

Electronic Supplementary Information (ESI)

**Microfluidic thread based electroanalytical system for
green chromatographic separations**

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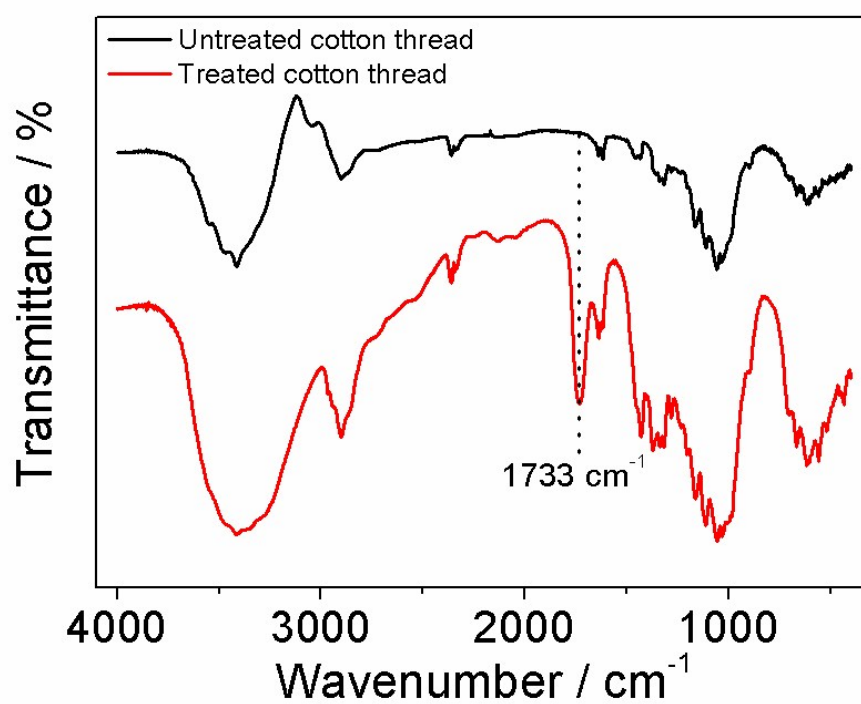


Fig. S1 FTIR spectra of the untreated and treated cotton threads by the citric acid esterification process.

