Screening for pancreatic lipase natural modulators by capillary electrophoresis hyphenated to spectrophotometric and conductometric dual detection

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Keywords

Capillary electrophoresis lipase assay; Contactless conductivity detector; Natural inhibitor screening; TDLFP based on-line enzymatic assay; UPLC/MS molecular characterization of water plant extracts

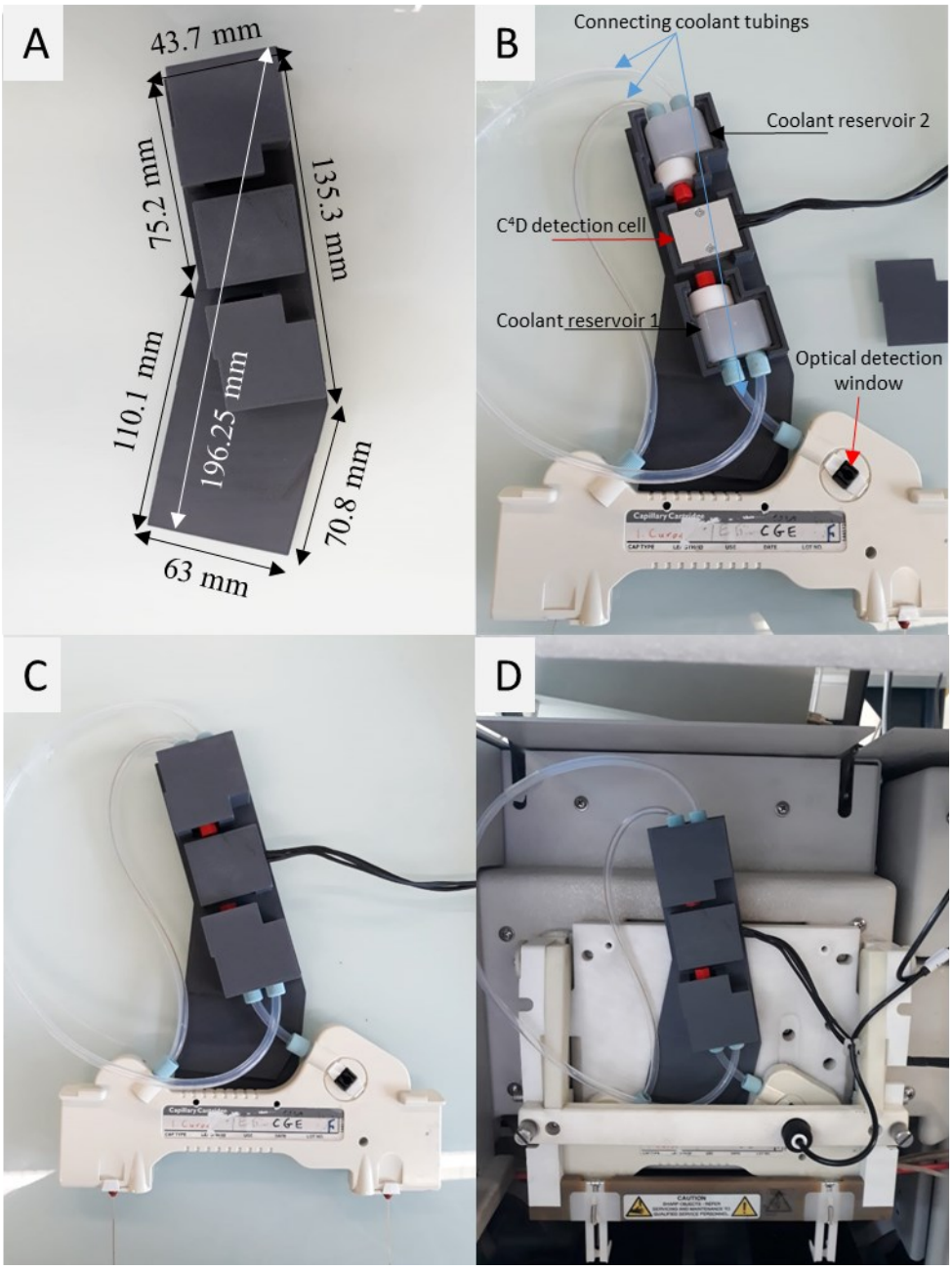

Figure S.1: Capillary cartridge with the connecting tubings and reservoirs supported by a polyacetic acid 3D printed scaffold. A) The 3D printed scaffold with its dimensions, B) Insertion of all components (two reservoirs, C^4D detection cell) into their designated positions in the scaffold, C) Addition of 3D printed clips to fix loose parts of the system in place and D) installation of the cartridge into the CE instrument.

