Electronic Supporting Material

Development of poly(vinyl alcohol) / chitosan / aloe vera gel electrospun composite nanofibers as a novel sorbent for thin-film micro-extraction of pesticides in water and food samples followed by HPLC-UV analysis

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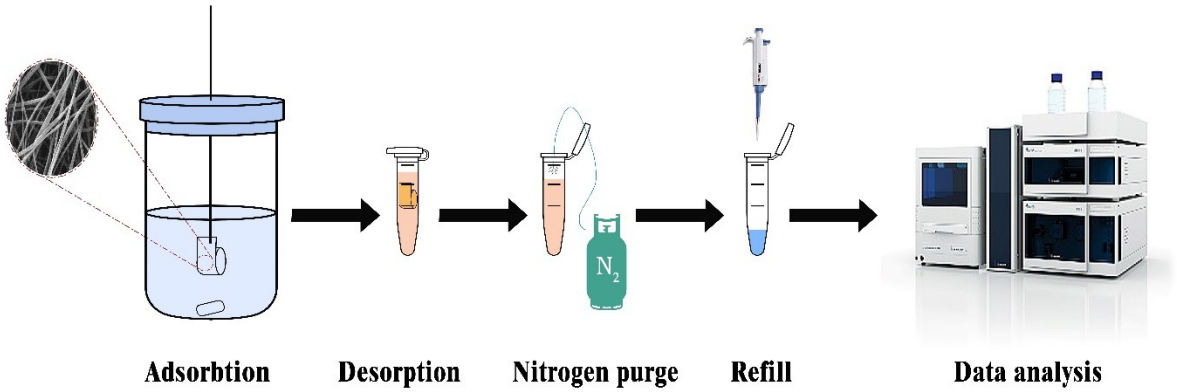

Fig. S1. A schematic illustration of TFME-HPLC-UV method based on PVA/CA/CS/AV as the sorbent.

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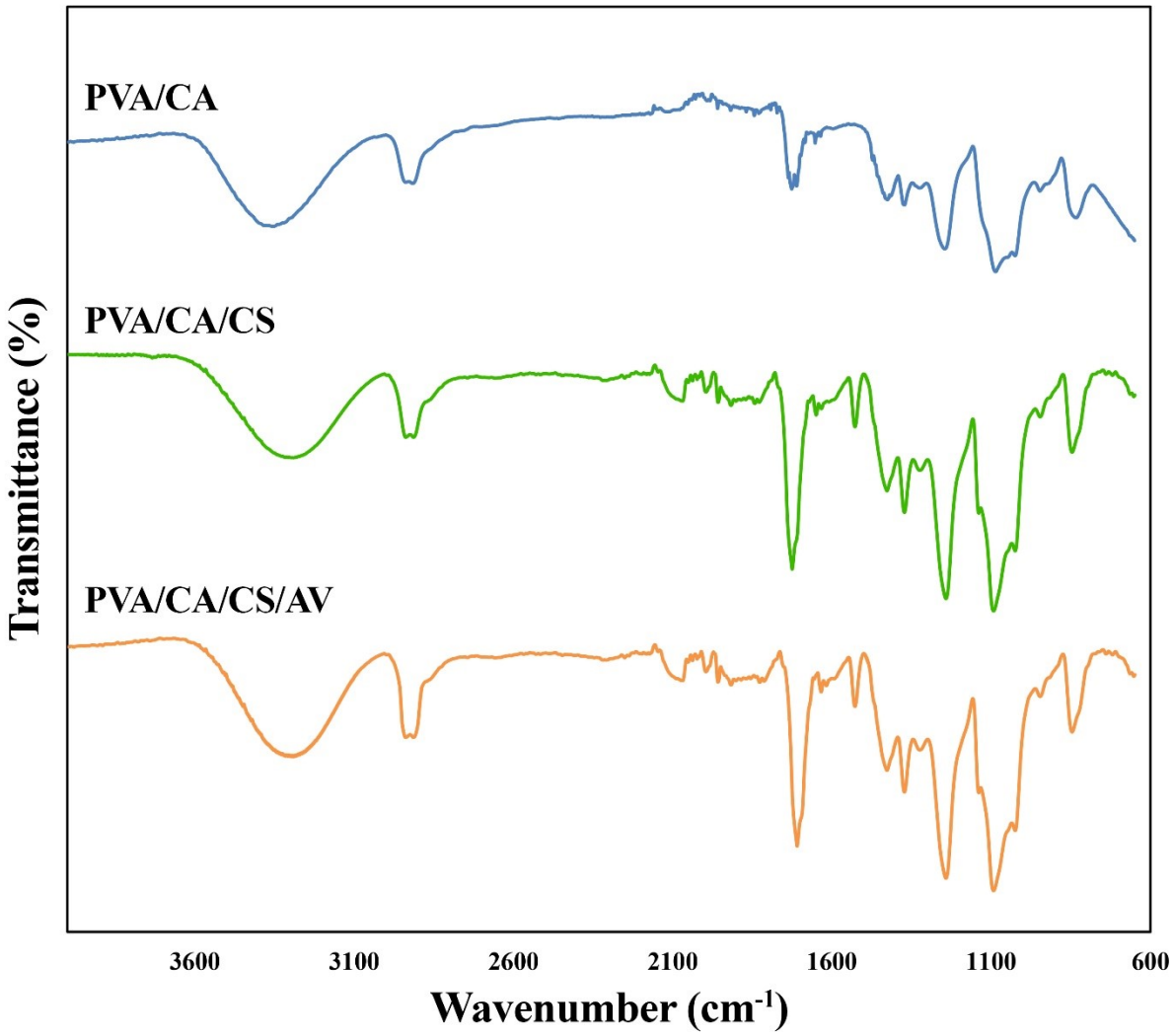

