Supplementary Materials

Hydroxyalkyl amination of agarose gels improves adsorption of bisphenol A and diclofenac from water: Conceivable prospects

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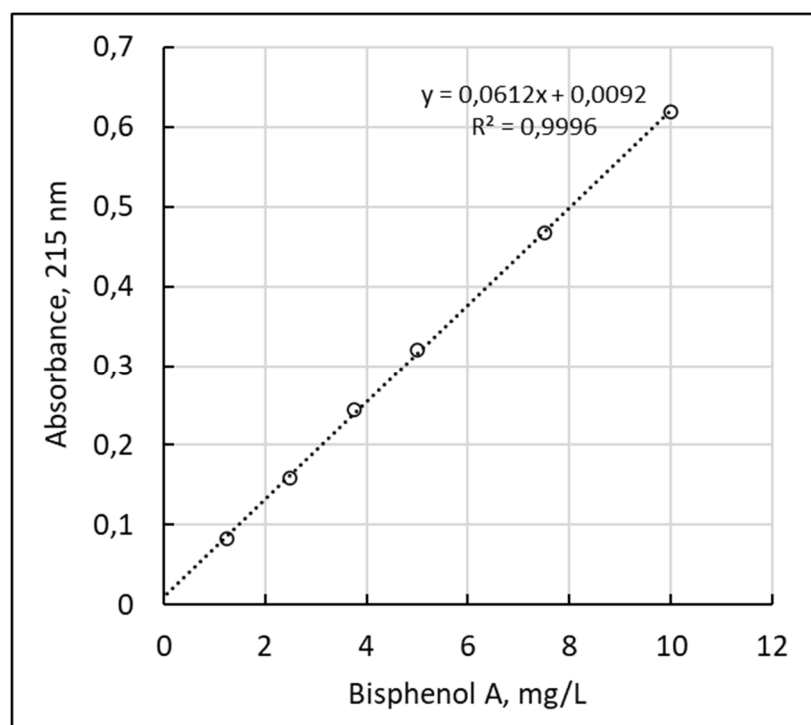**Calibration curves for bisphenol A estimation**

Fig.S1. Linear calibration for estimation of bisphenol A at concentrations below 10 mg/L.

Concentration of bisphenol A in the range from 1 to 10 mg/L was calculated from the linear calibration C_{BP} [mg/L] = (A215 - 0.009)/0.0612 obtained for the pure substance, where A_{215} is absorbance of bisphenol A solution at 215 nm. The concentration of bisphenol A in the 10 to 100 mg/L range was calculated from the linear calibration, C_{BP} [mg/L] = (A_{276} + 0.001)/0.0139, obtained for the pure substance, where A_{276} is the absorbance of bisphenol A solution at λ_{max} = 276 nm.

Since the absorbance of bisphenol A at low concentrations can be reproducibly measured at 215 nm with experimental error of ±0.001, the absorbance of 0.02 can be used for quantifying the substances at 5% relative experimental error. This absorbance corresponds to 0.18 mg/L bisphenol A, which may be considered as a sensitivity limit.

Table S1. Summary output obtained in Excel for the linear regression of Fig.S1

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,999793
R Square	0,999586
Adjusted R Square	0,999483
Standard Error	0,004537
Observations	6

