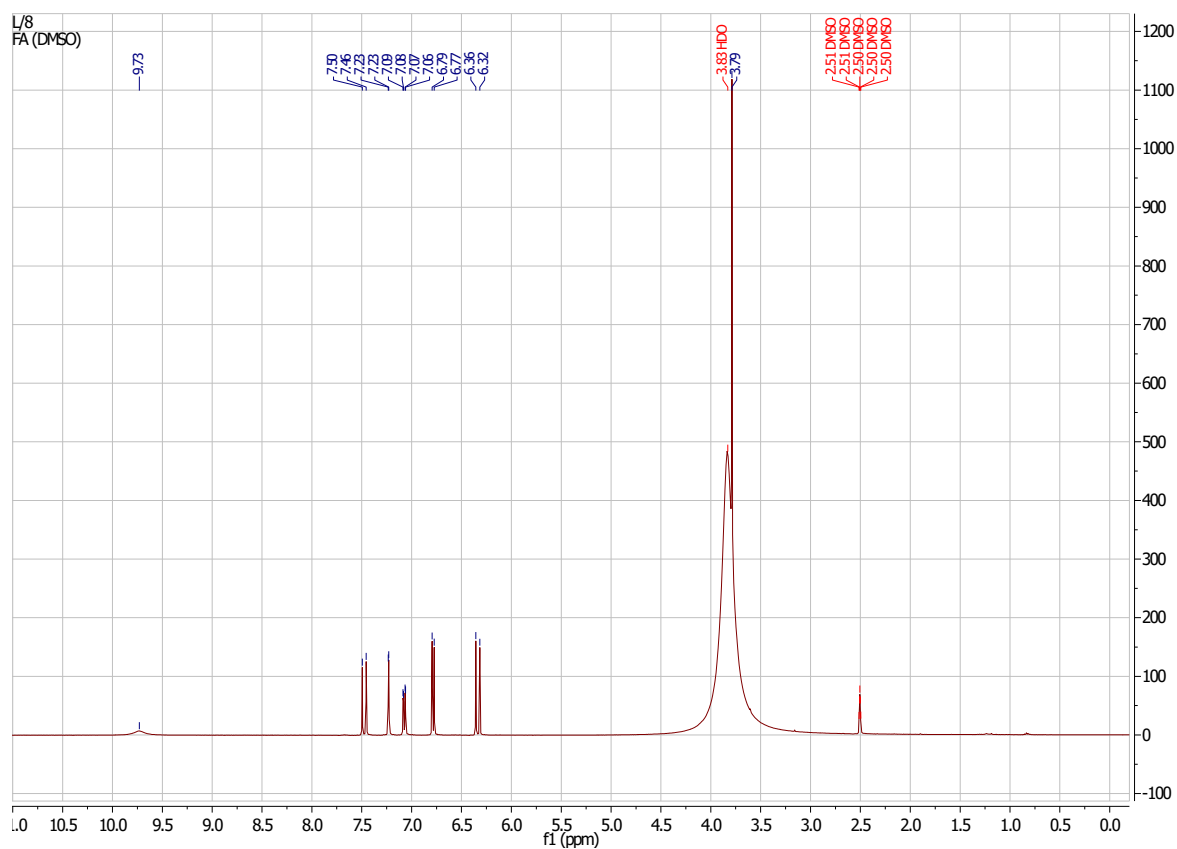
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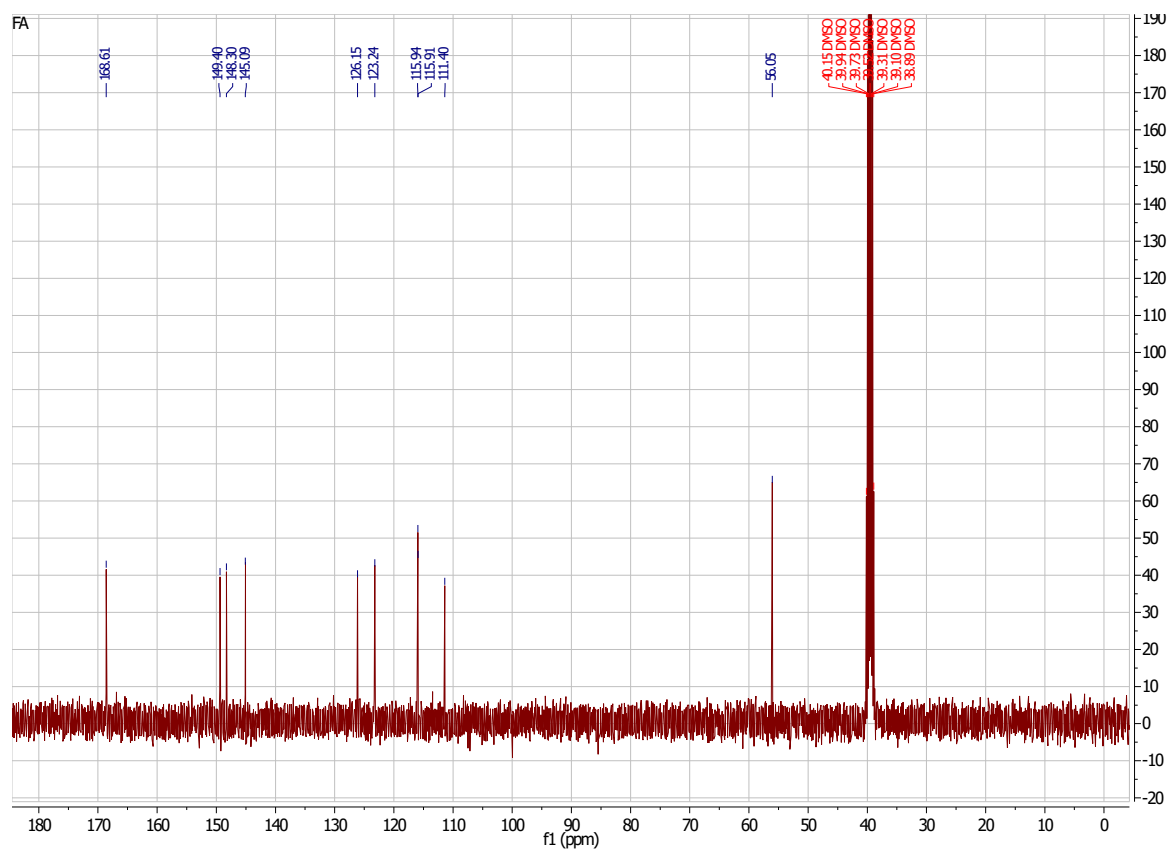
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S1. Copies of ^1H and ^{13}C NMR spectra of ferulic acid

^1H NMR spectrum of ferulic acid (400 MHz, $\text{DMSO-}d_6$)

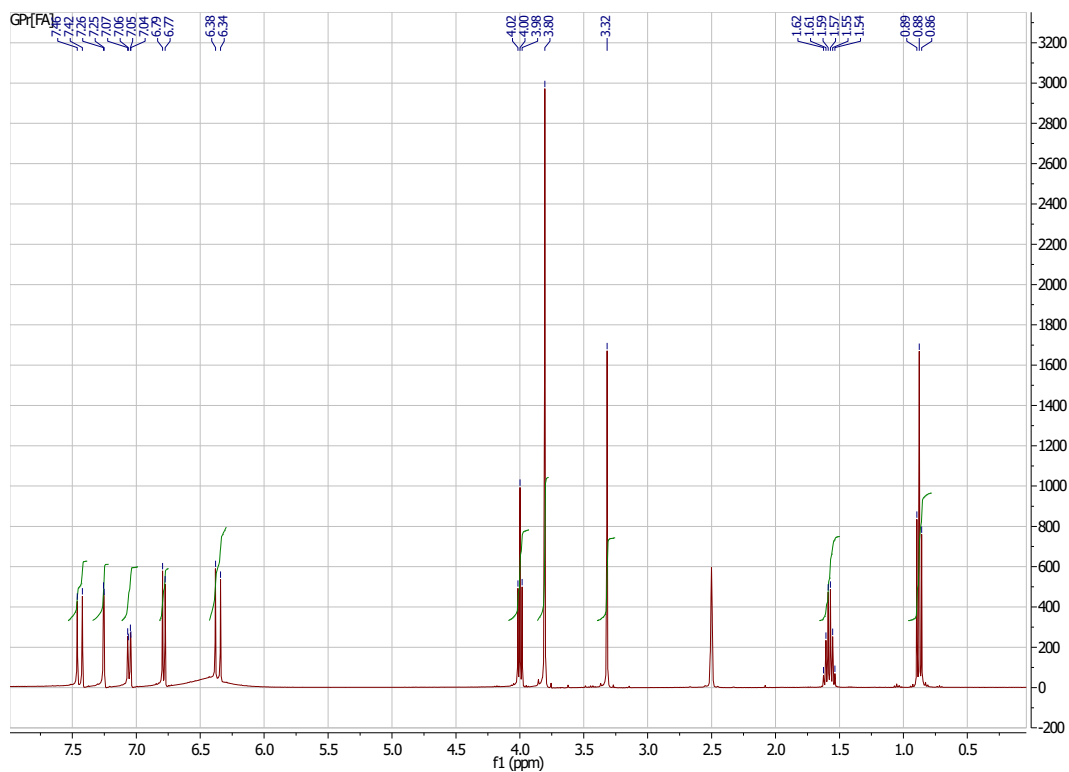
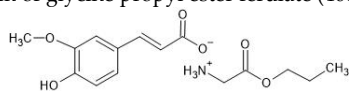