Fig. S2. FT-IR spectra of PVA/CA, PVA/CA/CS, and PVA/CA/CS/AV nanofibers.

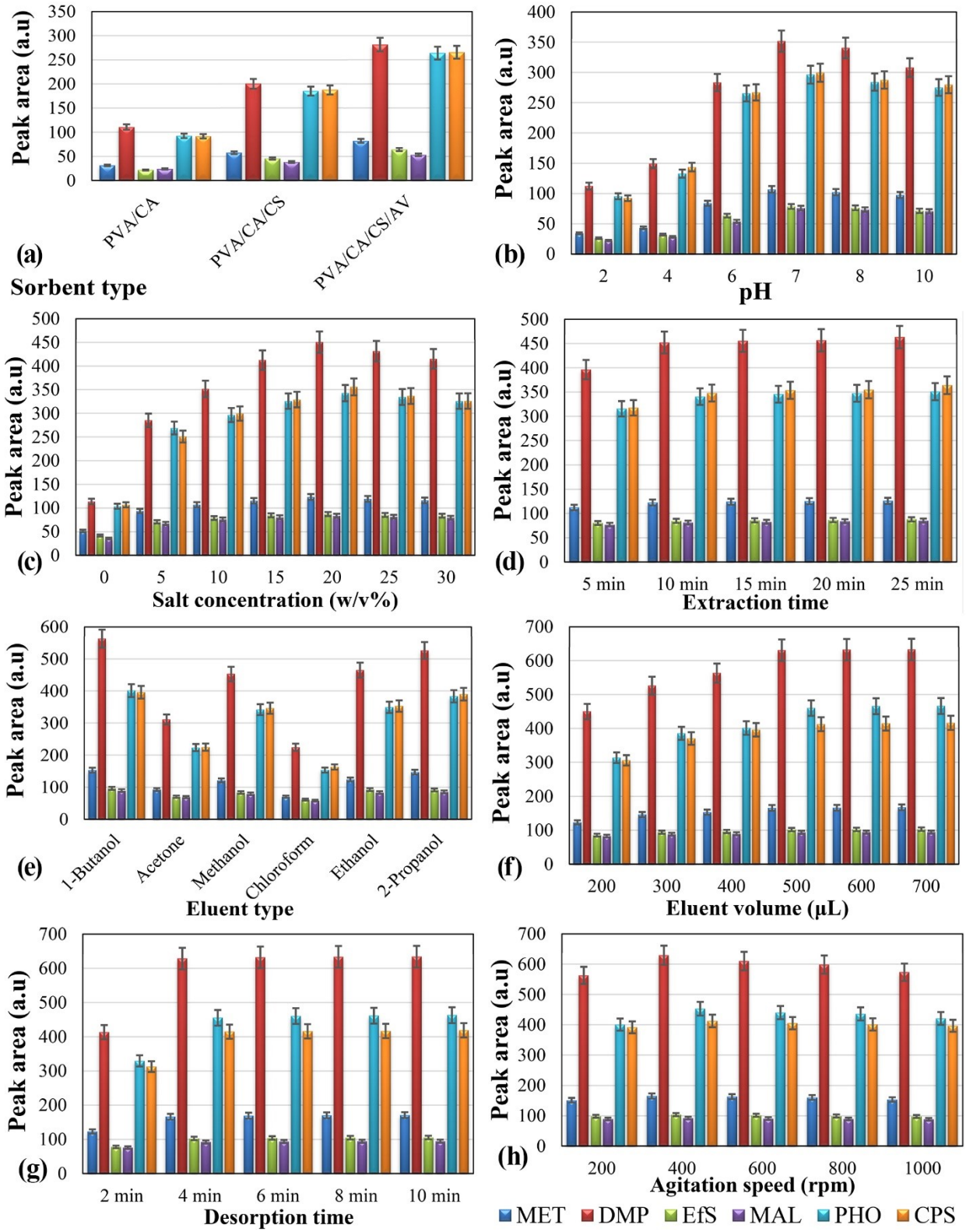

Fig. S3. Effect of (a) sorbent type, (b) sample pH, (c) salt concentration, (d) extraction time, (e) eluent type, (f) eluent volume, (g) desorption time, (h) agitation speed. Extraction

