

Supplementary Information

A New Electrochemical Platform Based on a Polyurethane Composite Electrode Modified with Magnetic Nanoparticles Coated with Molecularly Imprinted Polymer for the Determination of Estradiol Valerate in Different Matrices

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Chromatographic results

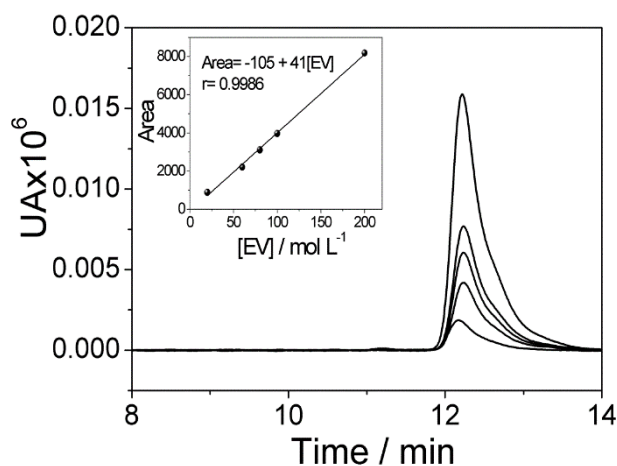


Figure S1. Determination of estradiol valerate by HPLC-UV method, and analytical curve (inset).

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Repeatability studies

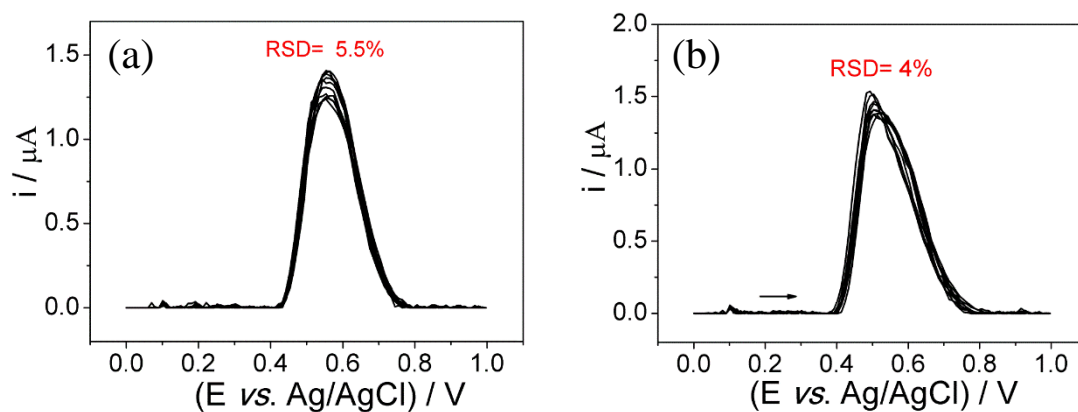


Figure S2. Study of (a) intra and (b) inter-days repeatability of the mag-MIP / GEC sensor in the presence of $5.0 \times 10^{-5} \text{ mol L}^{-1}$ estradiol valerate using 0.1 mol L^{-1} phosphate buffer solution (pH 7.0) and methanol (50:50, v/v). SWV conditions: $f = 10 \text{ Hz}$, $a = 75 \text{ mV}$, $\Delta E_s = 5 \text{ mV}$.

Memory effect

In order to verify the existence of any memory effect in the proposed sensor, an electrochemical experiment by square-wave voltammetry (SWV) was performed using two concentrations of estradiol valerate (C1: $10 \mu\text{mol L}^{-1}$ and C2: $5 \mu\text{mol L}^{-1}$). It can be seen clearly the increase of peak current proportional to the added concentration, indicating no memory effect in measurements.