^{13}C NMR spectrum of ferulic acid (101 MHz, $\text{DMSO-}d_6$)

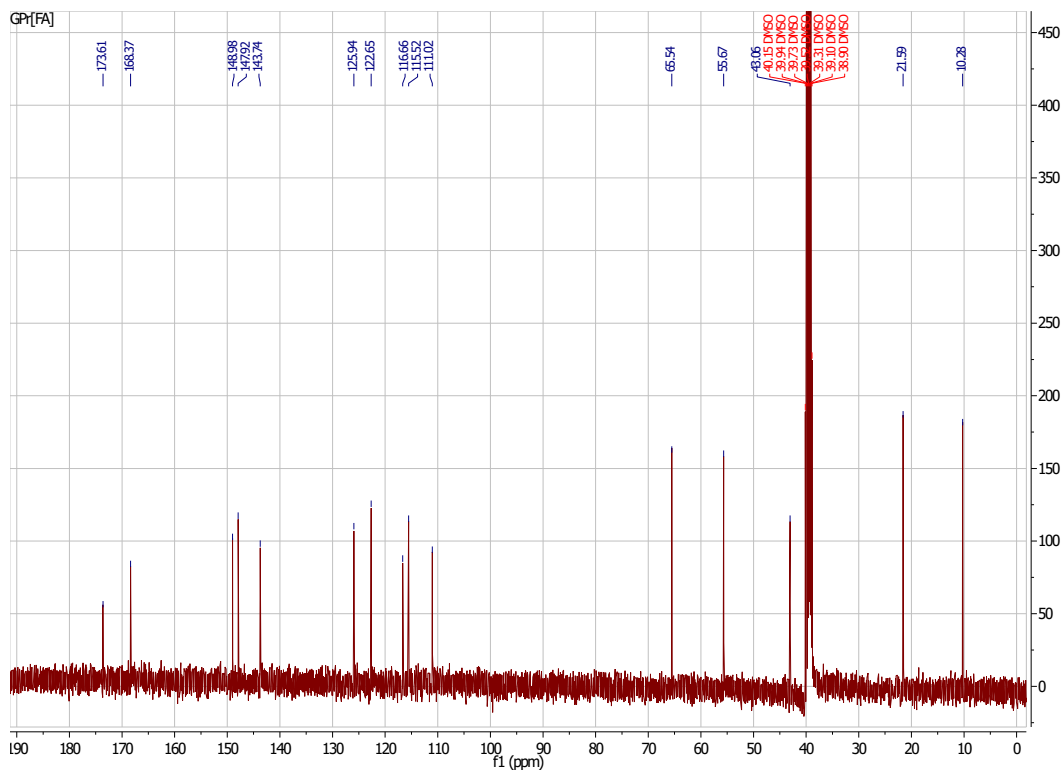


S2. Copies of ^1H NMR, ^{13}C NMR and HMQC spectra of amino acid propyl esters ferulates

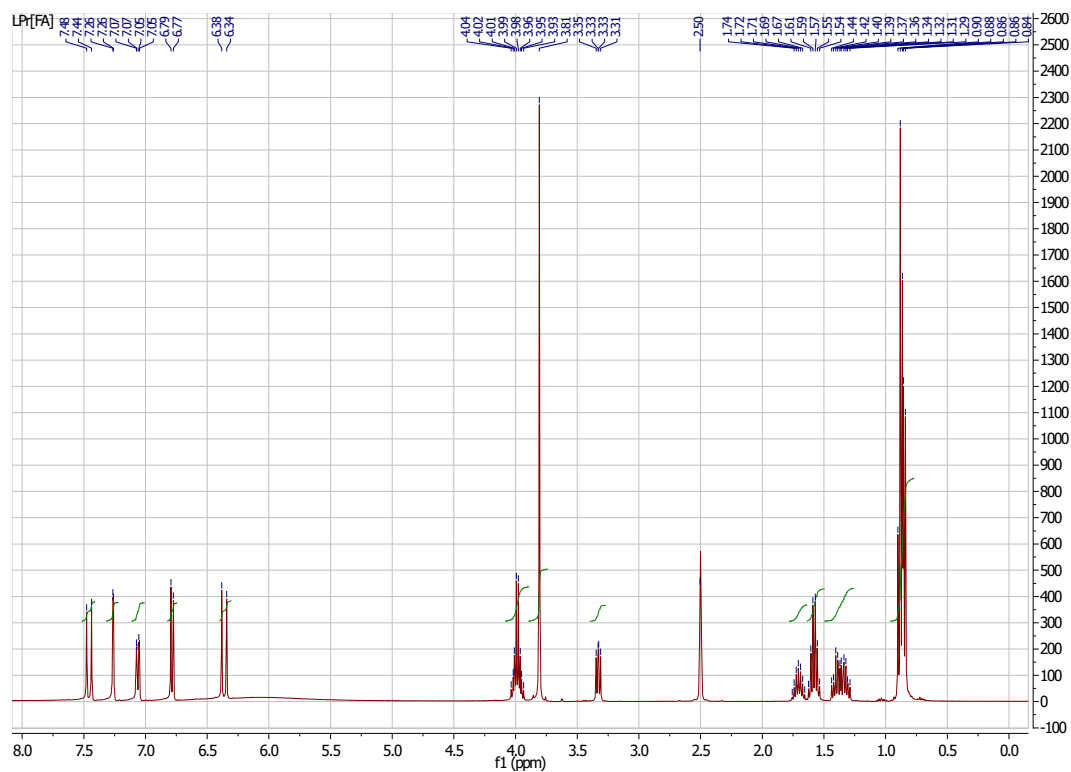
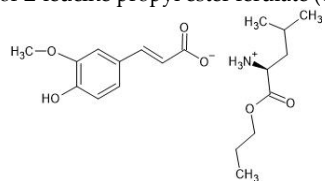
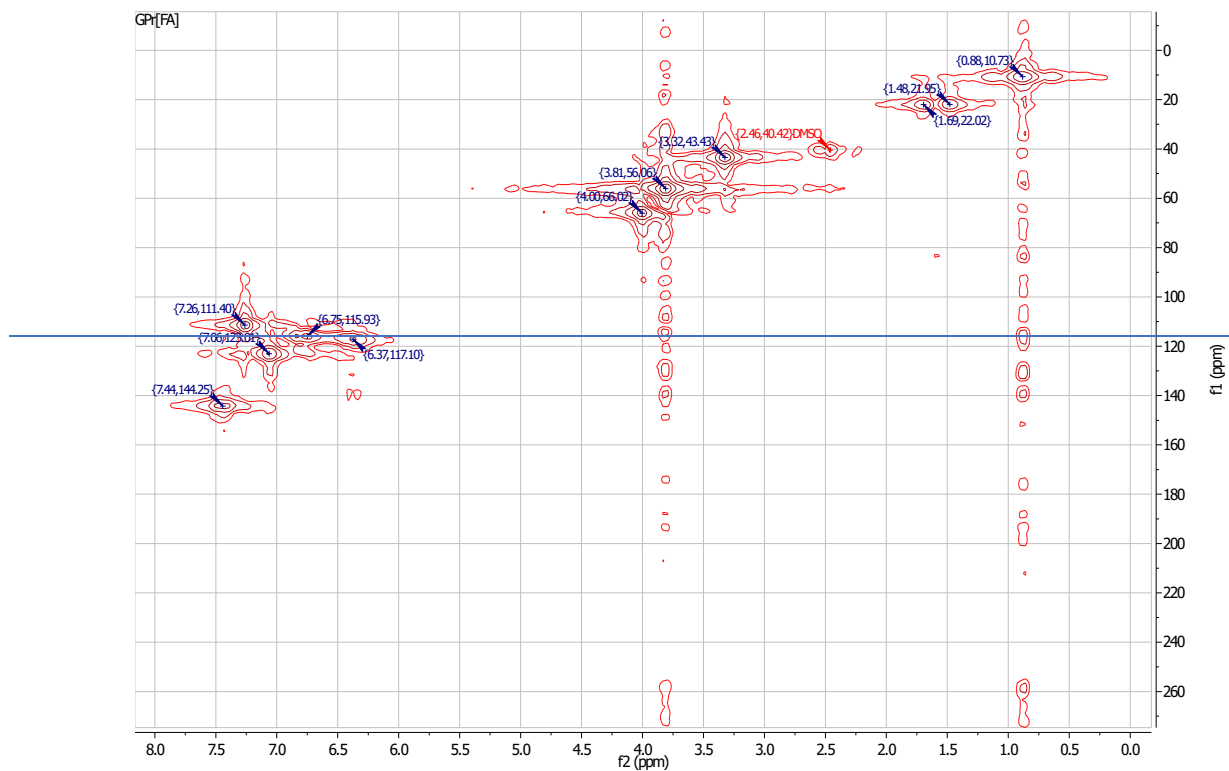
^1H NMR spectrum of glycine propyl ester ferulate (400 MHz, $\text{DMSO}-d_6$)

