

Article

Application of Natural Deep Eutectic Solvents in the Extraction of Quercetin from Vegetables

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Received: 11 June 2019; Accepted: 20 June 2019; Published: 21 June 2019

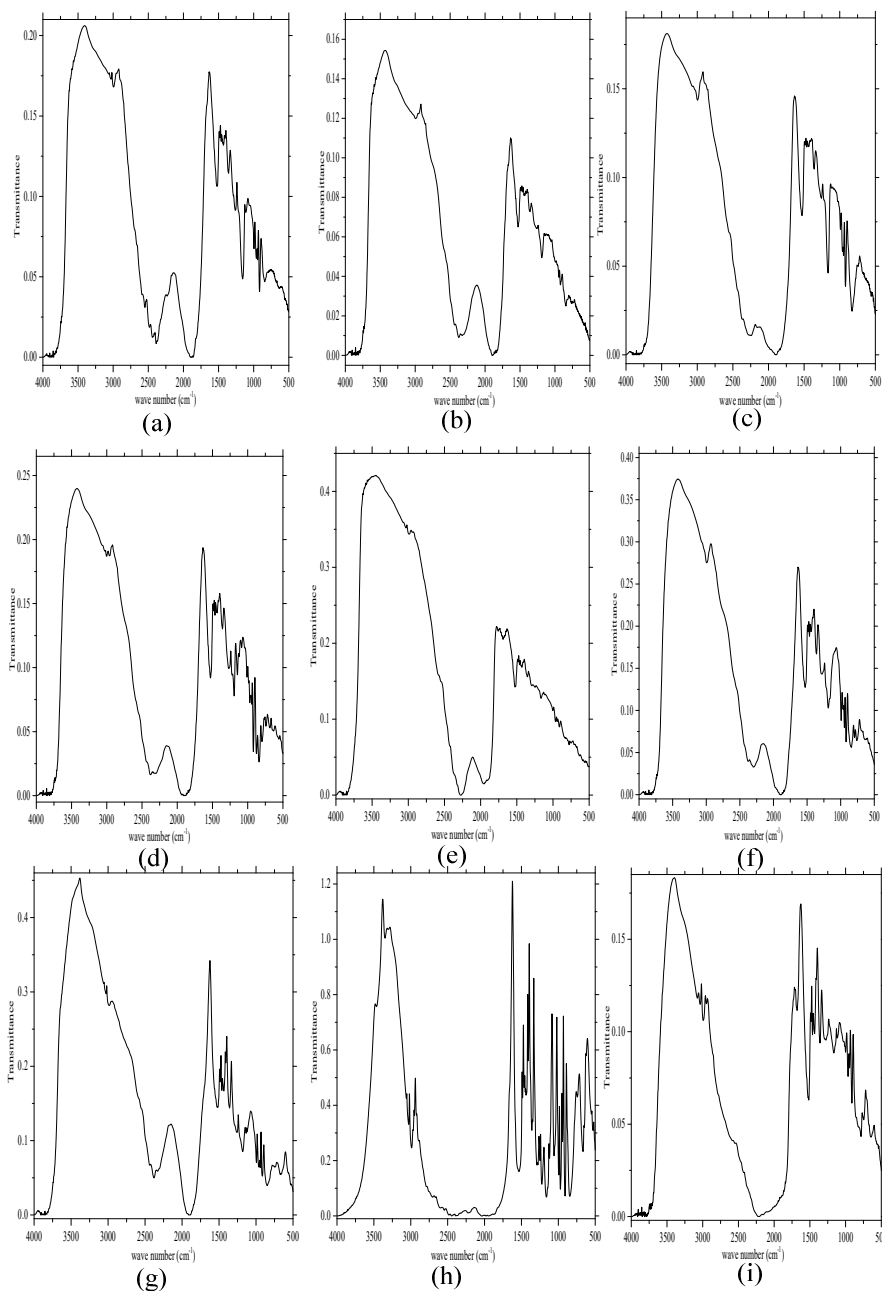


Figure S1. FT-IR spectra of betaine based NADESs. a: Bet-Ery, b: Bet-Rib, c: Bet-Xyl, d: Bet-Fuc, e: Bet-Glul, f: Bet-Man, g: Bet-Gal, h: Bet-Mal, and i: Bet-Glua.

