Photoelectrochemical Degradation of Pharmaceutical Active Compounds in Multicomponent Solutions with an Sb-Doped SnO_2 Ceramic Anode Coated with $BiPO_4$

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1. Materials and methods

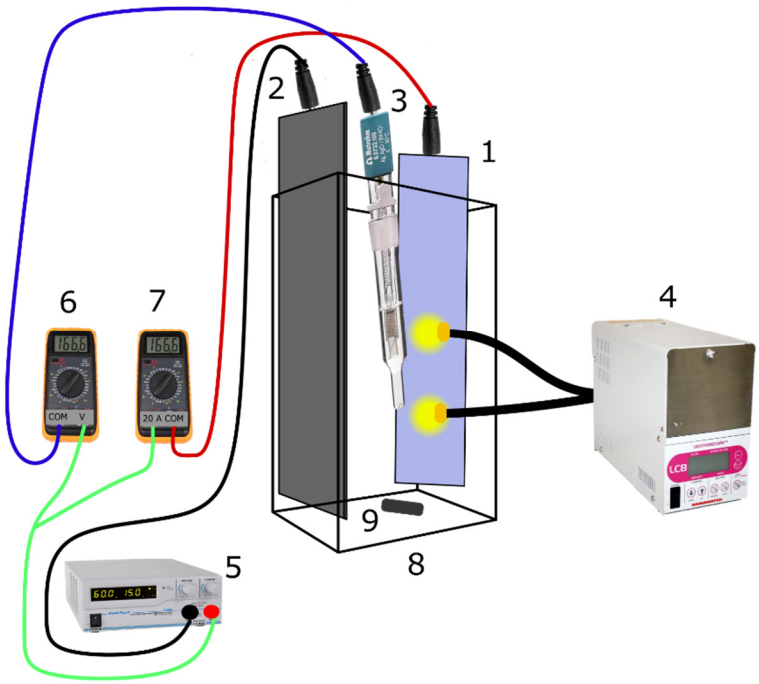


Figure S1. Schematic representation of the experimental setup that consisted of the following electrodes: (1) Sb doped–SnO_2 anode coated with $BiPO_4$ acting as a as a working electrode, (2) a stainless-steel sheet acting as a counter electrode, and (3) an Ag/AgCl (3M KCl) reference electrode. The light source (4) was equipped with a double light beam to increase the illuminated area of the anode. The experiments were performed in galvanostatic mode, and the current was applied using a power supply (5). The current and the electrode potential were measured using an amperemeter (6) and a voltameter (7), respectively. The experiments were performed in a prismatic quartz cell with 200 mL capacity (8). A magnetic stirrer set to 1000 rpm (9) was used to minimize mass transfer limitations.

Table S1. Main properties of the selected contaminants.

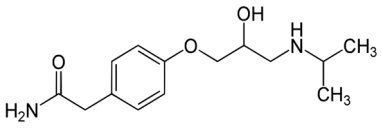
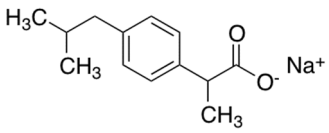
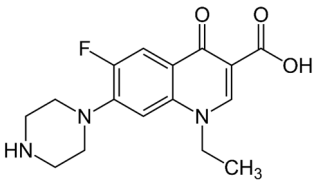
	Formula	Molar weight	Structure
Atenolol	$C_{14}H_{22}N_2O_3$	266.3 g·mol^{-1}	
Ibuprofen	$C_{13}H_{17}NaO_2$	228.3 g·mol^{-1}	
Norfloxacin	$C_{16}H_{18}FN_3O_3$	319.3 g·mol^{-1}	

Table S2. HPLC gradient conditions for the detection of ATL, IBU and NOR.

Time (min)	A (%)	B (%)
0	95.00	5.00
1.00	95.00	5.00
4.00	70.00	30.00
6.00	50.00	50.00
8.00	95.00	5.00
10.00	95.00	5.00
10.10	95.00	5.00
13.00	95.00	5.00

2. Results and discussion

2.1. (Photo)electrochemical oxidation of solutions containing the isolated pharmaceuticals