As the standard error of the regression (0,0045) is measured in the units of dependent variable, i.e. the absorbance at 215 nm, the standard error of bisphenol estimation is then 0,0045/0,0612 = 0,073 mg/L.
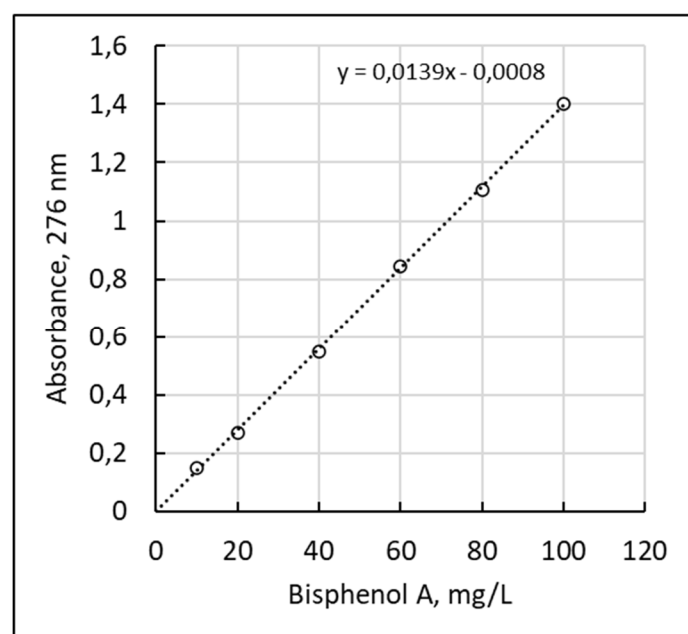

Fig.S2 Linear calibration for estimation of bisphenol A at concentrations above 10 mg/L.
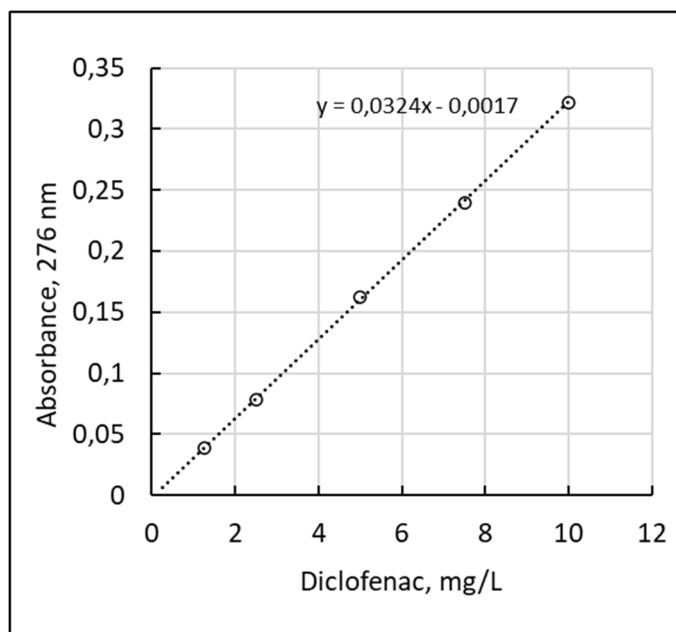
Calibration curve for diclofenac estimation

Fig.S3. Linear calibration for estimation of diclofenac.

The concentration of diclofenac in the effluent was calculated using the equation C_{DCF} (mg/L) = $(A_{276} + 0.002)/0.0324$ found from the linear calibration, see Fig.S2.

Since the absorbance of diclofenac at low concentrations can be reproducibly measured at 276 nm with experimental error of ±0.001, the absorbance of 0.02 can be used for quantifying the substance with 5% relative experimental error. This absorbance corresponds to 0.67 mg/L diclofenac, which may be considered as a sensitivity limit.

Table S2. Summary output obtained in Excel for the linear regression of Fig.S2

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0,999943
R Square	0,999886
Adjusted R Square	0,999848
Standard Error	0,001429
Observations	5

As the standard error of the regression (0,0014) is measured in the units of dependent variable, i.e. the absorbance at 276 nm, the standard error of diclofenac estimation is then 0,0014/0,0324 = 0.043 mg/L.

Table S3. Breakthrough curves of (a) bisphenol A (10 mg/L) obtained on 1 mL-column with TRIS-Zetarose 4FF (Fig.6a): Raw data.

