Evaluation of Chemotherapy Drugs Carboplatin and Temozolamide in Pharmaceutical Formulations and Biosamples via Capillary Zone Electrophoresis Approach

Nawal A. Alarfaj, Maha F. El-Tohamy^{†,*}

Department of Chemistry, College of Science, King Saud University, P.O. Box 22452, Riyadh 11495, Saudi Arabia nalarfaj@hotmail.com, star2000star@gmail.com

[†]Permanent address: General Administrative of Medical Affairs, Zagazig University, Egypt

^{*}E-mail: star2000star@gmail.com

doi: 10.20964/2018.05.55

Received: 15 January 2018 / Accepted: 13 March 2018 / Published: 10 April 2018

A simultaneous separation process of two anticancer drugs carboplatin and temozolamide in their binary mixture using capillary zone electrophoresis method has been introduced in this study. Under full optimized conditions a fused silica capillary was used to carry out the electrophoretic separation using a background electrolyte 50 mmol L⁻¹ acetate buffer of pH = 3.6 which was run at potential 20 kV, hydrodynamic injection 8 s and 60 mbar pressure. The capillary cartridge temperature was adjusted at 30°C and a diode array detector was utilized to record the separation peaks in the presence of internal standard phenylethylamine solution at 330 nm. Excellent electrophoretic separation was achieved over linear concentration ranges of 10-240 and 5-100 µg mL⁻¹ with correlation coefficients of 0.9996 and 0.9993 for carboplatin and temozolamide, respectively. The obtained detection and quantification limits were found to be 2.5 and 7.4 µg mL⁻¹ for carboplatin, while, for temozolamide were found to be 1.3 and 4.3 µg mL⁻¹. This analytical approach was validated and the results were compared with those reported by other reported methods.

Keywords: Capillary zone electrophoresis; Carboplatin; Temozolamide; Chemotherapy; Pharmaceutical formulations; Biological fluids

[FULL TEXT](#)

© 2018 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).