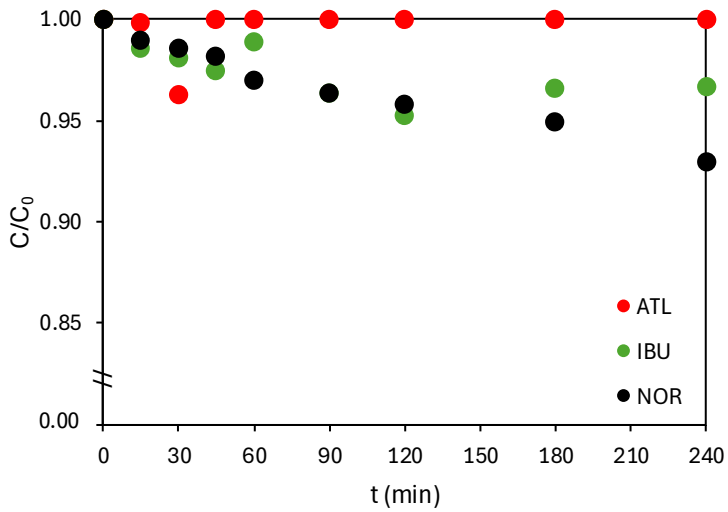


Figure S2. Evolution of the relative concentration in the photolysis experiments for ATL, IBU and NOR. (C_0 = 100 mg·L^{-1} and C_{Na2SO4} = 2 g·L^{-1})

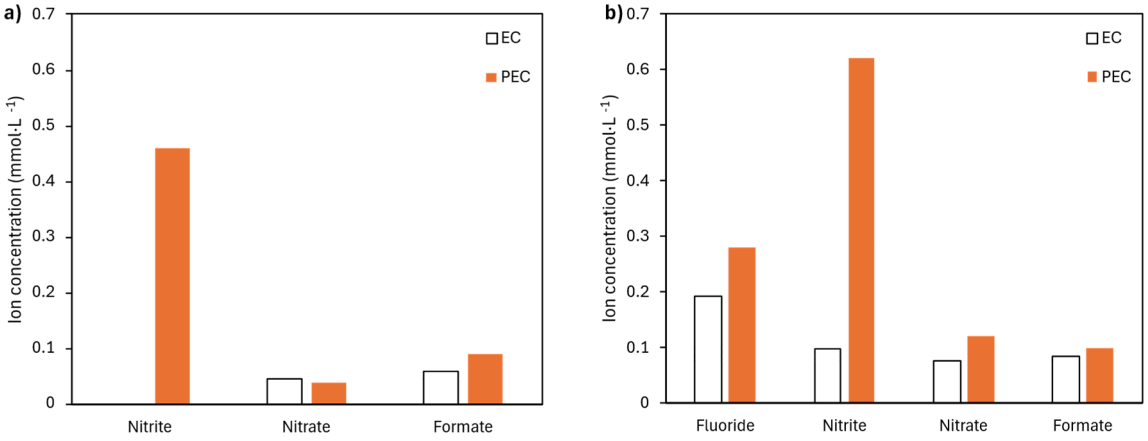


Figure S3. Concentration of ions formed during (a) ATL and (b) NOR degradation in electro (EC) and photoelectrochemical (PEC) experiments. I = 0.2 A, C_0 = 100 mg·L^{-1} and C_{Na2SO4} = 2 g·L^{-1}.