V, mL	bpA	bpA-2
2	0,013	0,014
4	0,014	0,012
6	0,013	0,012
8	0,013	0,013
10	0,011	0,013
12	0,011	0,012
14	0,013	0,014
16	0,016	0,019
18	0,036	0,046
20	0,074	0,111
24	0,179	0,257
28	0,492	0,432
32	0,557	0,537
36	0,593	0,585
40	0,612	0,601
44	0,608	0,61
48	0,609	0,61
52	0,612	0,615
56	0,605	0,615
60	0,581	
64	0,496	
68	0,375	
72	0,262	
76	0,195	
85	0,108	
89	0,063	
93	0,047	
97	0,033	
101	0,03	
105	0,352	
109	0,284	
113	0,219	
117	0,18	
121	0,083	
125	0,012	
129	0,008	
133	0,011	
137	0,009	
141	0,007	

Table S4. Breakthrough curves of diclofenac (10 mg/L) obtained on 1 mL-columns with TRIS-Zetarose 4FF and Zetarose 4FF (Fig.6b): Raw data

V, mL	diclof Tris-Zeta 4FF	Abs 10 mg/L diclof	diclof Zeta4FF
2	0,012	0,319	0,007
6	0,003		0,058
10	0,002		0,299
14	0,009		0,312
16	0,002		0,323
20	0,002		0,324
24	0,002		
28	0,002		
36	0,005		
40	0,004		
50	0,008		
64	0,025		
76	0,068		
80	0,1		
84	0,114		
88	0,115		
92	0,123		
96	0,129		
100	0,135		
104	0,138		
128	0,158		
132	0,161		
136	0,161		
170	0,165		
176	0,177		
182	0,175		
188	0,175		
194	0,177		
200	0,182		
206	0,183		
212	0,181		
218	0,18		
228	0,017		
239	0,01		
251	0,001		
259	0,72		

263	0,085
267	0,04
271	0,022
275	0,062
279	0,037
283	0,021
287	0,011
291	0,001
295	0,001
299	0,001	0,319
303	0,001
307	0,001
311	0,001
321	0,001
331	0,001

Breakthrough curves of acetanilide and resorcinol registered on 1 mL-column with TRIS-Zetarose 4FF.
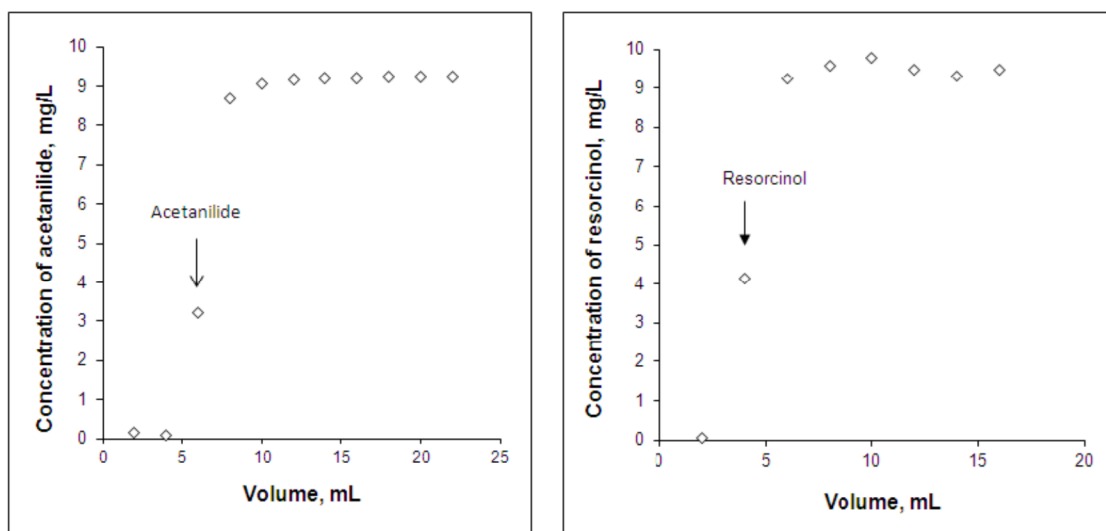

Fig.S4. Breakthrough curves of acetanilide (10 mg/L) and resorcinol (10 mg/L) applied to a 1 mL-column with Mono-Tris-Zetarose, flow rate 0.45 mL/min.