

## **Supplementary Information**

### **Implication of Ionic Liquids in Empagliflozin-Isonicotinic acid Eutectic System: Mechanochemical Synthesis, Characterisation and Performance Attributes**

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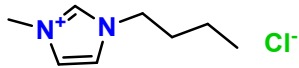
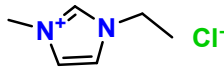
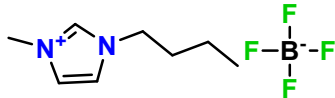
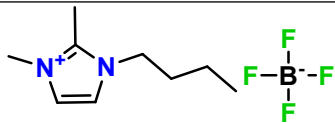
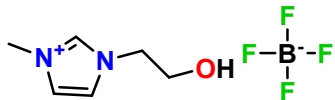
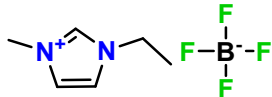
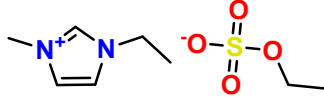
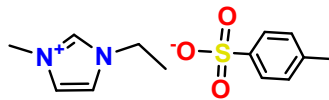
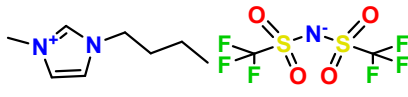
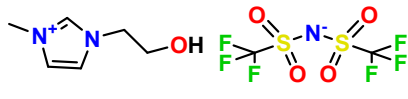
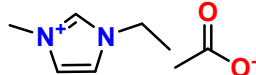
**Figure S5:** Molecular electrostatic potential (MEP) surface mapping of the (a) EPG dimer, (b) INA dimer, (c) EINA, and (d) EINA-IL complexes obtained by LAG and ILAG

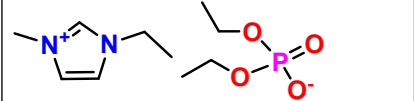
**Figure S6:** <sup>1</sup>H-NMR spectrum of empagliflozin (EPG)

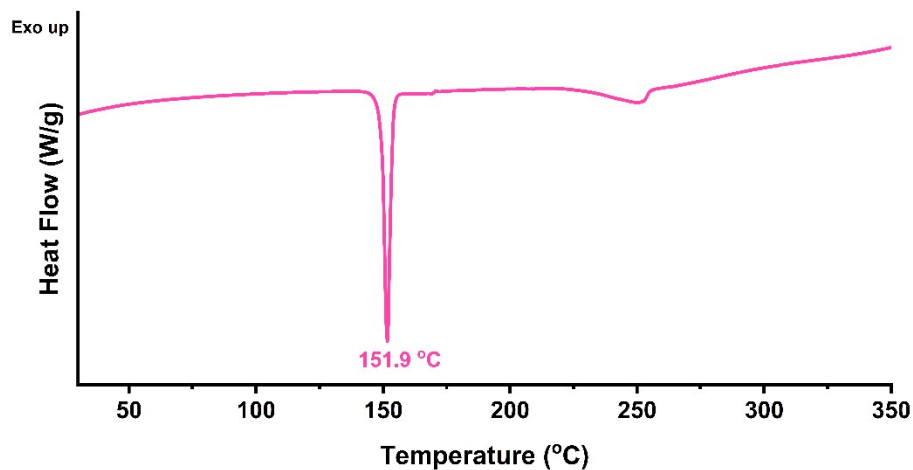
**Figure S7:** <sup>1</sup>H-NMR spectrum of isonicotinic acid (INA)