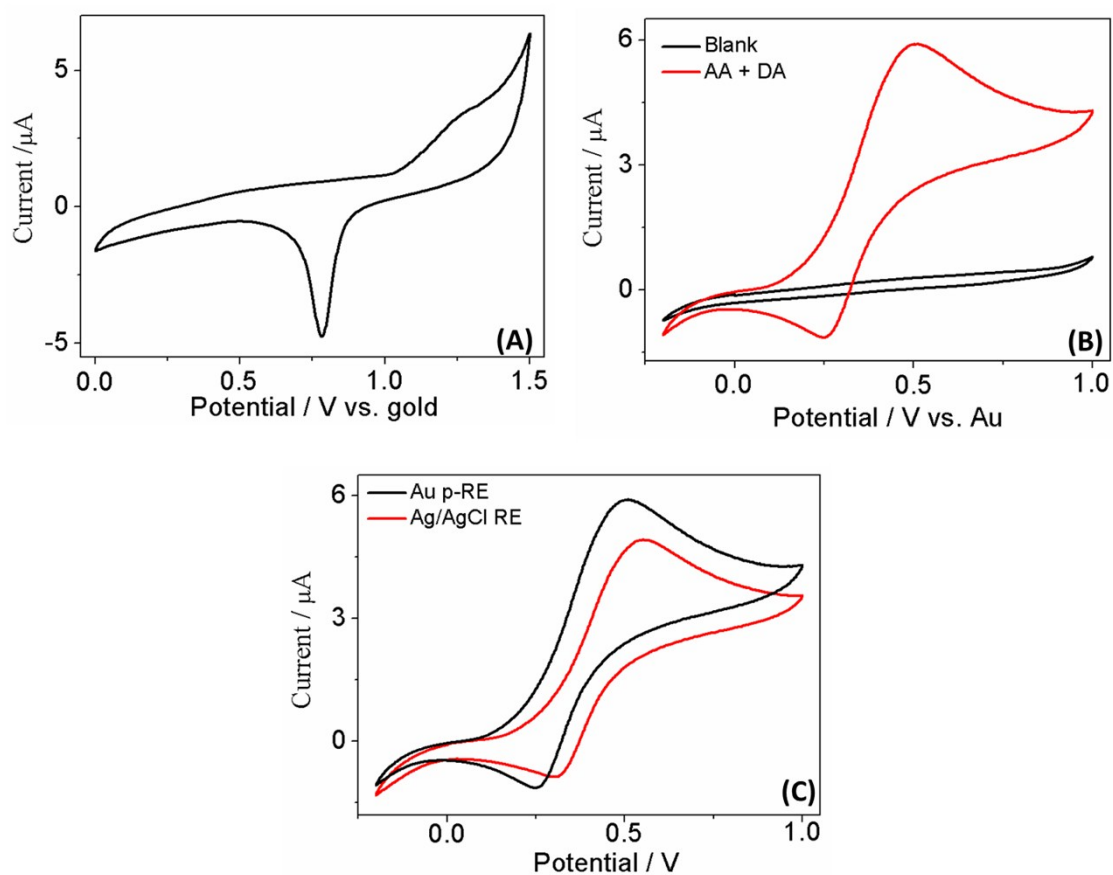


Fig. S2 Typical CVs obtained with the gold electrodes of the proposed microfluidic system in (A) 0.5 M H_2SO_4 , (B) 0.1 M acetate buffer pH 3.8 without (blank) and with 1.0 mM AA + 1.0 mM DA, and (C) 0.1 M acetate buffer pH 3.8 containing 1.0 mM AA + 1.0 mM DA employing the gold pseudo reference electrode and the Ag/AgCl reference electrode. Scan rate: 50 mV s^{-1} .

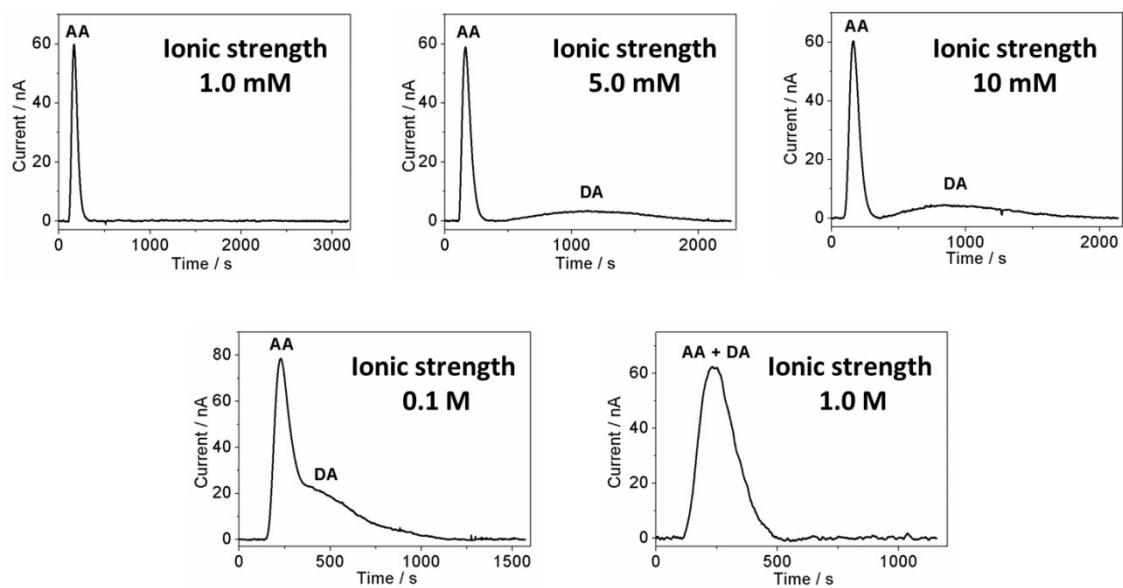


Fig. S3 Effect of ionic strength on the chromatograms obtained with the proposed system for a solution containing 1.0 mM AA + 1.0 mM DA using isocratic elutions of acetate buffer pH 3.8 with ionic strengths between 1.0 mM – 1.0 M as mobile phase. Interval time: 100 ms; applied potential: 0.6 V; injected volume: 1.0 μ L.

