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Double-dip approach: Simultaneous acquisition of the dissolution curves of two active ingredients in a binary pharmaceutical dosage form exploiting the opportunities offered by ion selective electrodes

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Acquisition of the dissolution profiles of more than single active ingredient in a multi-component pharmaceutical formulation is dominated by utilization of the off-line spectroscopic and chromatographic methods. In this approach, a double-dip green analytical chemistry (GAC) approach with the goal of advancing the in-line potentiometric sensors to their most effective use for simultaneous acquisition of the dissolution curves of two active ingredients in a binary pharmaceutical dosage form, Brufen Flu is adopted. For the proof of concept, two sensitive and selective sensors were developed for the simultaneous determination of the cationic pseudoephedrine (PSE) and the anionic ibuprofen (IBU) drugs to monitor their dissolution profiles without sample pretreatment or derivatization. For the determination of the cationic drug (PSE), sensor I was developed using potassium tetrakis (4-chlorophenyl) borate (KTCPB) as a cationic exchanger, while sensor II was developed for the determination of the anionic IBU using tridodecyl methyl ammonium chloride (TDC) as an anionic exchanger using 2-nitrophenyl octyl ether (2-NPOE) as a plasticizer for both used sensors. The use of these novel sensors not only provides a way for the determination of PSE and IBU in bulk powder, in laboratory mixtures and in combined dosage form but also, permits simultaneous in-line monitoring of their dissolution profiles. The advantages of the newly introduced double-dip approach are highlighted and the merits of these benign real-time analyzers (ISEs) that can deliver equivalent analytical results as HPLC and UV-spectrophotometry, while significantly reducing solvent consumption/waste generation in addition to the manipulation steps are described.

Biography

Dina A Ahmed has completed her Master's degree in Pharmaceutical Sciences on September 2015 from Ain Shams University and has been enrolled on May 2016 for the PhD degree and still registered for this degree. Currently, she is working as an Assistant Lecturer at Faculty of Pharmaceutical Sciences and Pharmaceutical Industries at Future University in Egypt, Cairo, Egypt. She has participated in many local and international conferences: Third FUE International Conference of Pharmaceutical Sciences (February 9-11, 2015, Cairo, Egypt); 2nd Annual International Conference on Pharmaceutical Sciences (May 4-7, 2015, Athens, Greece); 4th FUE International Conference of Pharmaceutical Sciences (31 January-2 February 2017, Cairo, Egypt) and 8th International Scientific Conference (March 2-3, 2017, Cairo, Egypt).

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