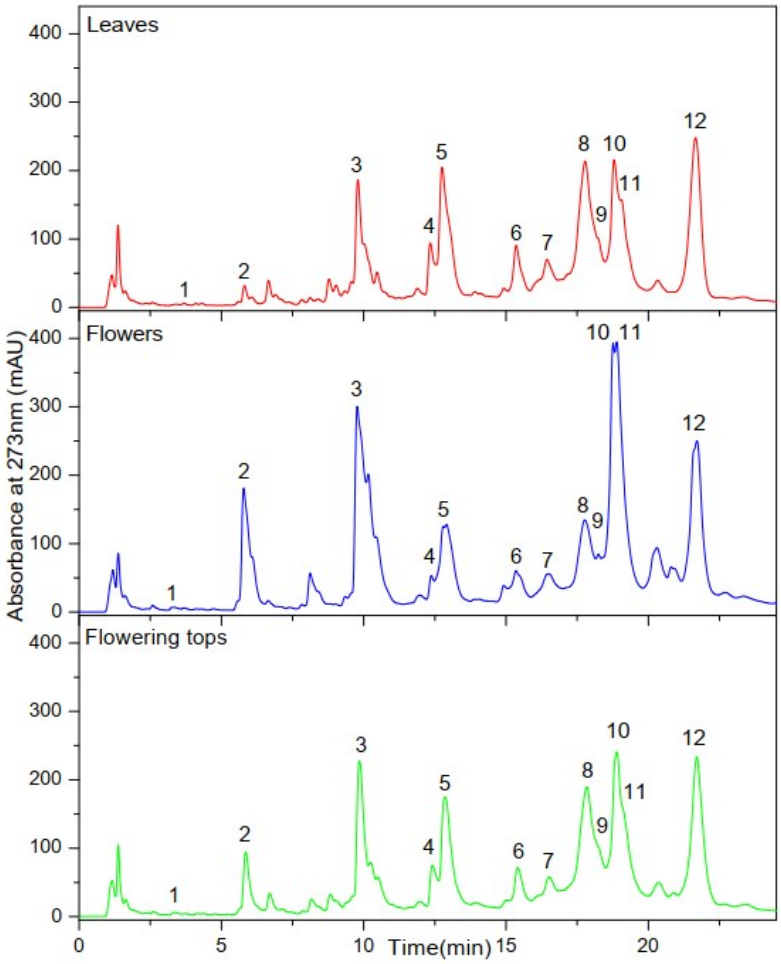

Figure S.2 UHPLC profiles of different parts of hawthorn extracts obtained from infusion extraction modes for ground fresh leaves, flowers and flowering tops (fresh materials havested in April 2020). Experimental conditions: A Kinetex C18 100A 100×2.1 mm, 2.6 µm column, binary solvent system: water/formic acid (1‰, v/v) as solvent A and acetonitrile/formic acid (1‰, v/v) as solvent B. Gradient program: 5 % B, then increase of B to 100 % in 35 min with a convex increase, flow rate: 0.3 mL.min^{-1}, injection volume: 20 µL. Column temperature: 20°C, UV monitoring at 273 nm. UV-Vis spectra recorded between 200 and 550 nm. Peak identification: 1=Cyanidin, 2=5-*O*-caffeoylquinic acid, 3=chlorogenic acid, 4=procyanidin B2, 5=epicatechin, 6=procyanidin C1, 7=cinnamtanin A2, 8=vitexin-2-*O*-rhamnoside, 9=pinnatifinose A, 10=hyperoside, 11=isoquercetin, 12=apigenin C-hexoside.