conditions; sample pH: 7.0; salt concentration: 20 (w/v%); extraction time: 10 min; eluent type:1-butanol; eluent volume: 500 µL; desorption time: 4 min; agitation speed: 400 rpm.

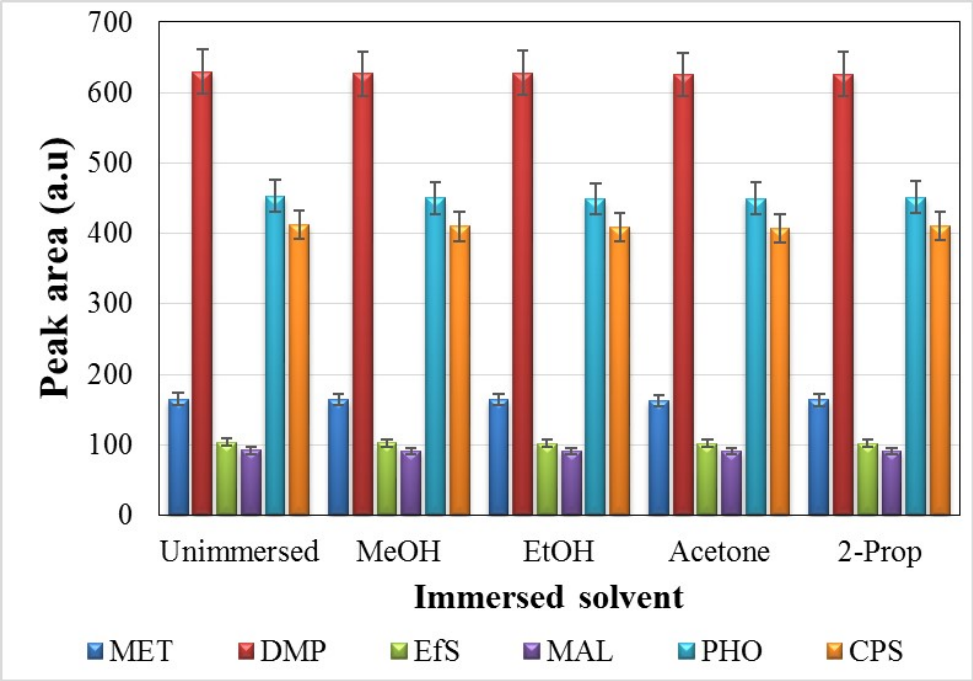

Fig. S4. Solvent stability of PVA/CA/CS/AV composite nanofibers after immersing in different organic solvents for 2 h.