**Figure S8:** <sup>1</sup>H-NMR spectrum of eutectic mixture (EINA) obtained by LAG

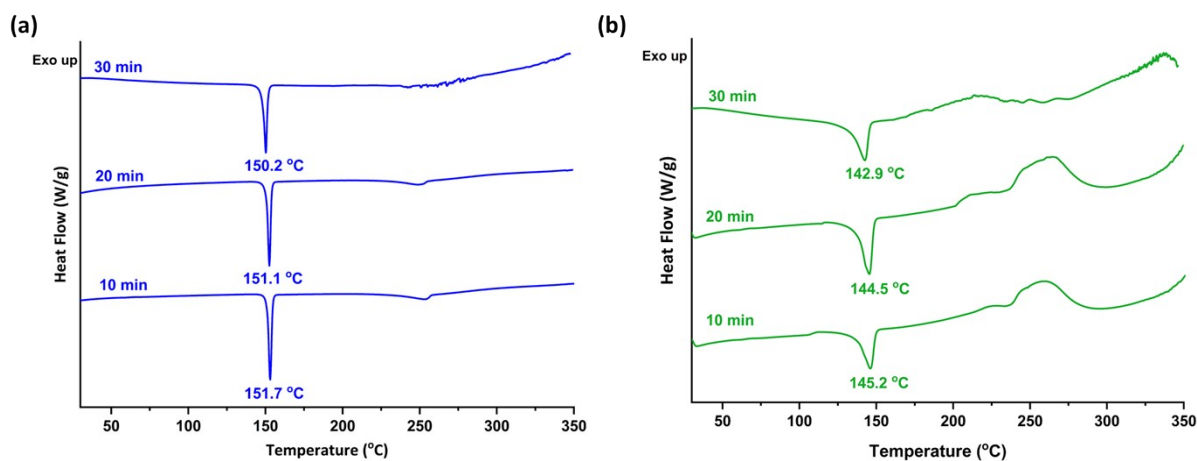
**Figure S9:** <sup>1</sup>H-NMR spectrum of eutectic mixture (EINA-IL) obtained by ILAG

Table S1: Different ILs employed during ILAG experiments			
ILs	Abbreviation used	Structure	Outcome
1-Butyl-3-methylimidazolium Chloride	IL1		Paste
1-Ethyl-3-methylimidazolium Chloride	IL2		Paste
1-Butyl-3-methylimidazolium Tetrafluoroborate	IL3		Crystalline powder
1-Butyl-2,3-dimethylimidazolium Tetrafluoroborate	IL4		Crystalline powder
1-(2-Hydroxyethyl)-3-methylimidazolium Tetrafluoroborate	IL5		Crystalline powder
1-Ethyl-3-methylimidazolium Tetrafluoroborate	IL6		Crystalline powder
1-Ethyl-3-methylimidazolium EthylSulfate	IL7		Paste
1-Ethyl-3-methylimidazolium p-Toluenesulfonate	IL8		Paste
1-Butyl-3-methylimidazolium Bis(trifluoromethanesulfonyl)imide	IL9		Paste
1-(2-Hydroxyethyl)-3-methylimidazolium Bis(trifluoromethanesulfonyl)imide	IL10		Paste
1-Ethyl-3-methylimidazolium Acetate	IL11		Paste

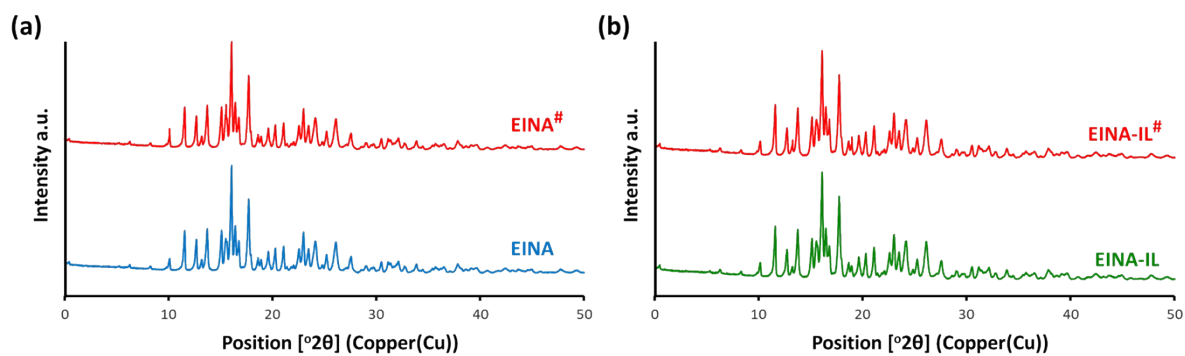
1-Ethyl-3-methylimidazolium Diethyl Phosphate	IL12		Paste
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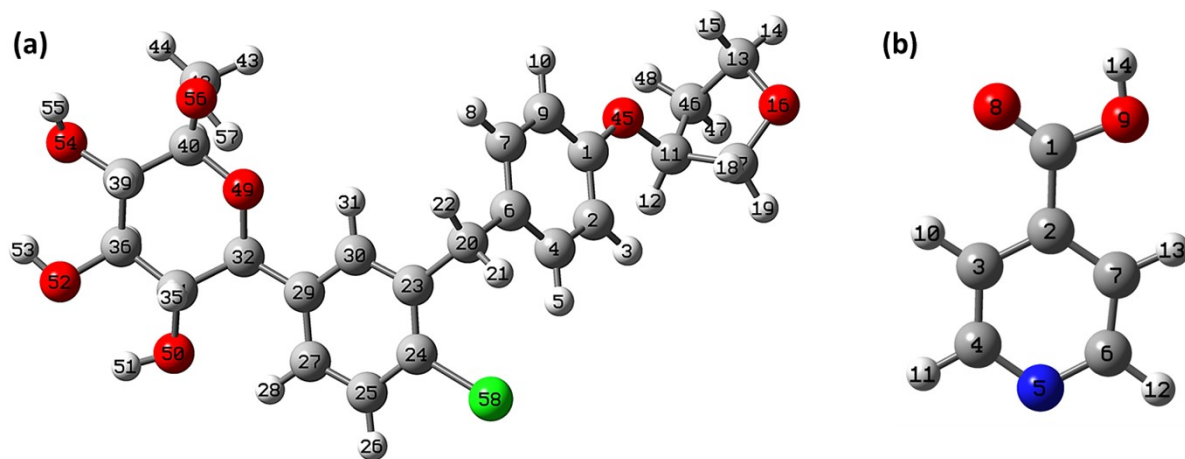
**Figure S1:** DSC thermograms of EPG-INA binary mixture obtained by neat grinding