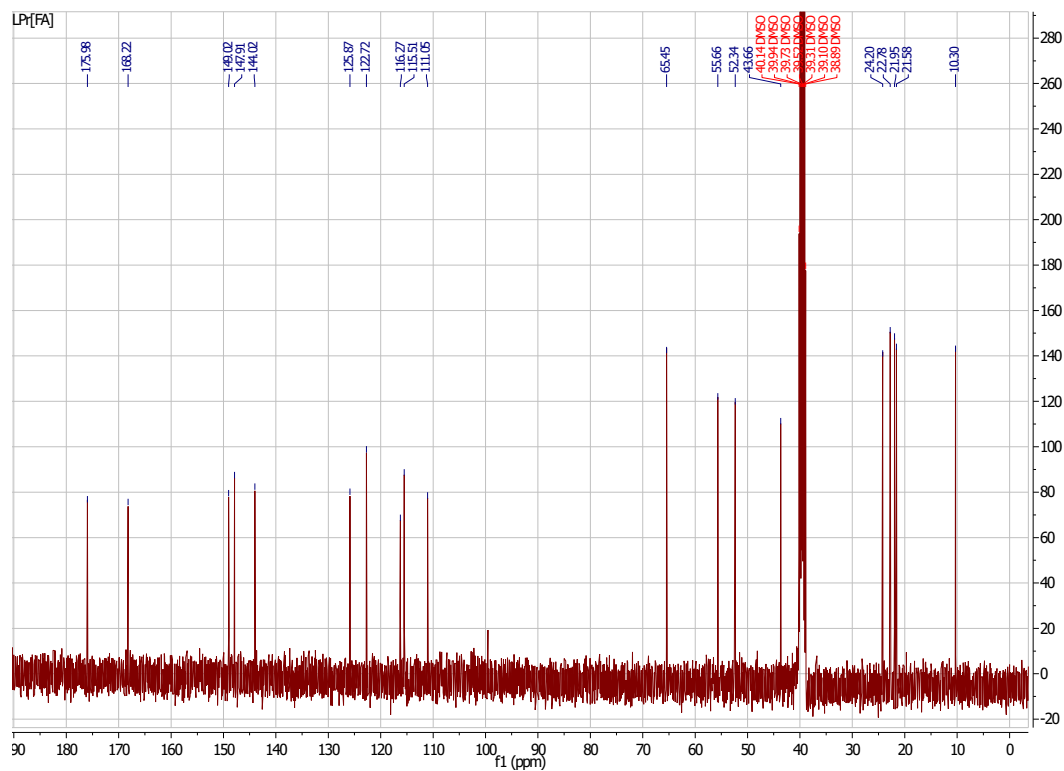


^{13}C NMR spectrum of glycine propyl ester ferulate (101 MHz, $\text{DMSO}-d_6$)

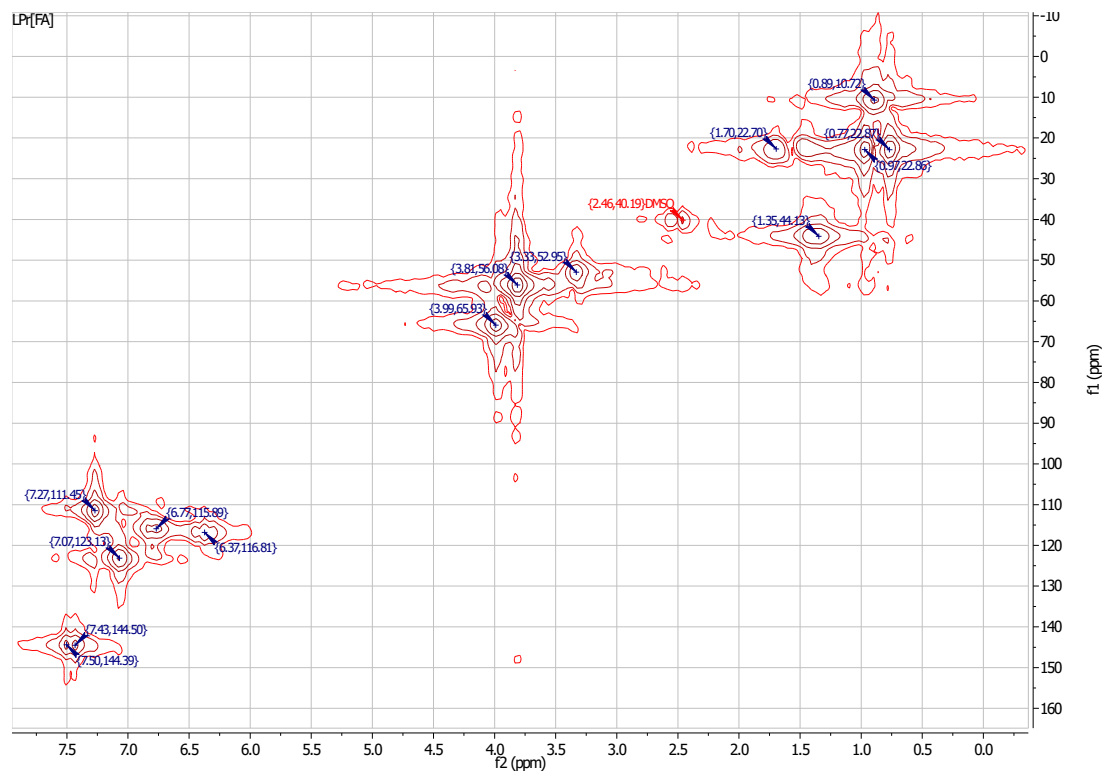


^1H - ^{13}C HMQC spectrum of glycine propyl ester ferulate

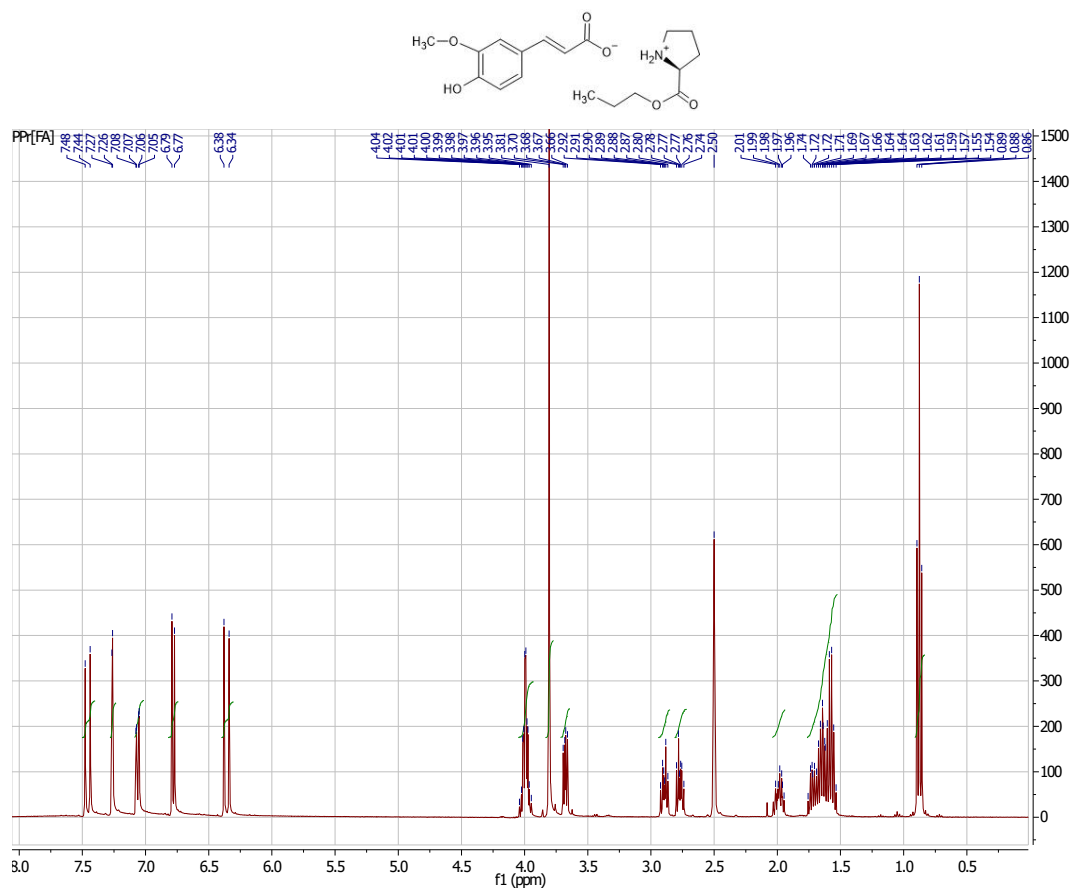




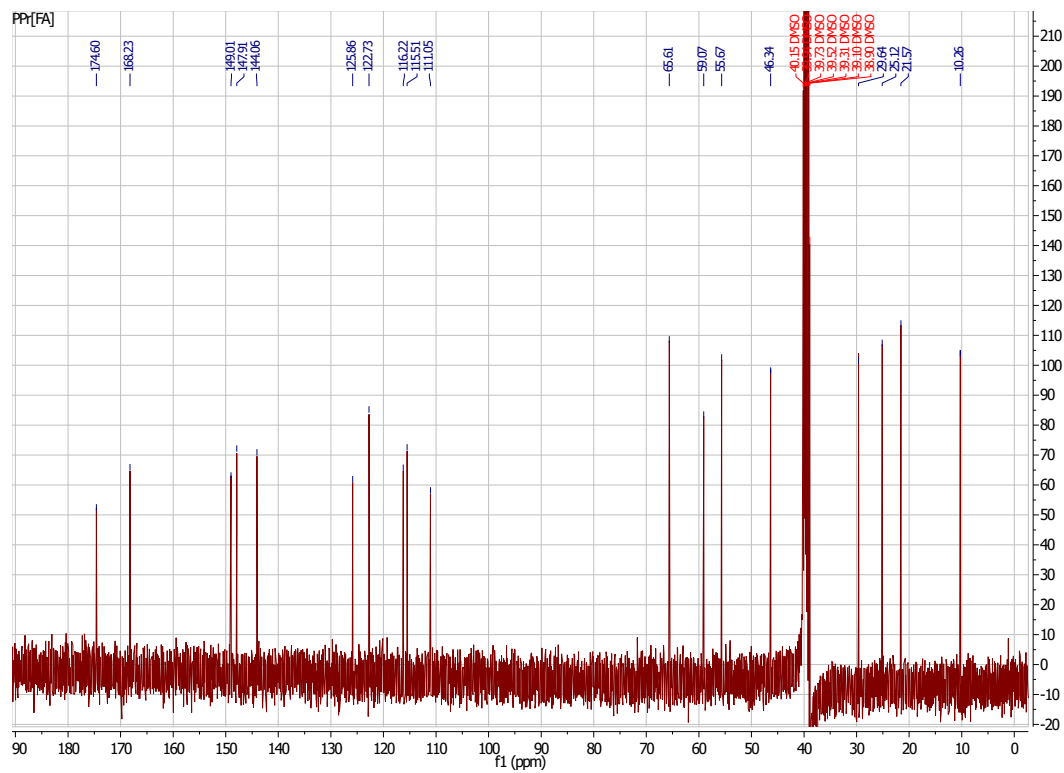
¹H-¹³C HMQC spectrum of L-leucine propyl ester ferulate