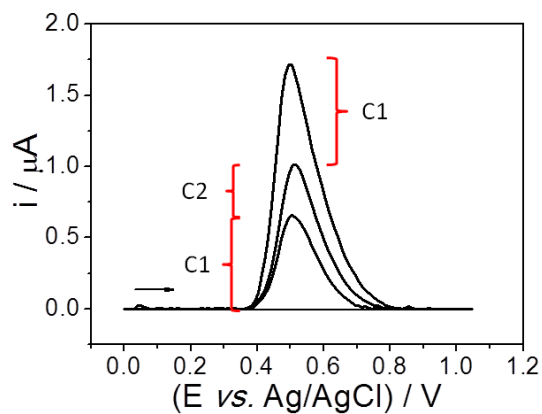


Figure S3. SWV experiments using two different concentrations of estradiol valerate (C1: $10 \mu\text{mol L}^{-1}$ and C2: $5 \mu\text{mol L}^{-1}$).

Sensor response profiles to estradiol valerate in presence of cholesterol and β -estradiol molecules

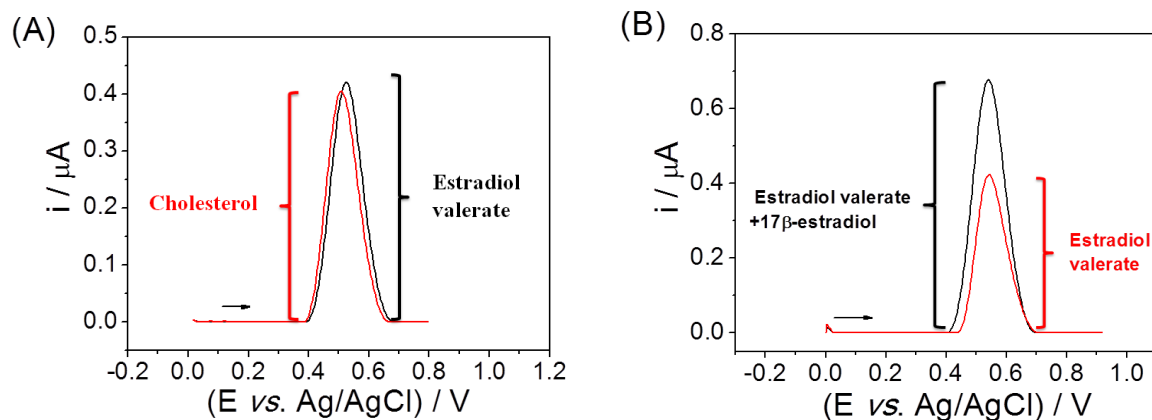


Figure S4. Electrochemical response of $1.0 \times 10^{-5} \text{ mol L}^{-1}$ estradiol valerate in presence of (A) $1.0 \times 10^{-5} \text{ mol L}^{-1}$ cholesterol and (B) $1.0 \times 10^{-5} \text{ mol L}^{-1}$ β -estradiol in the optimized conditions.

Schematic proposed mechanism

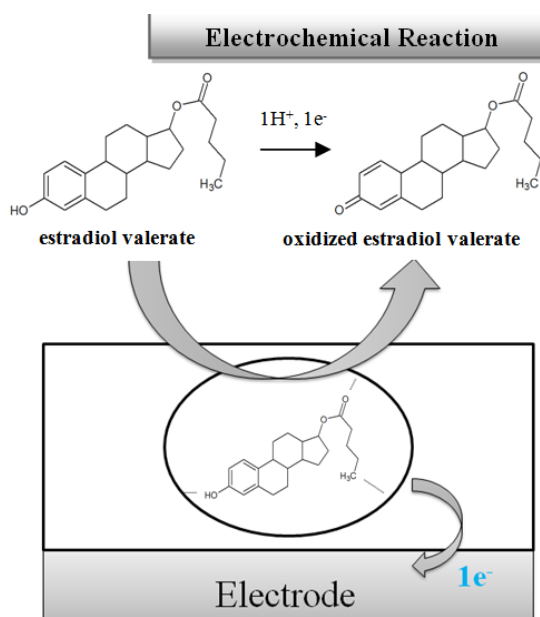


Figure S5. Schematic diagram for a possible mechanism of estradiol valerate with mag-MIP.