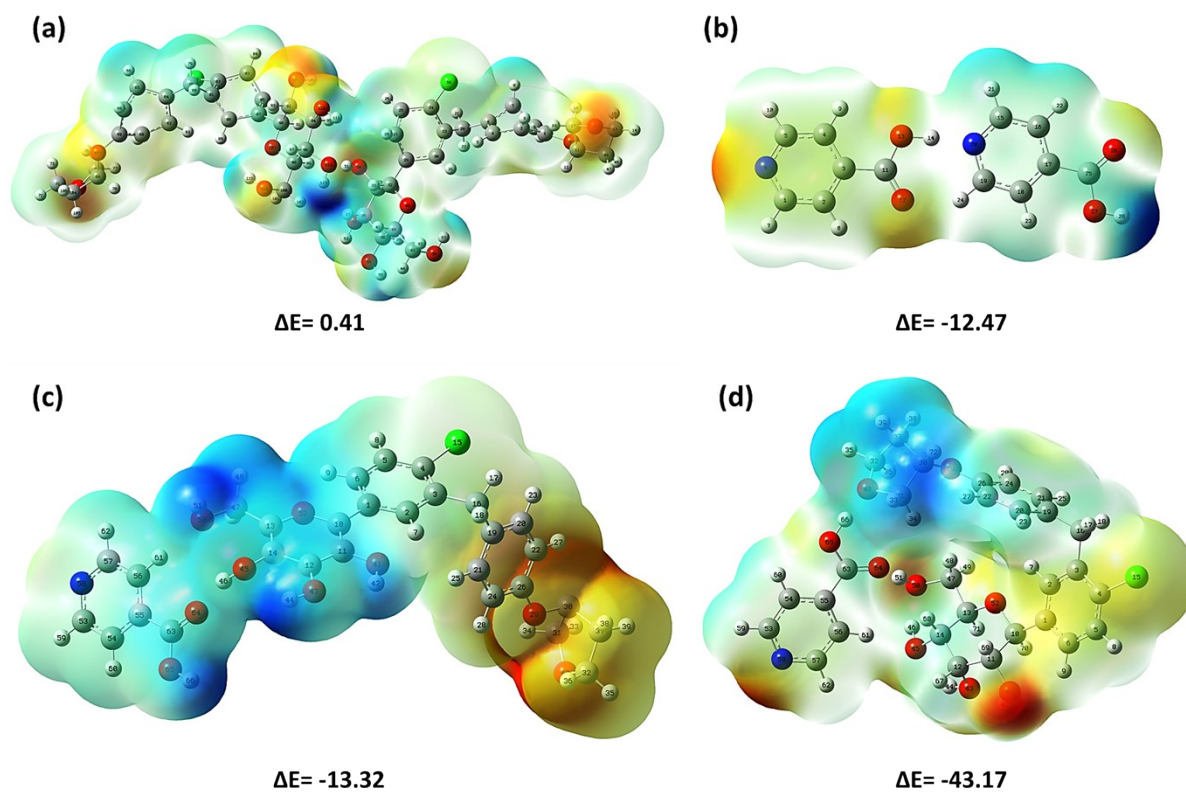
**Figure S2:** DSC curves of ground products obtained at different milling time intervals (10, 20, and 30 min) by (a) LAG and (b) ILAG approach