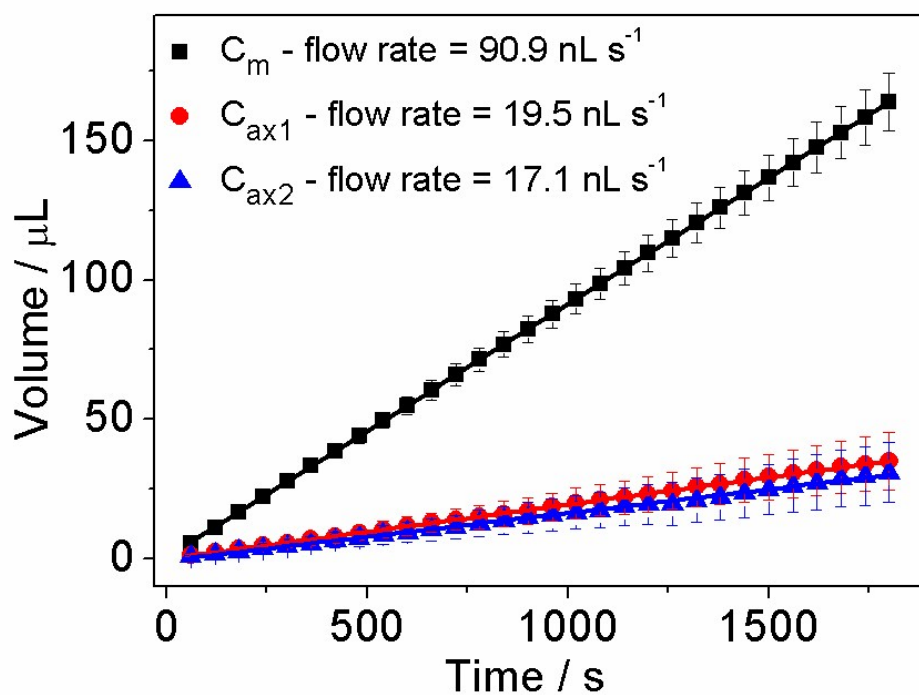


Fig. S4 Relationship between the volume of solution transported in each of the three microchannels of the system (C_m , C_{ax1} and C_{ax2}) as a function of time, and the individual values of the flow rates obtained in the microchannels.