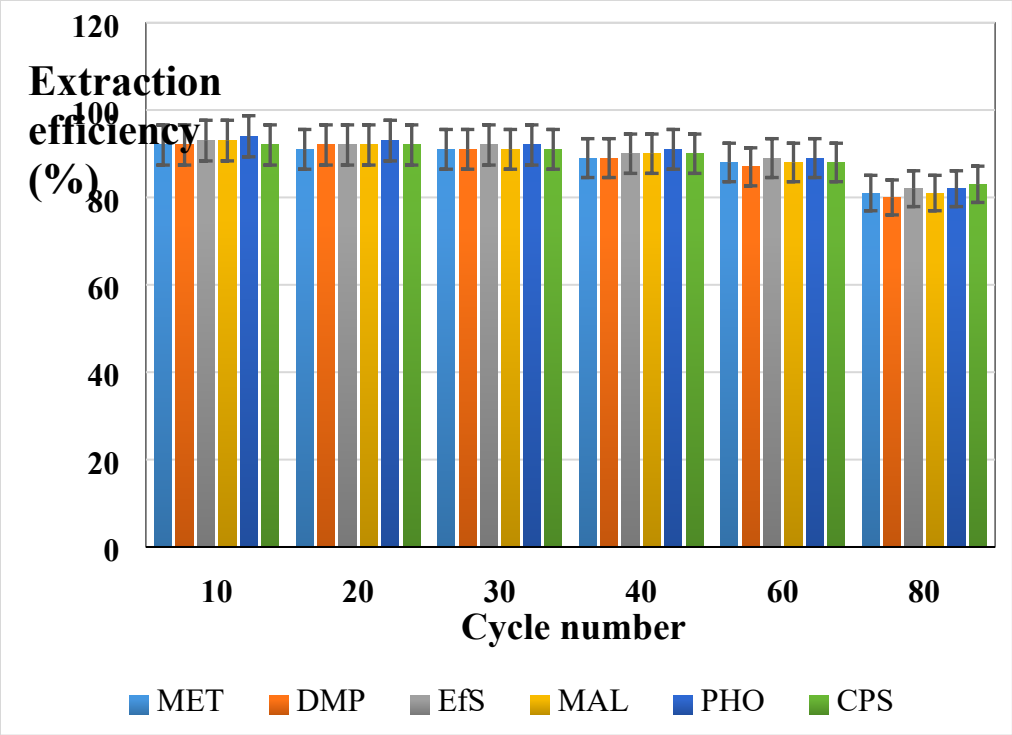

Fig. S5. Reusability of PVA/CA/CS/AV composite nanofibers.