**Figure S3:** Pre- and post-stability PXR patterns of (a) EINA and (b) EINA-IL eutectic mixtures (#represents post-stability sample)



**Figure S4:** Optimized structure of empagliflozin (a) and isonicotinic acid (b)



**Figure S5:** Molecular electrostatic potential (MEP) surface mapping of the (a) EPG dimer, (b) INA dimer, (c & d) EINA and EINA-IL complexes obtained by LAG and ILAG, respectively.

NMR DU.10.fid — EPG

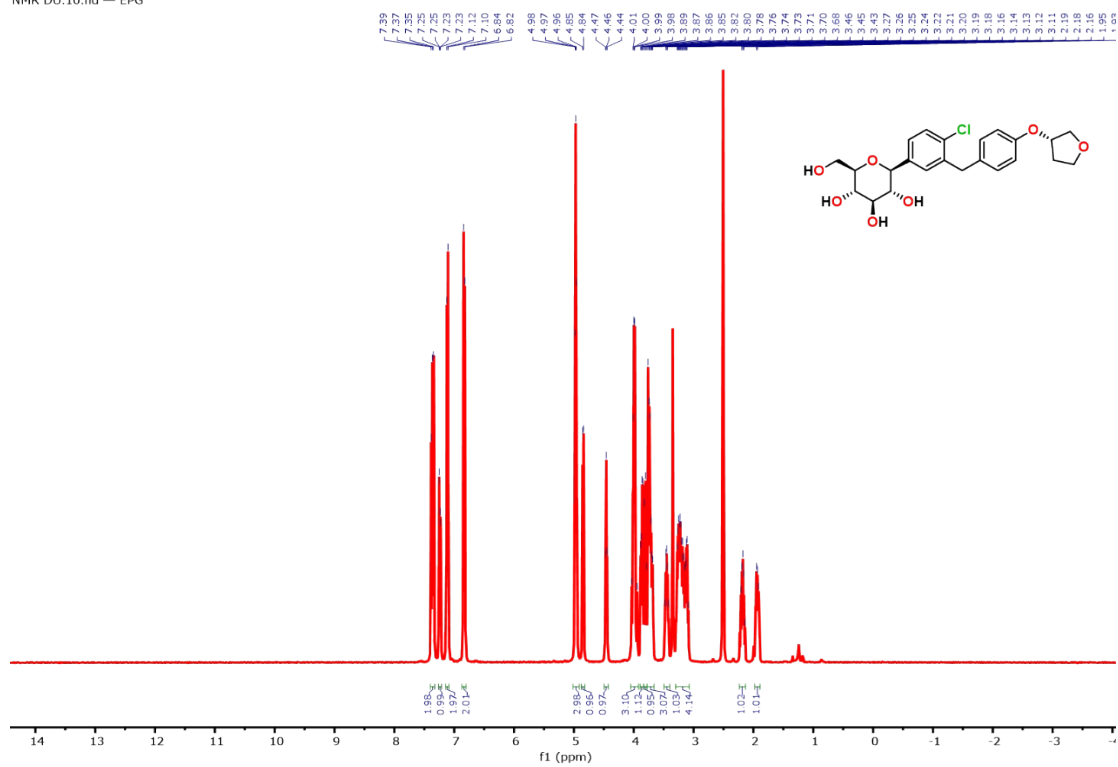


Figure S6: <sup>1</sup>H-NMR spectrum of empagliflozin (EPG)