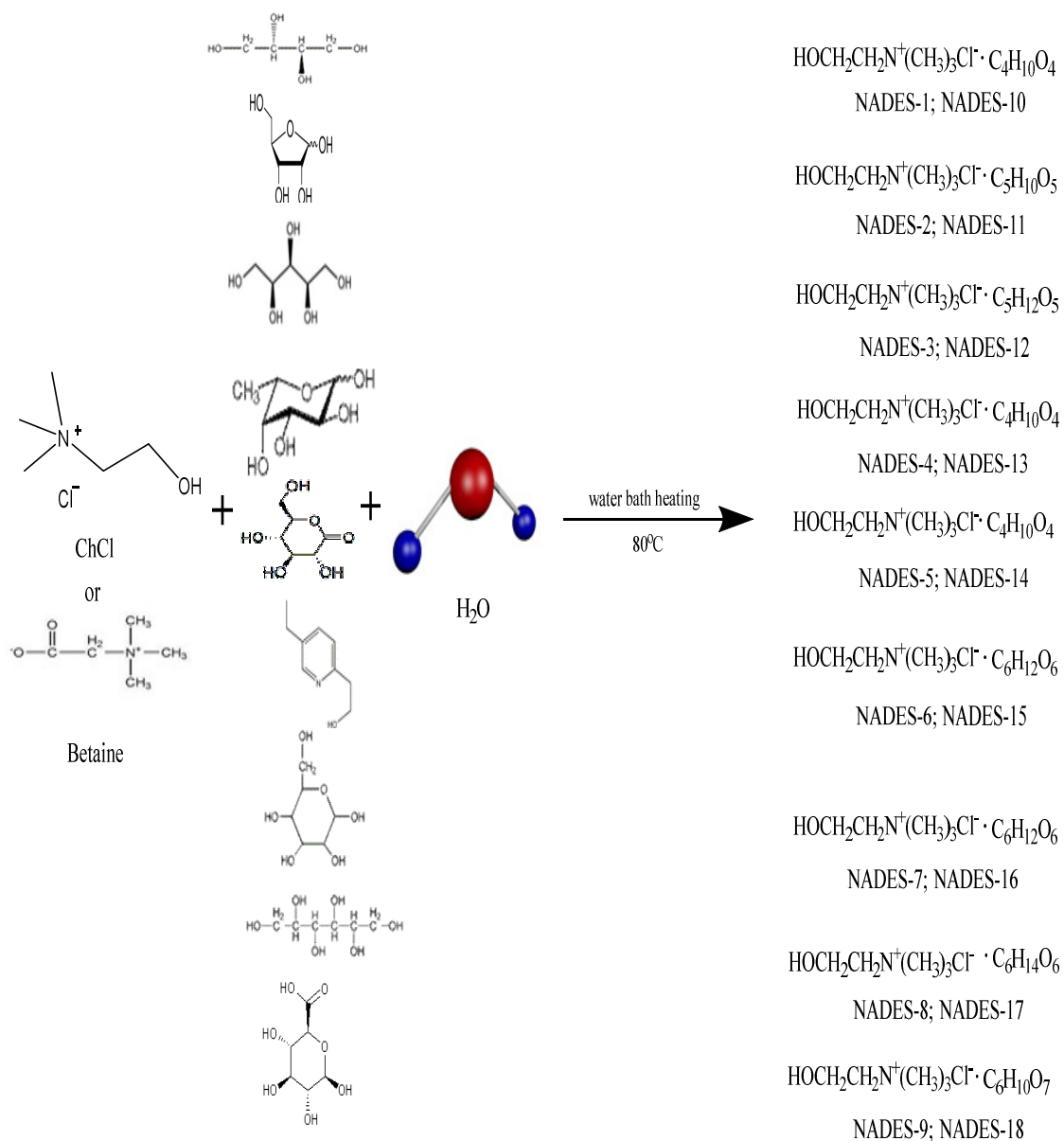


Figure S2. Synthetic protocol of the NADESs.