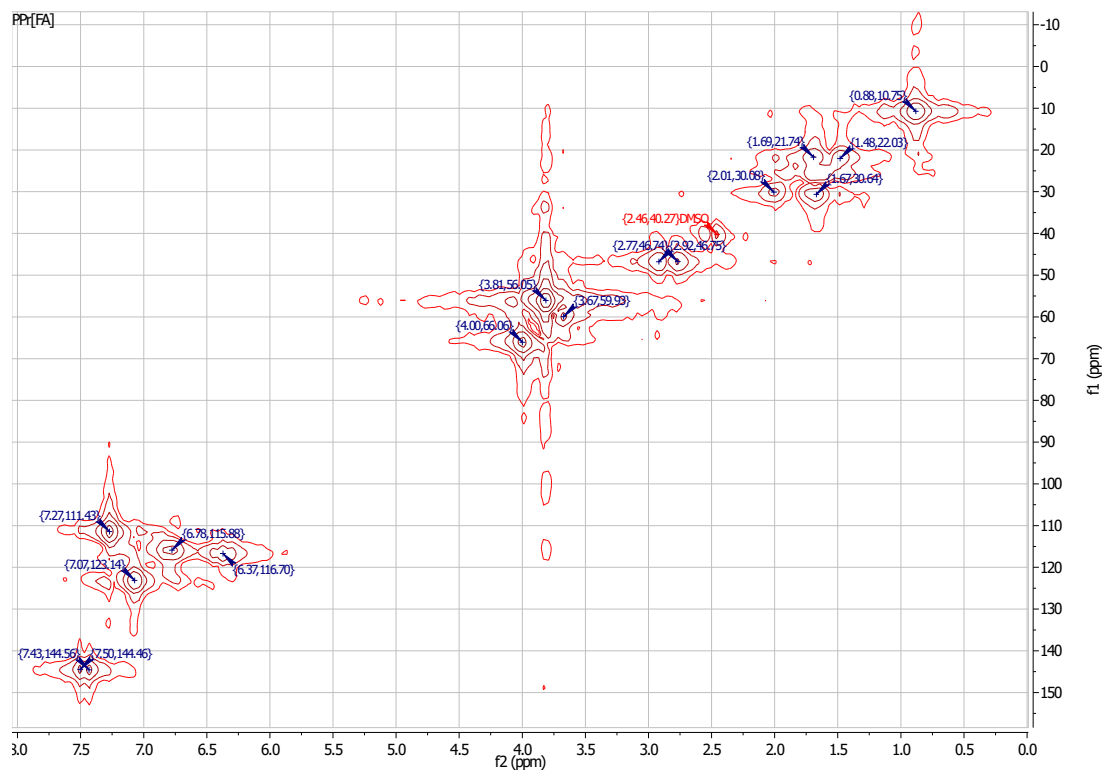


¹H NMR spectrum of L-proline propyl ester ferulate (400 MHz, DMSO-*d*₆)



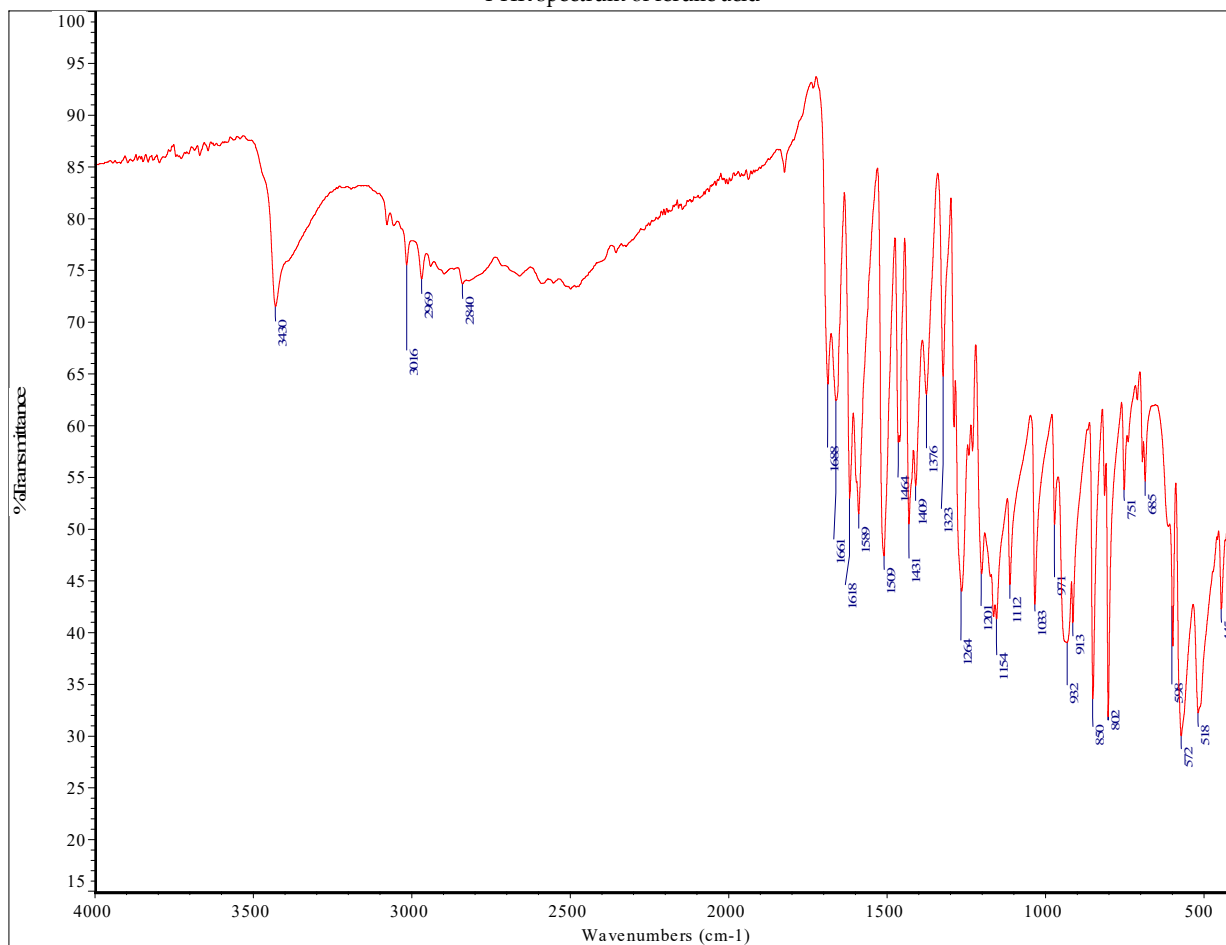
¹³C NMR spectrum of L-proline propyl ester ferulate (101 MHz, DMSO-*d*₆)