NMR DU.20.fid  
INA

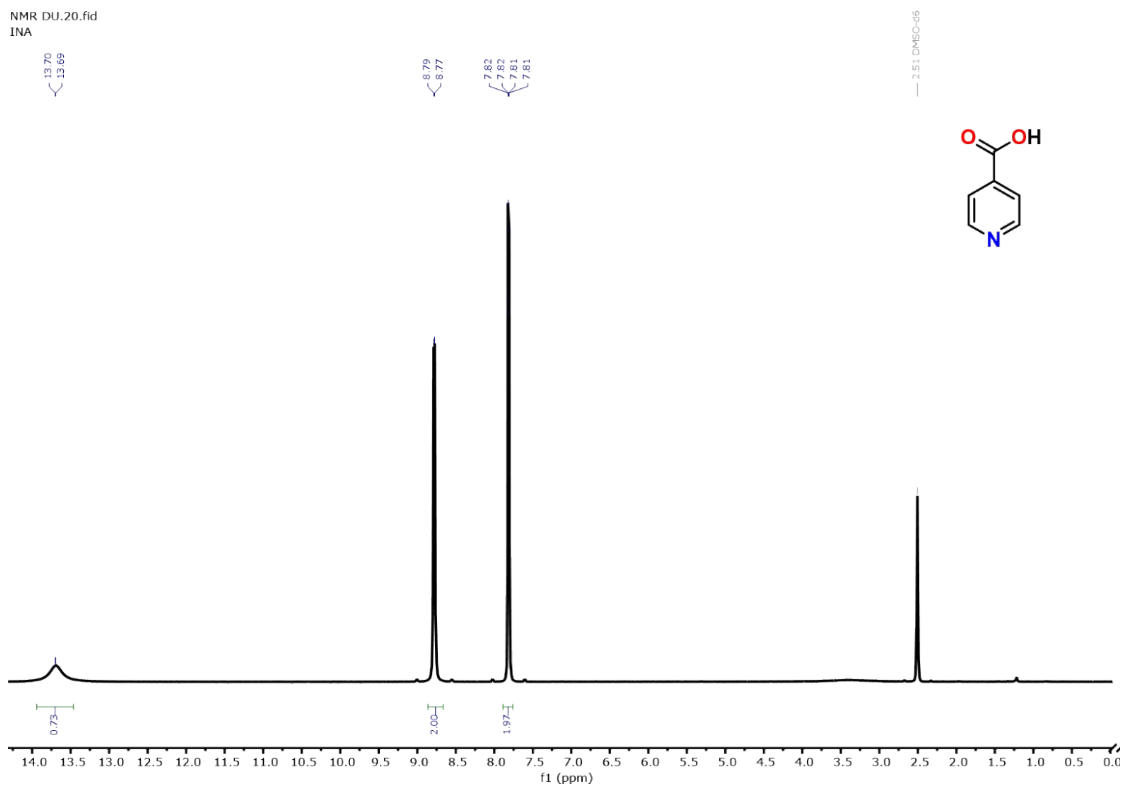


Figure S7: <sup>1</sup>H-NMR spectrum of isonicotinic acid (INA)