2.2. *(Photo)electrochemical oxidation of the synthetic mixture*

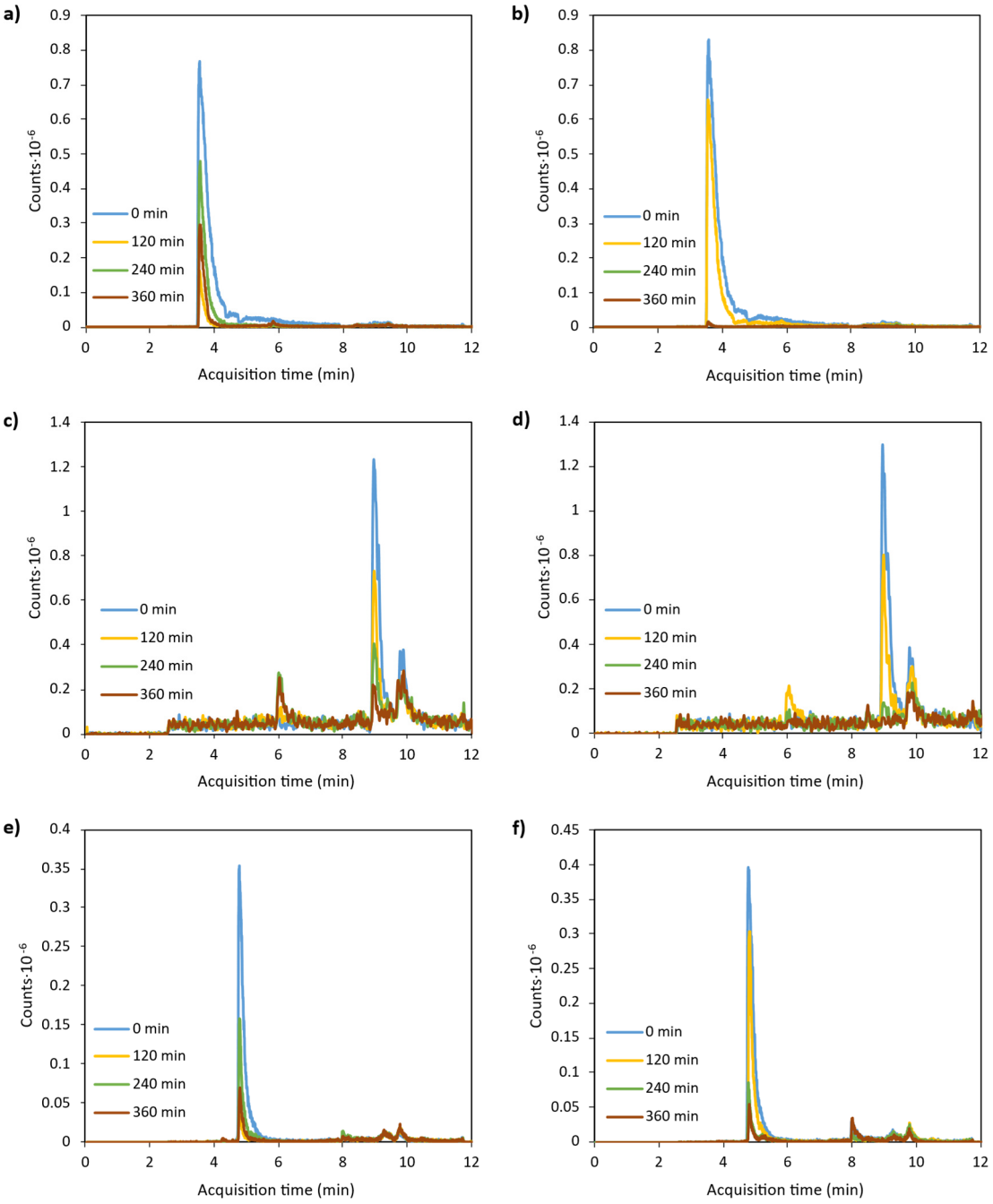


Figure S4. EIC chromatograms for time values of 0, 120, 240 and 360 min for ATL in the absence (a) and in the presence (b) of light. Figures (c) and (d) correspond to the same representations for IBU, and (e) and (f) for NOR. I=0.2 A, $C_{ATL} = C_{IBU} = C_{NOR} = 20$ mg·L^{-1} and $C_{Na2SO4} = 2.8$ g·L^{-1}.

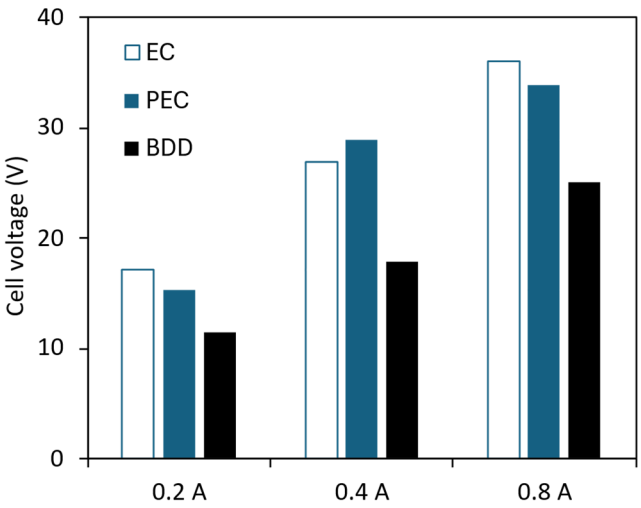


Figure S5. Average cell voltage for the electro (EC), photoelectrochemical (PEC) experiments and for the BDD anode at 0.2, 0.4 and 0.8 A. $C_{ATL} = C_{IBU} = C_{NOR} = 20$ mg·L^{-1} and $C_{Na2SO4} = 2.8$ g·L^{-1}.