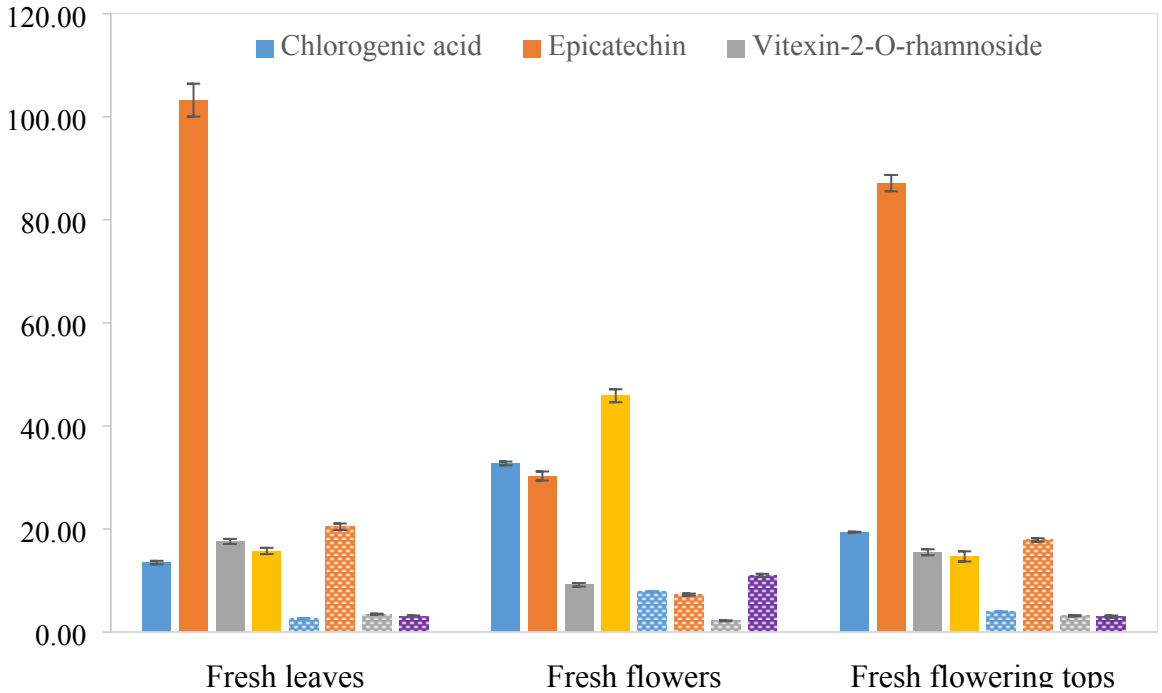

Figure S.3. Quantification of chlorogenic acid (peak 3), epicatechin (peak 5), vitexin-2-*O*-rhamnoside (peak 8), isoquercetin (11) were determined by external calibration, using commercially available standards. Error bars: ± 1 standard deviation calculated on *n*=3 repetitions. , in mg g^{-1} dry extract. , in mg g^{-1} fresh plant.

Table S.1: Comparison of the conductivities and effective mobilities of both BGEs using PeakMaster v5.3

BGE	**Tris/CHES (12 mM, pH 9.0)**	**Tris/MOPS (10 mM, pH 6.6)**
Conductivity (S m^{-1})	0.054	0.046
Effective mobility (m^2 V^{-1} s^{-1})	Co-ion CHES: -5.1	Co-ion MOPS: -5.7
	4-NP: -29.3	4-NP: -7.9
	Butyrate: -30.0	Butyrate: -30.0