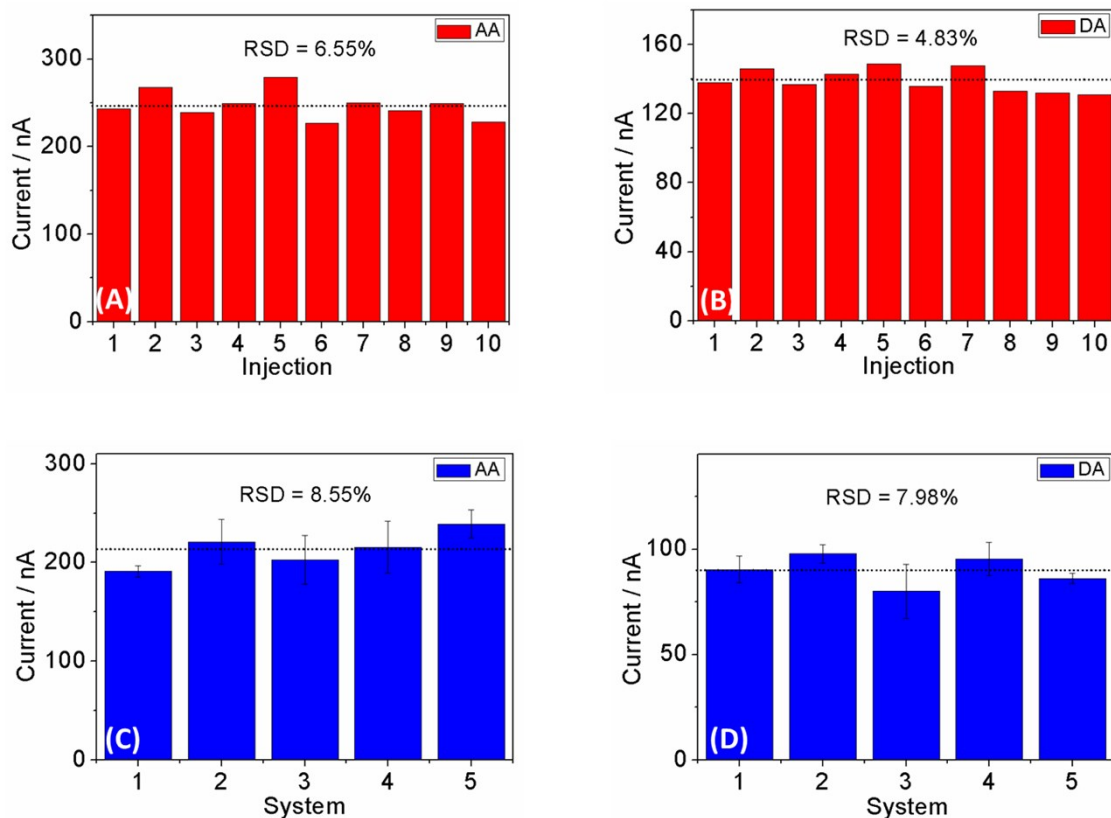


Fig. S5 Current values and relative standard deviation (RSD) obtained in analyses of a mixture of 1.0 mM AA + 1.0 mM DA for (A-B) 10 consecutive injections and for (C-D) 5 different systems. Interval time: 100 ms; applied potential: 0.6 V; injected volume: 2.0 μ L.

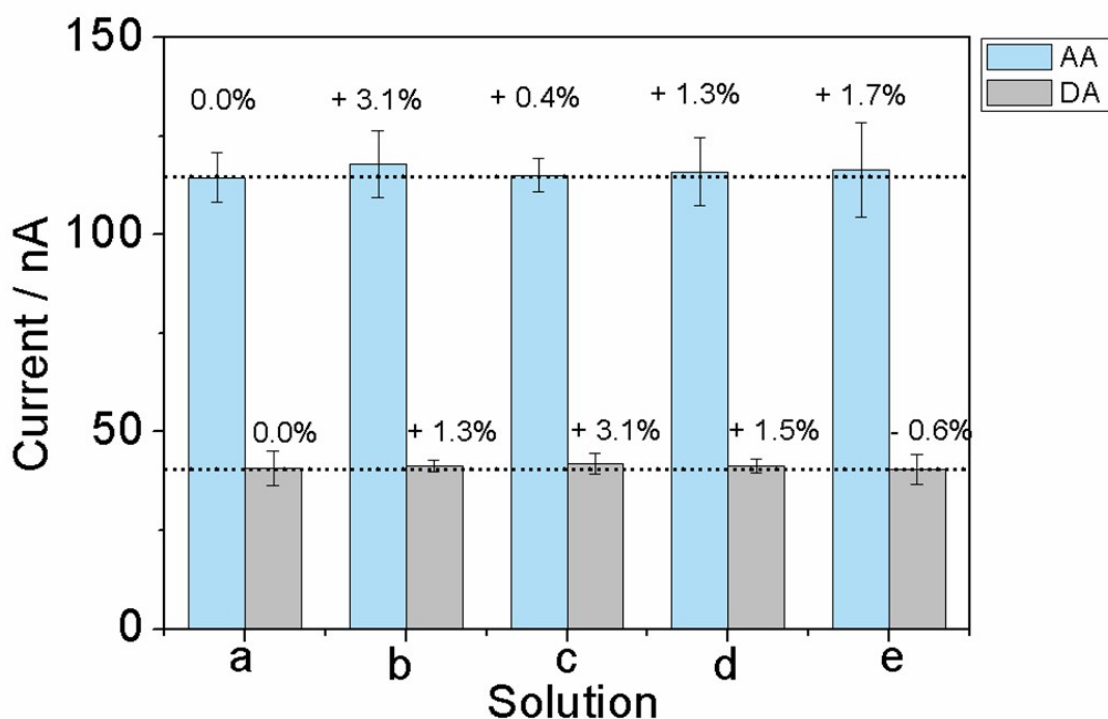


Fig. S6 Variation in the responses obtained with the proposed system for the detection of AA and DA in solutions containing potentially interfering species present in the tear, with the following concentrations: (a) 0.5 mM AA + 0.5 mM DA; (b) 0.5 mM AA + 0.5 mM DA + 0.5 mM glucose; (c) 0.5 mM AA + 0.5 mM DA + 10.0 mM lactate; (d) 0.5 mM AA + 0.5 mM DA + 10.0 mM urea; (e) 0.5 mM AA + 0.5 mM DA + 0.5 mM glucose + 10.0 mM lactate + 10.0 mM urea. Interval time: 100 ms; applied potential: 0.6 V; injected volume: 2.0 μ L.