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IV Reunião Bienal da Sociedade  
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**ANAIS DA IV REUNIÃO  
BIENAL DA SOCIEDADE  
BRASILEIRA DE  
ELETROQUÍMICA E  
ELETROANALÍTICA**

24 E 25 DE OUTUBRO DE 2024

ORGANIZAÇÃO:



## Combined process of adsorption, desorption and electrochemical oxidation of antibiotics in ethanol medium

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Wastewater treatment is crucial due to increasing environmental pollution from pharmaceuticals, that threaten water resources. Electrochemical oxidation is a viable method for removing these pollutants but struggles with low-concentration media due to diffusion challenges, necessitating pre-concentration [1,2]. This study examines tetracycline (TeC) degradation through electro-oxidation using a commercial mixed oxide electrode (MMO). It involves an initial pre-concentration step with activated carbon adsorption, followed by desorption in ethanol. Adsorption isotherms for two carbon types showed a better fit to the Freundlich model, Fig. 1a e b, with maximum adsorption capacities of 186.10 mg/g, Fig. 1d, for CAG-Synth carbon and 226.65 mg/g, Fig. 1c. for filter-carbon. In the ethanol desorption process, TeC concentration increased after 50 minutes. Electro-oxidation of TeC achieved high removal rates of 87.57% in water and 84.48% in ethanol after 6 hours of electrolysis. This confirms the effectiveness of activated carbon pre-concentration and electro-oxidation in alcoholic media, suggesting a promising wastewater treatment strategy that could be enhanced by combining with photolysis.

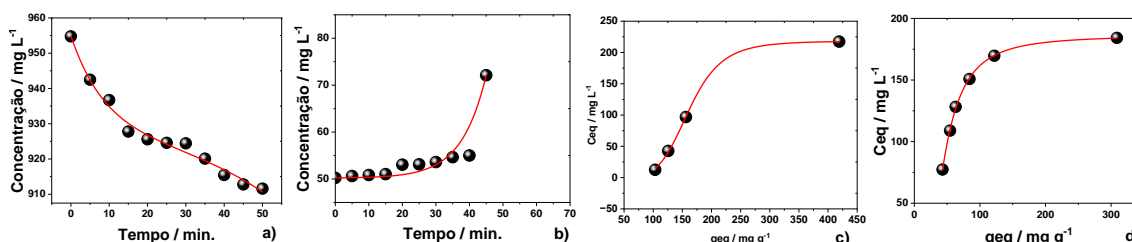


Fig 1. a) Adsorption test for TeC in water and b) Desorption of TeC using ethanol c) Freundlich isotherm for filter carbon d) Freundlich isotherm for CAG-Synth

### Acknowledgments:

CNPq (2023-2096; 310027/2018-7), FAPESP (2022/04561-6;2022/15337-0).

### References:

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