 ^1H - ^{13}C HMQC spectrum of L-proline propyl ester ferulate

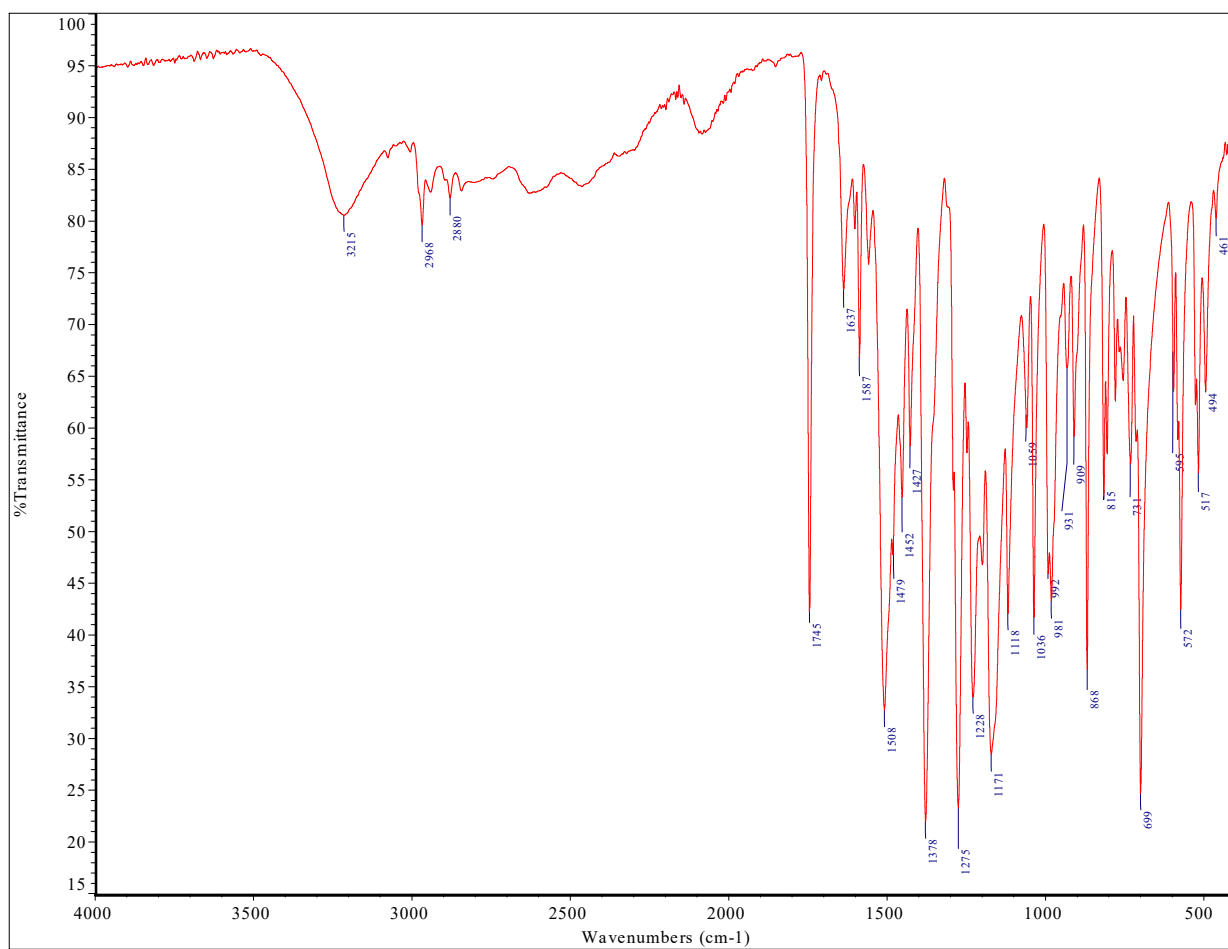


S3. FTIR spectra of ferulic acid and amino acid propyl esters ferulates

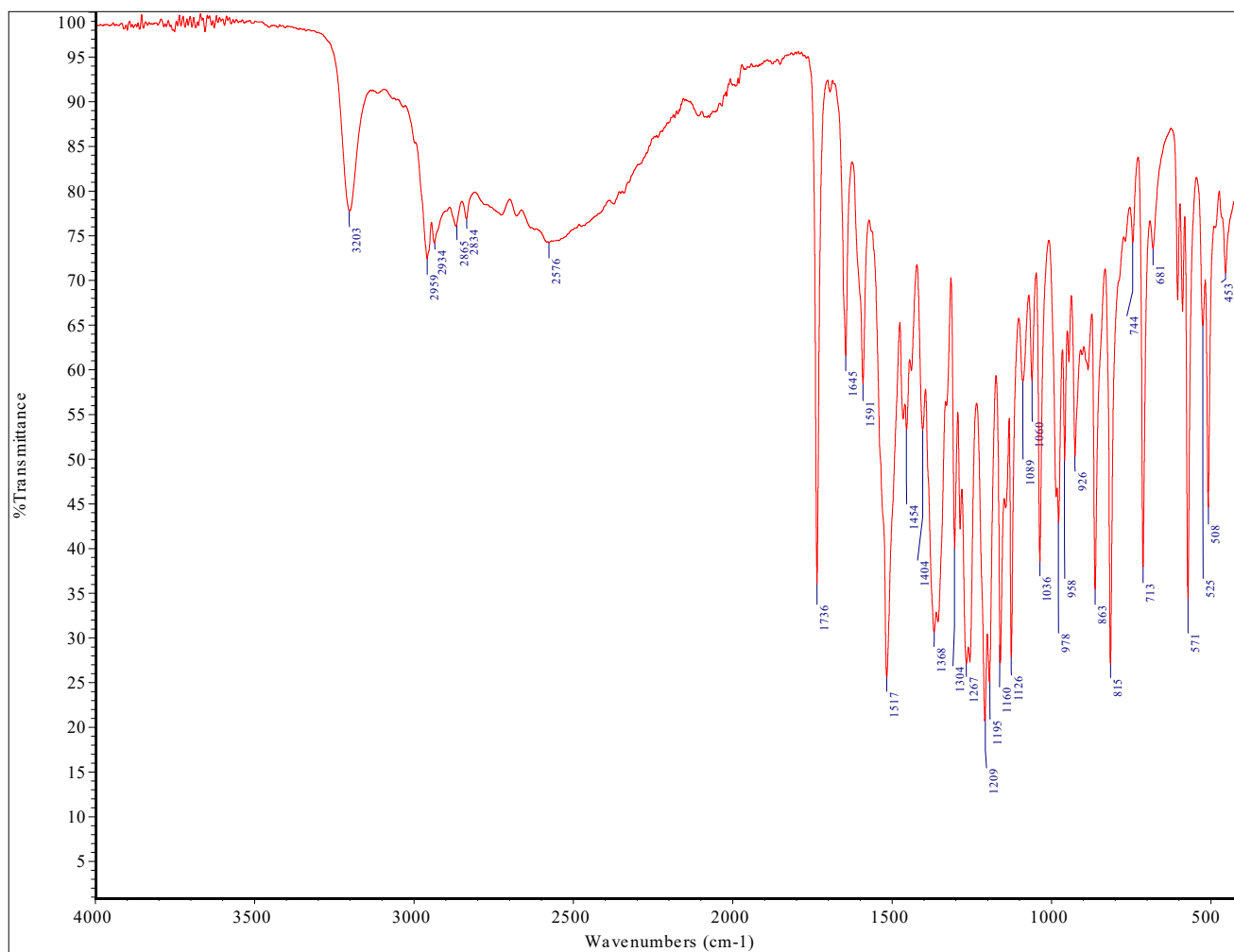
FTIR spectrum of ferulic acid



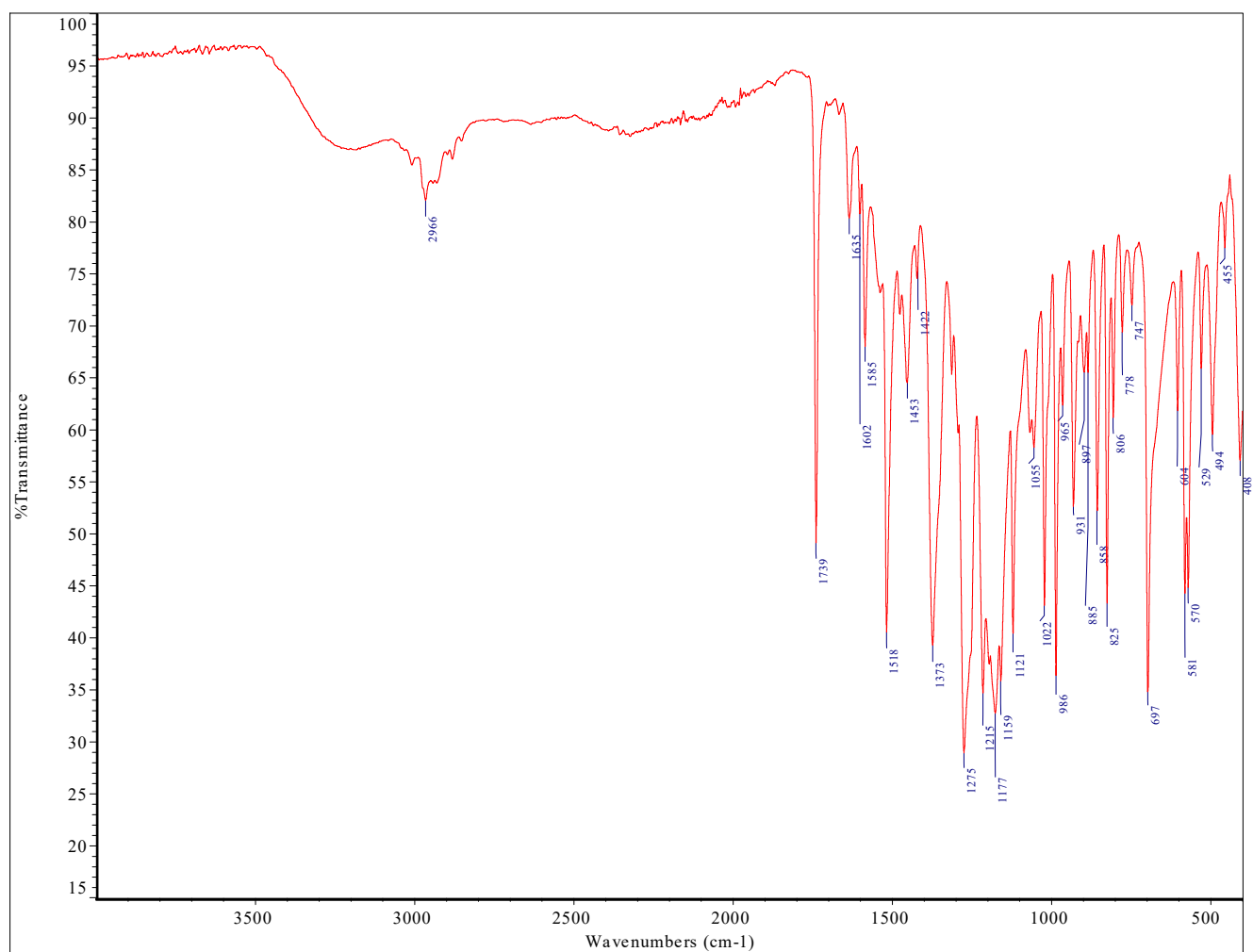
FTIR spectrum of glycine propyl ester ferulate, GPr[FA]