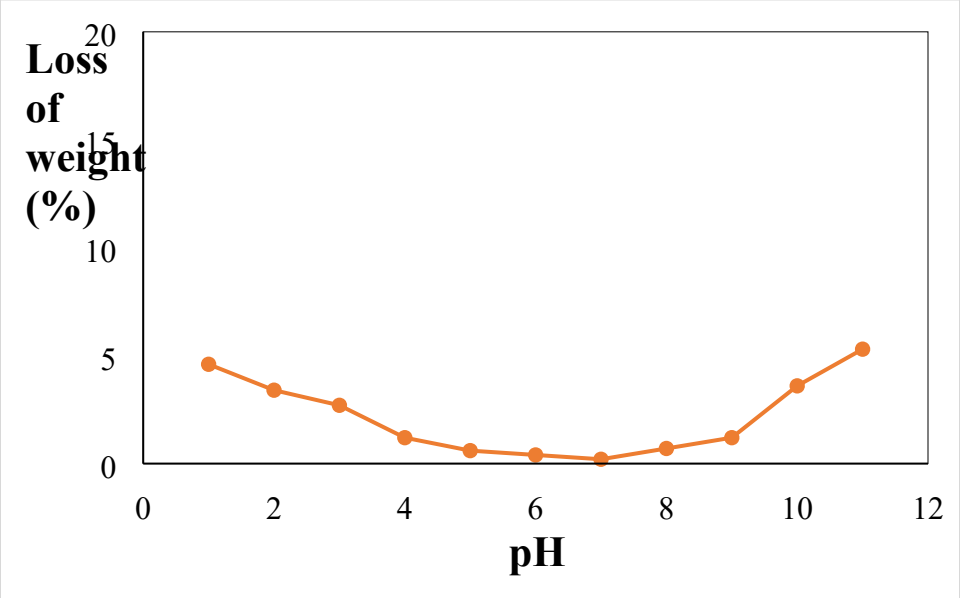

Fig. S6. pH stability of PVA/CA/CS/AV composite nanofibers.

Table S1. Different isotherm models and their parameters.

Isotherm	Equation and parameters	Unit	MET	DMP	EFS	MAL	PHO	CPS
Freundlich	$\text{Log } q_e = m \text{ Log } C_e + \log \alpha$							
	$\log q_e$ vs. $\log C_e$							
	m	-	0.6277	0.6410	0.6600	0.7000	0.4186	0.4357
	α	$L\ mg^{-1}$	7.34	6.95	4.55	4.70	28.39	44.13
	R^2	-	0.9878	0.9851	0.9843	0.9868	0.9868	0.9607
Langmuir	$C_e/q_e = (1/Q_m K_L) + C_e/Q_m$							
	C_e/q_e vs. C_e							
	$Q_{, \text{Equilibrium}}$	$mg\ g^{-1}$	273.0	279.0	213.0	265.0	324.0	301.0
	$Q_{m,cal}$	$mg\ g^{-1}$	384.6	400.0	303.1	416.7	384.6	370.4
	K_L	$L\ mg^{-1}$	0.0067	0.0064	0.0057	0.0049	0.0152	0.0100
	R^2	-	0.9569	0.9514	0.9701	0.9559	0.9746	0.9274
Temkin	$q_e = B_1 \ln K_T + B_1 \ln C_e$							
	q_e vs. $\ln C_e$							
	B_1	$J\ mol^{-1}$	69.00	71.00	54.56	70.79	59.51	56.89
	K_T	$L\ g^{-1}$	0.118	0.114	0.098	0.095	0.451	0.317
	R^2	-	0.9061	0.9037	0.9250	0.9102	0.8820	0.8159

Table S2. Pseudo-first order and pseudo-second-order rate equations and parameters.

Kinetic	Equation and parameters	Unit	MET	DMP	EFS	MAL	PHO	CPS
Pseudo-first order	$\ln(q_e - q_t) = \ln q_e - k_1 t$							
	$\ln (q_e - q_t)$ vs. t							
	k_1	Min^{-1}	0.015	0.014	0.012	0.013	0.012	0.016
	$q_{e\ (calc)}$	$mg\ g^{-1}$	153.2	145.8	119.3	136.2	184.7	172.6
	R^2	-	0.8616	0.8854	0.9849	0.9782	0.9665	0.9763
Pseudo-second order	$t/q_t = 1/k_2 q_e^2 + t/q_e$							
	t/q_t vs. t							
	k_2	$g\ mg^{-1}\ min^{-1}$	0.00124	0.00148	0.00176	0.00159	0.00115	0.00092
	$q_{e\ (calc)}$	$mg\ g^{-1}$	200.0	204.0	149.3	192.3	222.2	227.3
	R^2	-	0.9985	0.9989	0.9960	0.9975	0.9920	0.9893