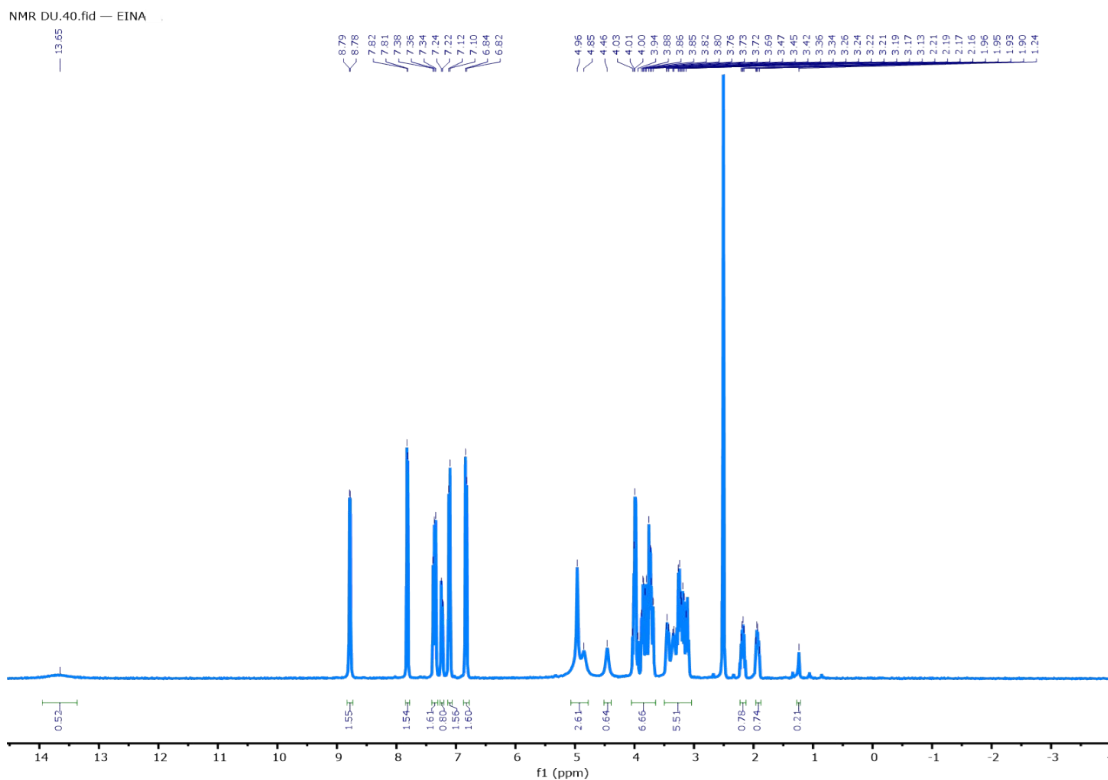


Figure S8:  $^1\text{H}$ -NMR spectrum of eutectic mixture (EINA) obtained by LAG

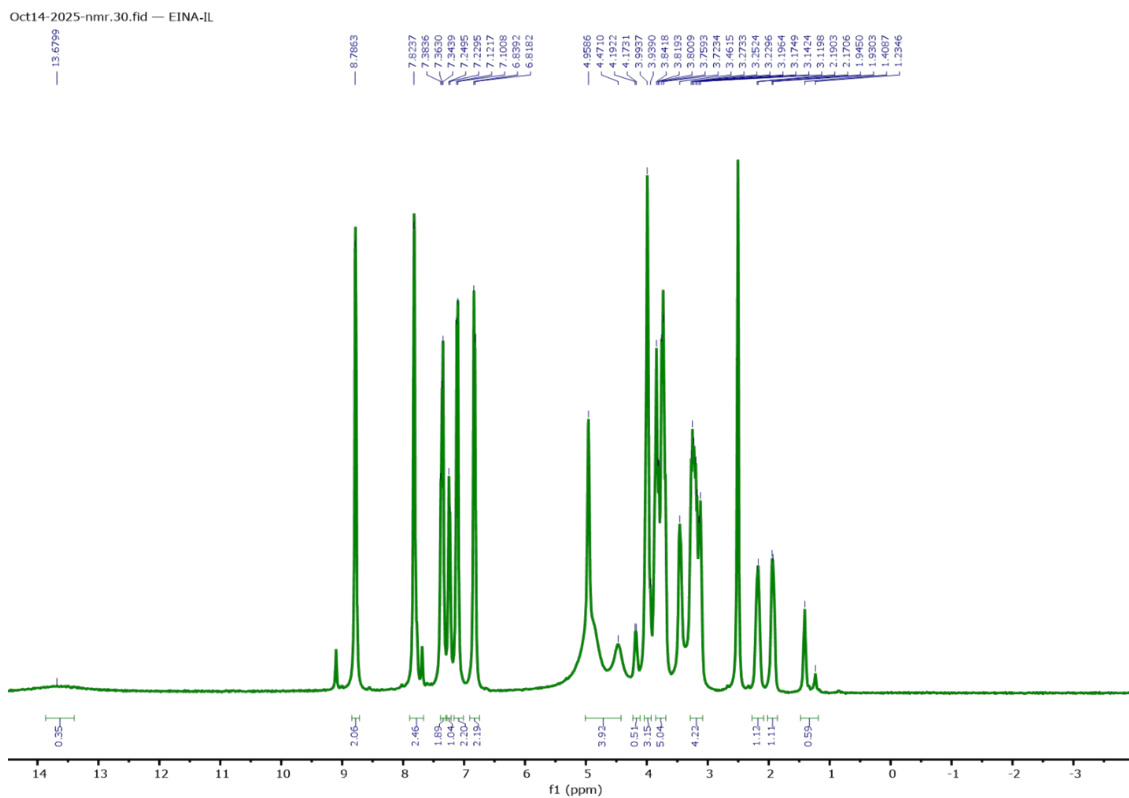


Figure S9:  $^1\text{H}$ -NMR spectrum of eutectic mixture (EINA-IL) obtained by ILAG