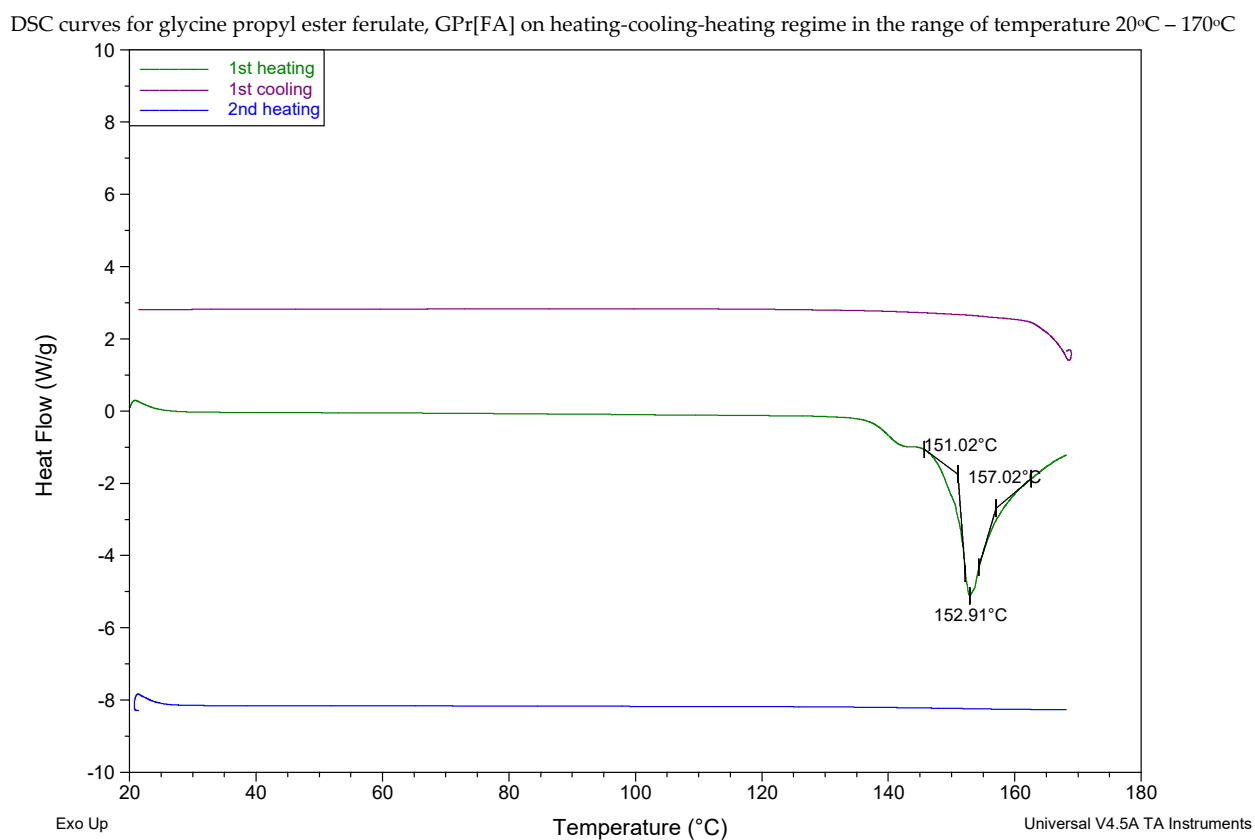
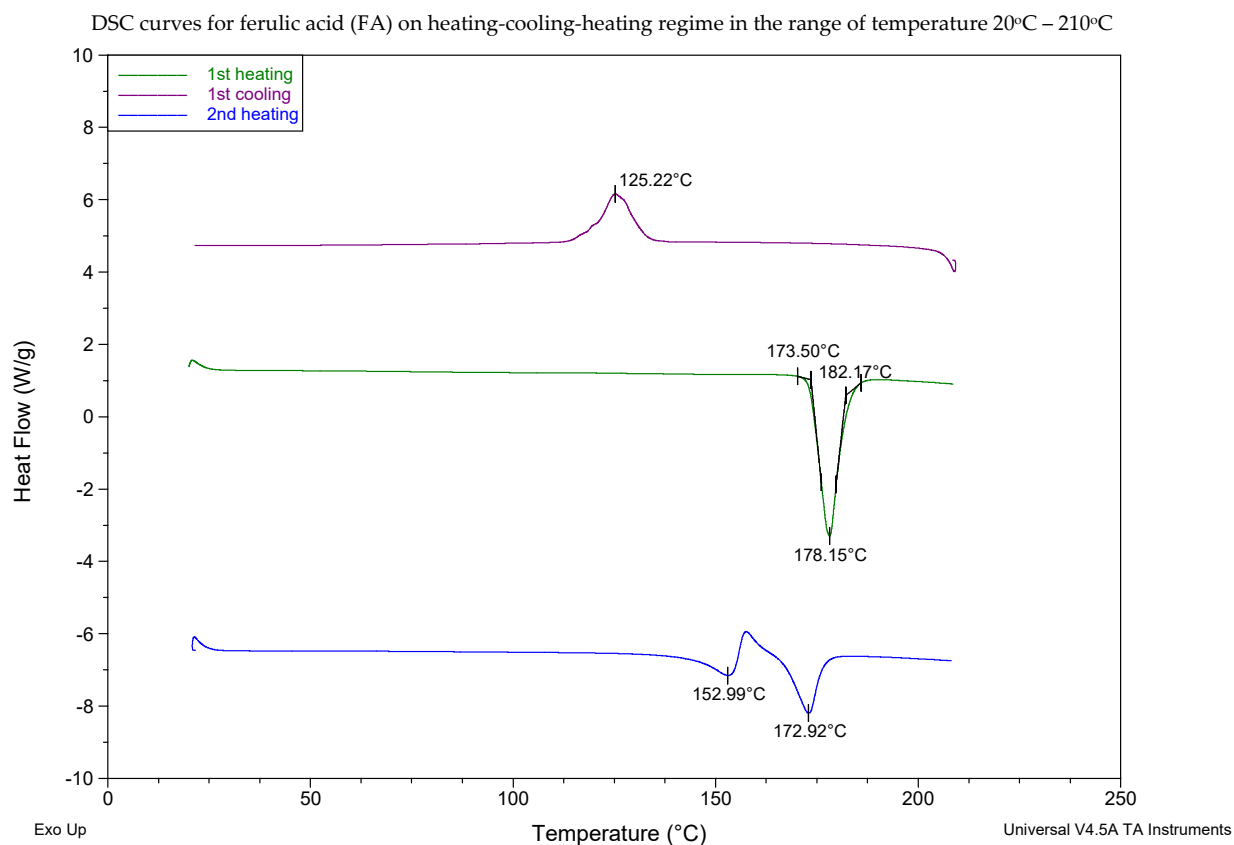


FTIR spectrum of L-leucine propyl ester ferulate, LPr[FA]

