12th World Congress on Analytical & Bioanalytical Techniques

September 19, 2022 | Webinar

Speaker

ISSN: 2155-9872
Volume-13
Journal of Analytical & Bioanalytical Techniques
https://www.omicsonline.org/archive-analytical-bioanalytical-techniques-open-access.php

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https://analyticaltechniques.annualcongress.com/2022

Title: Wearable biosensor for glucose monitoring in real samples

Mohammad Mehmandoust
Ankara University, Turkey

Received: May 16, 2022; Accepted: May 17, 2022; Published: December 30, 2022

A flexible glove-based electrochemical biosensor with a highly flexible printed electrode system has been created as a wearable point-of-use screening tool for military and food security applications. I describe a wearable glove-based biosensor that detects glucose electrochemically on patients' fingers. The glove-based sensor comprises flexible screen-printed carbon electrodes that have been enhanced with 1T-MoS2 nanosheets. Using differential pulse voltammetry, the sensor detects direct glucose oxidation in real samples with a low detection limit of 150.0 µM. Wireless data transfer from the "Lab-on-a-Glove" sensors and a portable electrochemical analyzer to a smartphone or tablet for further examination in real samples is provided by the "Lab-on-a-Glove" sensors and a portable electrochemical analyzer. The integrated sampling and sensing methodology on the thumb and index fingers allows for rapid glucose screening in the presence of interferent agents and holds great promise for timely point-of-need screening for first responders. This glove-based "swipe, scan, sense, and alarm" technique puts chemical analytics at the user's fingers and opens new avenues for identifying misused chemicals in emergencies.

Biography

I completed a bachelor's degree in 2018 years from Hakim Sabzevari University. I have published 19 papers in scientific journals, and I also am a reviewr of several journals. Now I am doing a Master in Analytical Chemistry, at Ankara University, Turkey.

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Title: Development and validation of a high-performance liquid chromatography assay for posaconazole nanoparticles

Anderson de Jesus Gomes, Fernanda Lima Subrinho and Claure Nain Lunardi

University of Brasilia, Brazil

Received: March 26, 2022; Accepted: March 17, 2022; Published: December 30, 2022

The development and optimization of a poly (D, Llactide-co-glycolide) (PLGA) polymer encapsulating the weakly watery antifungal pharmaceutical posaconazole (PSZ) to develop a formulation for the treatment of fungal diseases. An emulsification procedure for oil / water (o / w) was used to make PLGA nanoparticles loaded with posaconazole. Different analytical approaches were used to characterize the optimal formulation of PLGA nanoparticles loaded with PSZ. The average particle size and size distribution, as well as the surface zeta potential, were determined using laser light scattering. The current study devised a high-performance liquid chromatographic (HPLC) method for determining PSZ in nanoparticles and drug release profiles. The inclusion of nanoparticle components had no effect on the outcomes of the analysis. With a relative standard deviation (RSD) of less than 3%, the method demonstrated appropriate precision. When a standard pharmaceutical was added to the mix, the accuracy was tested, and satisfactory recovery values were obtained for all the drug concentrations employed. The HPLC method established in this study had good precision and accuracy, as well as specificity and selectivity in the operating range. In vitro drug release was biphasic, with an early burst followed by a gradual and persistent release lasting up to 15 days. The analytical process is dependable and provides benefits in terms of speed and reagent cost. PSZ could be released for a long time using the newly designed optimal formulation nanoparticles. FAPDF, CNPq, FINATEC and CAPES supported this project.

Biography

Anderson de Jesus Gomes is a was born in Araguari, Minas Gerais, Brazil. He received the B.S. degree in Chemistry from the Federal University of Uberlândia (UFU), Uberlândia, Minas Gerais, Brazil, in 1995, and the MSc. and Ph.D. degrees in Chemistry from the University of São Paulo (USP) Ribeirão Preto, São Paulo, Brazil, in 1998 and 2003, respectively. In 2005 he held his first post-doctorate at UFU evaluating the cytotoxic and phototoxic action of psoralen derivatives on melanoma tumor cells when encapsulated in polymeric nanoparticles. Between 2006 and 2008 he held his second post-doctorate at USP performing the synthesis of ruthenium nitrosyl complexes for the controlled release of nitric oxide (NO) and in a later work he developed methods for the encapsulation of such complexes in several types of matrices evaluating its action on tumor cells. Between 2013 and 2014 he worked as a visiting professor in the Department of Biomedical Engineering at Columbia University in NY USA, producing delivery systems with theranostics characteristics for the evaluation of drug biodistribution in vivo. In 2008, he joined the University of Brasília, as an Assistant Professor, and in 2015 became an Associated Professor. His current research interests include production and optimization of drug delivery systems, production of theranostics systems, synthesis of bioinorganic molecules, and photodegradation of drugs and environmental waste.

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Title: Adsorption of cationic dye-neutral red on the graphene oxide nanocomposites

Claure Nain Lunardi, Vítor Fernando da Silveira e Silva, Caio Alves de Oliveira Lino and Anderson de Jesus Gomes

University of Brasilia, Brazil

Received: March 26, 2022; Accepted: March 17, 2022; Published: December 30, 2022

The cancer treatment is still limited by barriers created by genetic changes such as mutations and gene polymorphisms. Such changes in certain malignant tissues render standard treatments of chemotherapy and radiation ineffective. It is also known that, in addition to the inconveniences caused by the surgical alternative, those methods have unintended consequences, such as non-specific distribution of antitumor drugs, cytotoxicity problems for healthy cells, development of multiple drug resistance, and standard antitumor drugs have immunosuppressive and cytotoxic properties, which can also damage cells normal, healthy cells. However, if the therapeutic drugs are directed at the sick spot, the side effects can be reduced. As a result, the option of exploring graphene oxide since a carrier and analyzing its properties, as it is a material of tremendous physicochemical potential, with new qualities, as well as the photo sensitizer and other additions, is being considered. The calibration curve of absorbance vs wavelength was used to create overlay graphs. The GraphPad Prism 8 program was utilized for the separated dye, the dye alone (neutral red=NR), the titrations, and the time variation, allowing us to determine the standard curves corresponding to concentration x absorbance and time x absorbance using the same software. The Hildebrand approach was found to be the mathematical solution that best suited the behavior of the titration curve with NO2- in both cases. As a result, it can be used to compare association constants (K). As a result of the exploratory practices, it was possible to conduct a comparative analysis of the binding of NR with nitrite in the presence and absence of graphene oxide, concluding through the variation of K and graph visualization that the presence of graphene oxide has no effect on the dye's association with the additive NO2- . FAPDF, CNPq, FINATEC and CAPES supported this project.

Biography

Claure Nain Lunardi is an associated professor in organic chemistry, enthusiast researcher leading undergraduate and graduate students in chemistry, nanomaterials, and photochemistry at University of Brasília since 2008. She obtained her Chemistry BSc. (1996), followed by her Chemistry Master and Ph.D. from University of São Paulo (USP-RP) on the synthesis and photochemistry of phthalocyanines for photodynamic therapy (2004). She completed a postdoctoral fellowship at Pharmacy School at USPRP (2008) in general pharmacology focused on nitric oxide donors. Claure was a visiting researcher at Columbia University (2013-2014) at Biomedical Engineering. Her work has been published in Materials Science and Engineering C, Nitric Oxide - Biology and Chemistry, Vascular Pharmacology and Canadian Journal of Chemical Engineering. Her current research interest lies in graphene, gold nanoparticles-based nanomaterials such as photocatalysis and drug delivery systems.