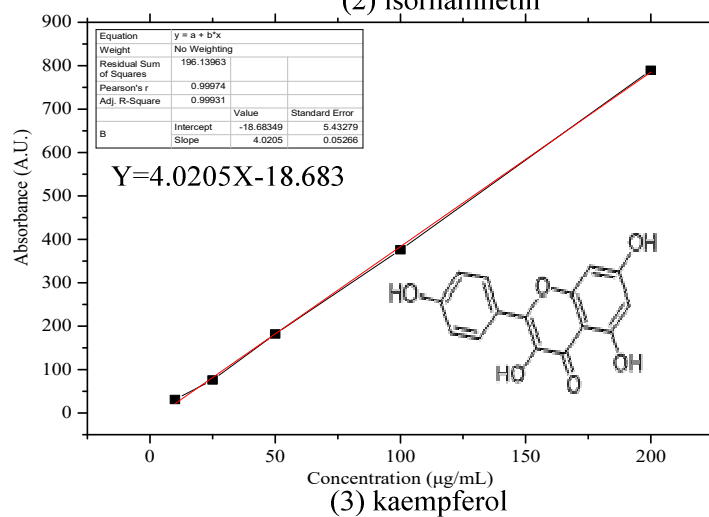
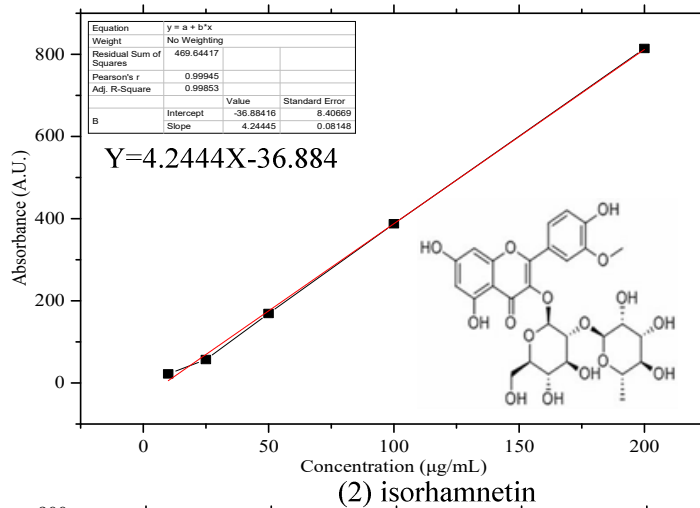
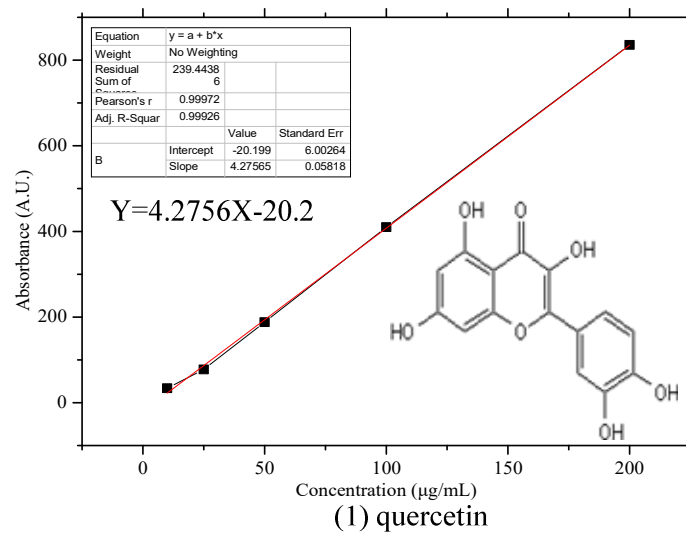


Figure S3. Standard curves and chemical structures of quercetin, isorhamnetin, and kaempferol.

Table S1. Abbreviations of the ChCl-based DESs.

Abbreviations	Component 1	Component 2	Component 3	Molar ratio ^a	Status	Viscosity ^c (mm ² s ⁻¹)
NADES-1		meso-Erythritol			Solid ^b	17.42
NADES-2		D-(-)-Ribose			Liquid	15.64
NADES-3		xylitol			Liquid	16.24
NADES-4		L-(-)-Fucose			Liquid	14.88
NADES-5		D-(+)-Glucono-1, 5-lactone			Liquid	15.72
NADES-6	ChCl	D-(+)-Mannose	H ₂ O	1:1:0.1	Liquid	20.48
NADES-7		D-(+)-Galactose			Solid	22.16
NADES-8		D-Mannitol			Liquid	13.24
NADES-9		D-Glucuronic acid			Liquid	13.72

a: The best molar ratio, other molar ratios were also studied (including 1:2/2:1/1:1.5) but turned out not to be homogeneous liquids. b: The status of it is solid at room temperature, while at a higher temperature it is liquid. c: The viscosity of it at 25.0 °C (H₂O: 0.7 mm² s⁻¹).

Table S2. Abbreviations of the betaine-based DESs.

Abbreviations	Component 1	Component 2	Component 3	Molar ratio	Status	Viscosity (mm ² s ⁻¹)
NADES-10		meso-Erythritol			Solid	10.32
NADES-11		D-(-)-Ribose			Liquid	9.64
NADES-12		xylitol			Liquid	9.72
NADES-13		L-(-)-Fucose			Liquid	10.80
NADES-14		D-(+)-Glucono-1, 5-lactone			Liquid	11.08
NADES-15	Bet	D-(+)-Mannose	H ₂ O	1:1:1	Liquid	10.24
NADES-16		D-(+)-Galactose			Solid	12.16
NADES-17		D-Mannitol			Solid	12.64
NADES-18		D-Glucuronic acid			Liquid	11.56