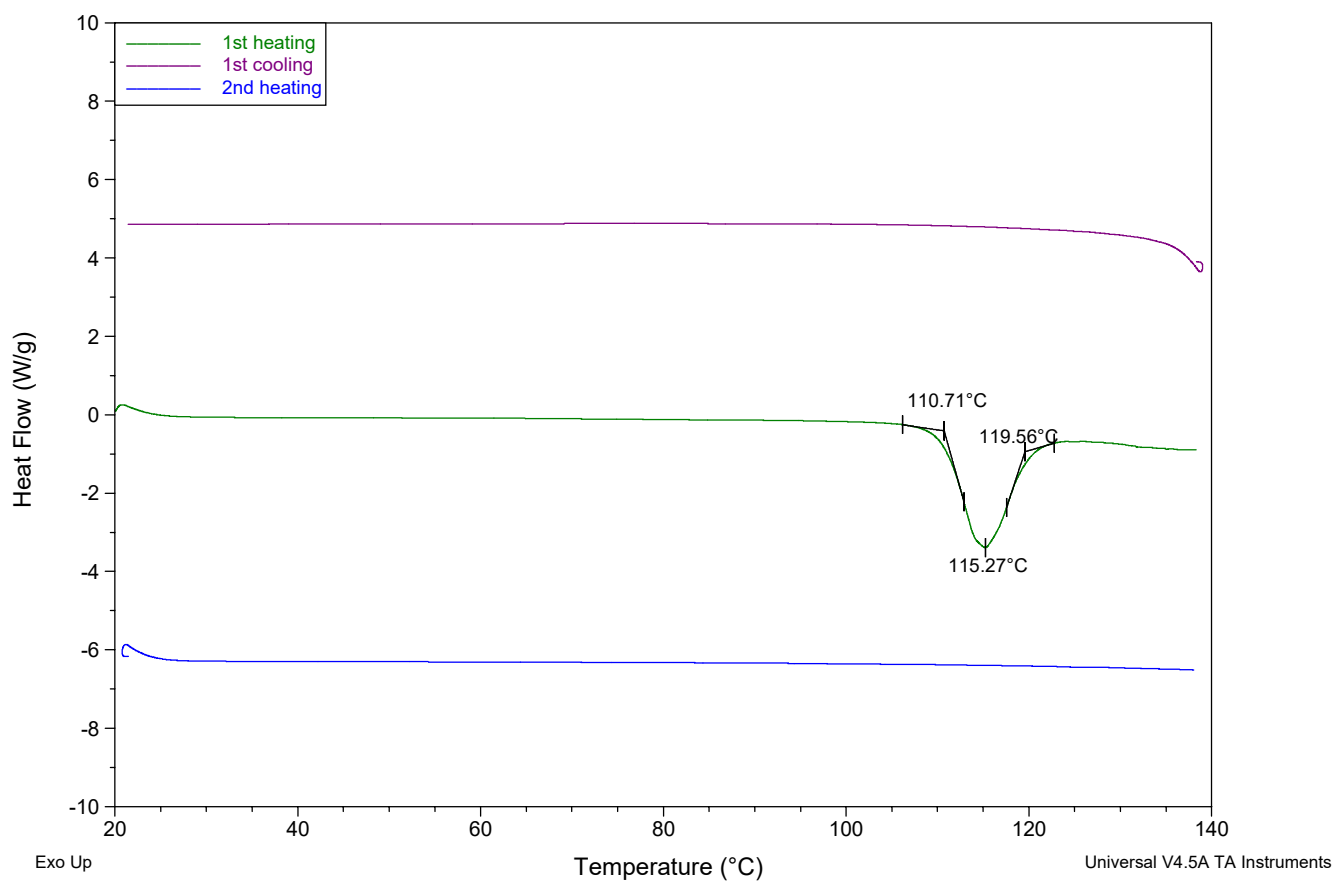


FTIR spectrum of L-proline propyl ester ferulate, PPr[FA]

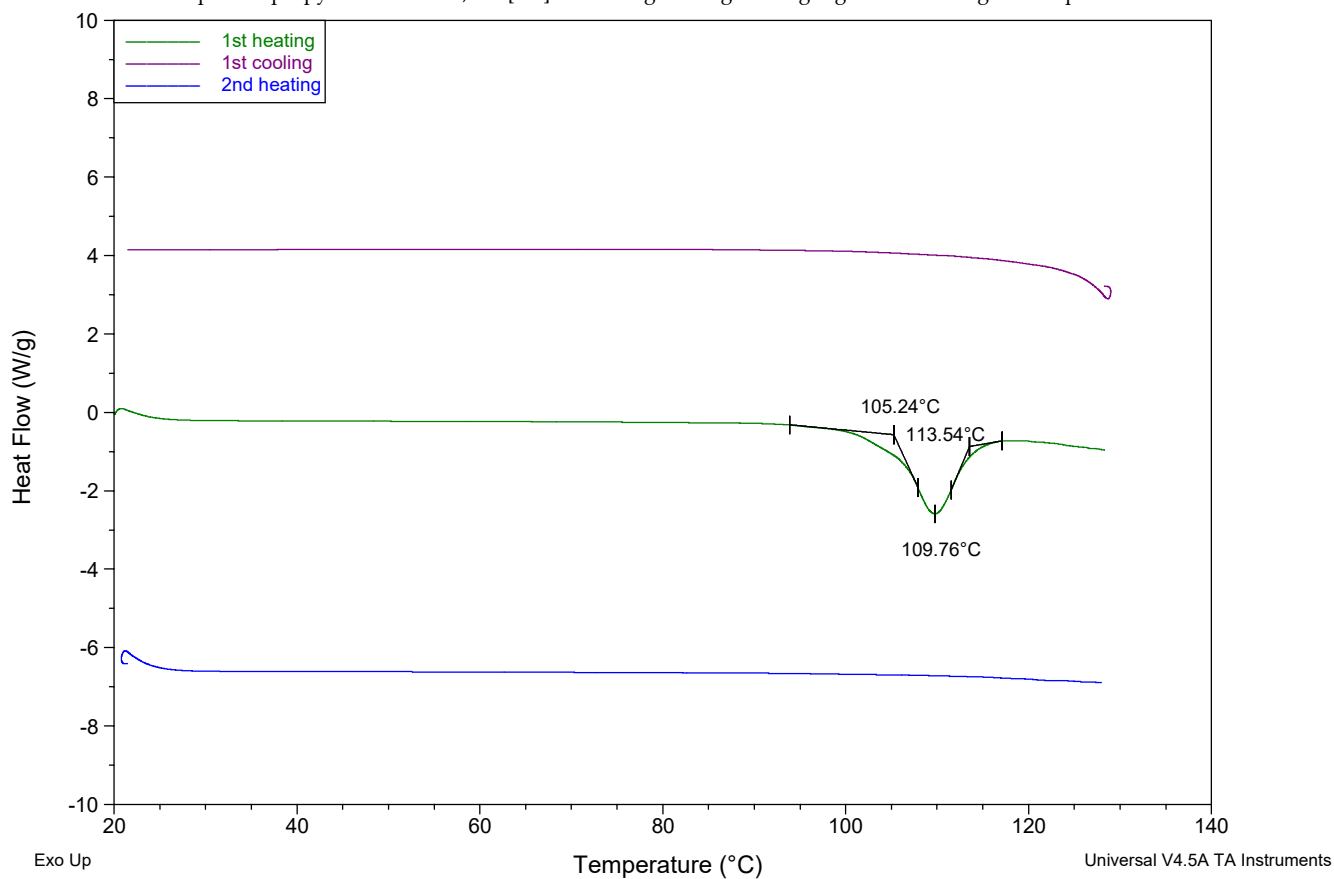




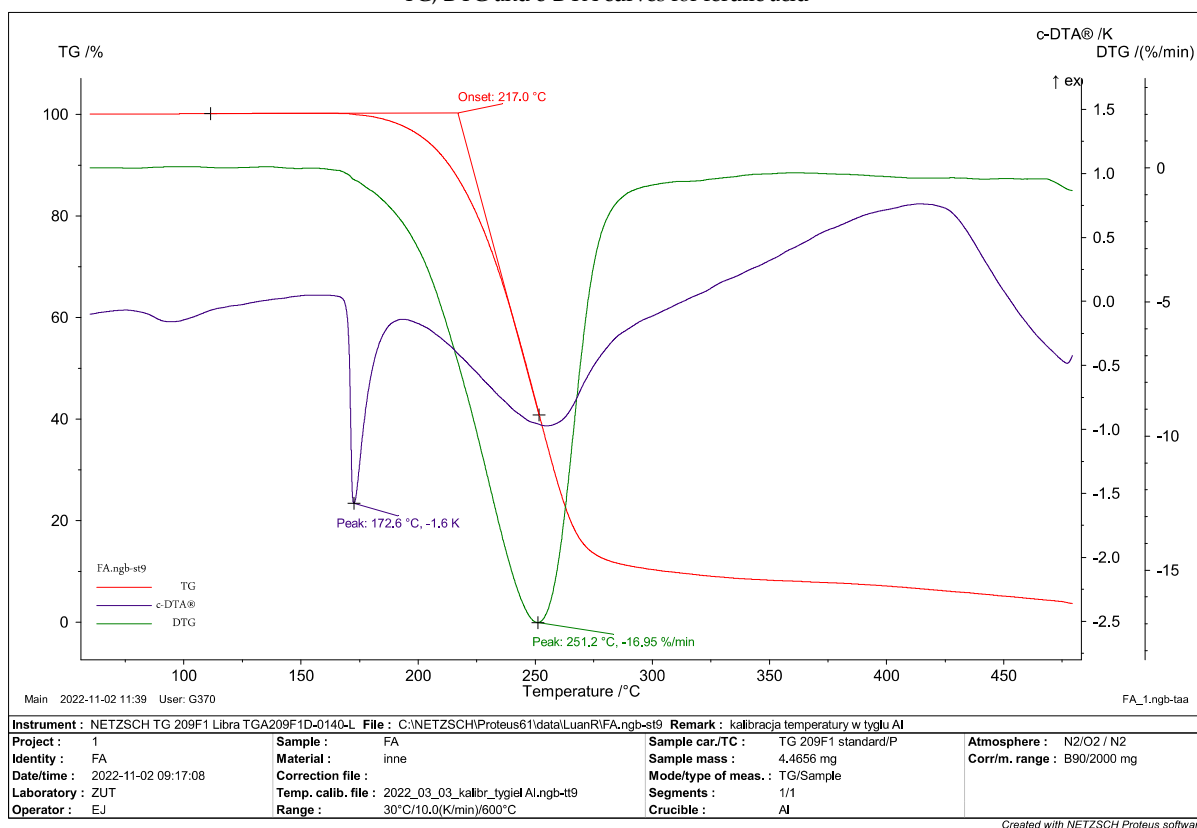
DSC curves for L-leucine propyl ester ferulate, LPr[FA] on heating-cooling-heating regime in the range of temperature 20°C – 140°C



