

## Differential Pulse Voltammetry Determination of Anti-Hypertensive Drug Hydrochlorothiazide in Pharmaceuticals Using Glassy-Carbon Electrode Modified by Electropolymerization with L- and D- Glutamic Acids

Camilo González-Vargas<sup>1</sup>, Camilo García<sup>2</sup>, Freddy Celis<sup>3</sup>, Ricardo Salazar<sup>1,\*</sup>

<sup>1</sup> Laboratorio de electroquímica del Medio Ambiente, Departamento de Química de los Materiales, Facultad de Química y Biología, Universidad de Santiago de Chile, USACH, Casilla 40, Correo 33, Santiago, Chile.

<sup>2</sup> Facultad de Recursos Naturales, Escuela de Ciencias Ambientales. Universidad Católica de Temuco. Temuco, Chile.

<sup>3</sup> Centro de estudios avanzados y Departamento de química, Facultad de Ciencias Naturales y Exactas, Universidad de Playa Ancha, Calle Traslaviña 450, Viña del Mar, Chile

\*E-mail: [ricardo.salazar@usach.cl](mailto:ricardo.salazar@usach.cl)

doi: 10.20964/2018.02.10

Received: 26 June 2017 / Accepted: 24 November 2017 / Published: 28 December 2017

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A simple and sensitive electrochemical sensor based on glassy carbon electrode modified by electropolymerization with both poly-glutamic acid enantiomers L- and D (GC-PGA) was developed to detect the anti-hypertensive drug hydrochlorothiazide (6-chloro-3,4-di-hydro-2H-1, 2,4-benzothiazine-7-sulfonamide-1,1 dioxide, HCTZ) in pharmaceuticals samples. Raman spectroscopy and electrochemical impedance spectroscopy were carried out to characterize L-PGA and D-PGA film. These procedures confirm the production of a polymer through an amide bond and the formation of a film resistant to charge transference in both cases. Also, an increase in the oxidation peak current for HCTZ in Buffer Britton Robinson solution 0,1 M pH 2 was obtained using the modified electrodes. With GC/D-PGA and GC/L-PGA, the peak current increased 2 times compared to unmodified GC, when using differential pulse voltammetry. A novel electroanalytical method for the determination of HCTZ was developed with both modified electrodes, showing a less limit of determination: 0.03186 and 0.01829 mM to GC/L-PGA and GC/D-PGA, respectively, and a less limit of quantification with respect to the GC electrode. The methodology developed was applied in the determination of HCTZ from pharmaceutical forms.

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**Keywords:** Glutamic Acid, Hydrochlorothiazide, electropolymerization, differential pulse voltammetry, glassy carbon electrode.

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