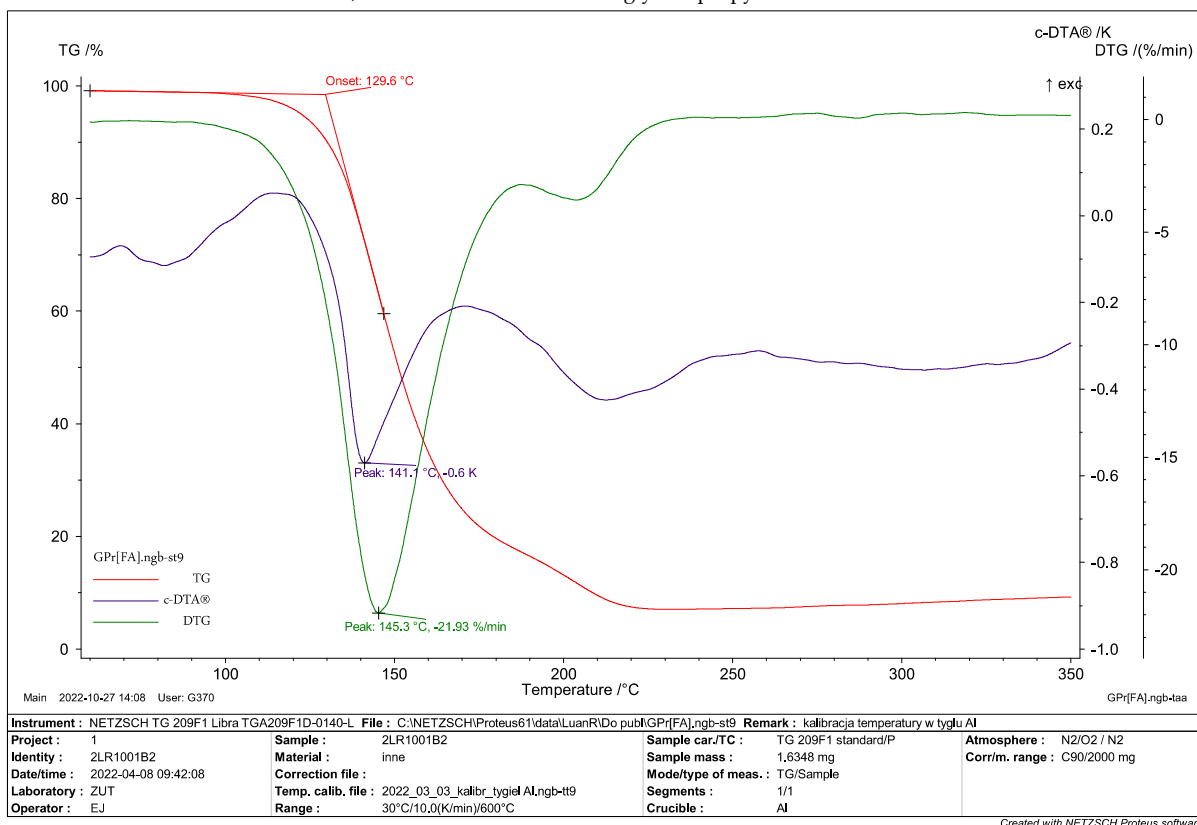
DSC curves for L-proline propyl ester ferulate, PPr[FA] on heating-cooling-heating regime in the range of temperature 20°C – 130°C



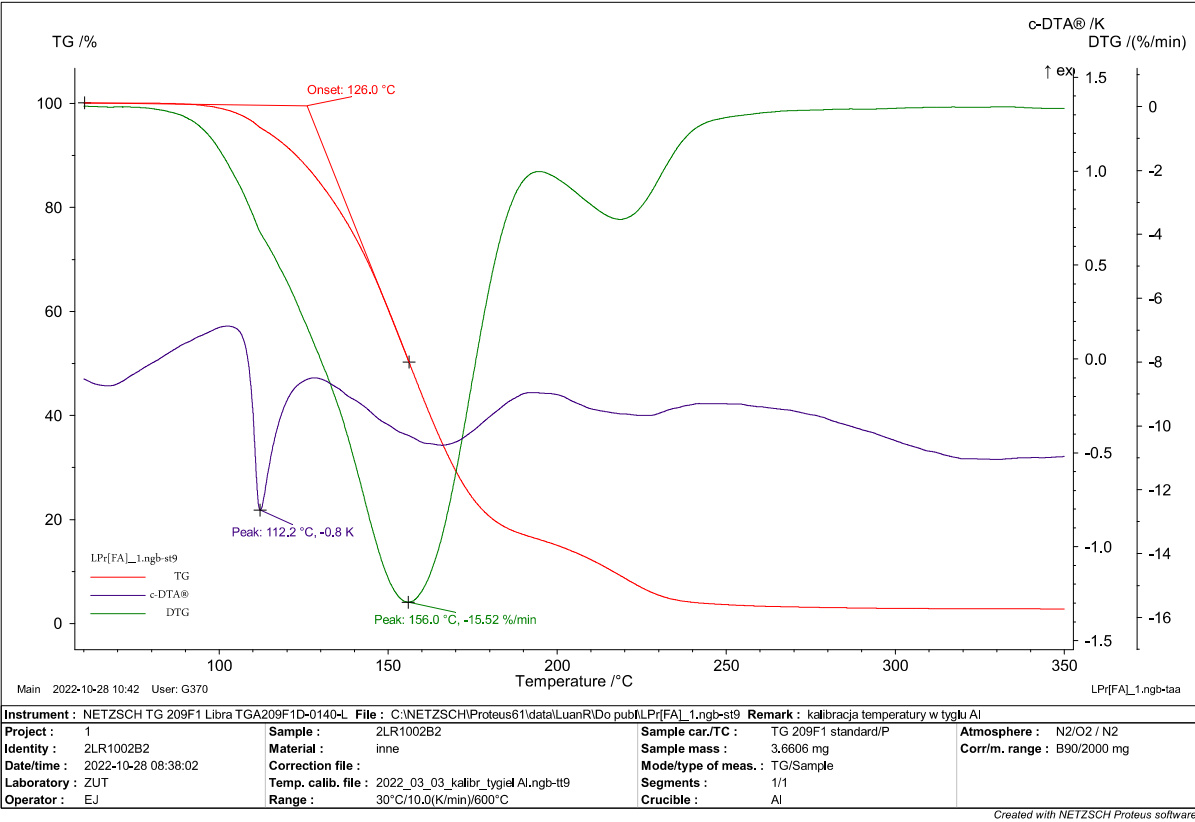
TG, DTG and c-DTA curves for ferulic acid



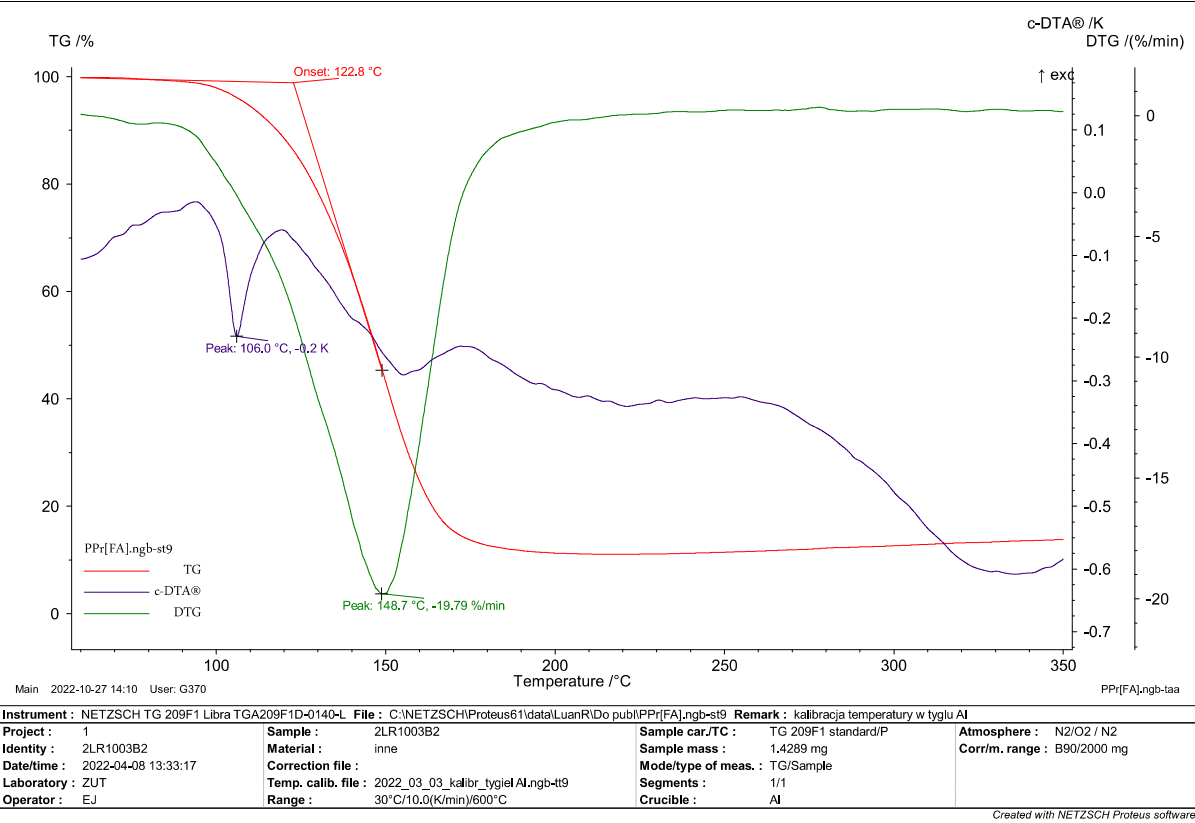
TG, DTG and c-DTA curves for glycine propyl ester ferulate



TG, DTG and c-DTA curves for L-leucine propyl ester ferulate



TG, DTG and c-DTA curves for L-proline propyl ester ferulate



S6. Photographs of hydrogels and emulsions preparations

Emulsions and hydrogels used in the permeation test.

A: the emulsions: 0 – emulsion vehicle (without FA and its derivatives), 1 - E-FA; 2 - GPr[FA], 3 - LPr[FA] and 4 - PPr[FA];
B: the hydrogels: 0 – hydrogel vehicle (without FA and its derivatives), 1 - H-FA; 2-GPr[FA], 3 - LPr[FA] and 4 - PPr[FA].

The photographs of the preparations were done prior applied to skin in the Franz chamber.

