Double-Dip Approach: Simultaneous Dissolution Profiling of Pseudoephedrine and Ibuprofen in a Combined Dosage Form by Ion Selective Electrodes

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Abstract

Attainment of the dissolution silhouettes of active ingredients in a pharmaceutical formulation containing multiple components is governed by off-line multistep chromatographic and spectroscopic methods. In this work, ñDouble-Dipò green analytical chemistry (GAC) approach with the eventual aim of progressing in-line potentiometric sensors for simultaneous attainment of the dissolution curves of dual active ingredients in a binary pharmaceutical dosage form is adopted. For the proof of concept, two selective and sensitive sensors were elaborated for the simultaneous detection of the cationic Pseudoephedrine (PSE) and the anionic Ibuprofen (IBU) drugs as well as monitoring their dissolution silhouettes. For detecting the cationic drug (PSE), PSE sensor was elaborated by the usage of potassium tetrakis (4-chlorophenyl)borate (KTCPB) being a cationic exchanger, while IBU sensor was established for detecting the anionic IBU using tridodecylmethyl ammonium chloride (TDC) being an anionic exchanger and 2-nitrophenyl-octyl-ether (2-NPOE) as a plasticizer for both sensors. Developing these novel sensors permits PSE and IBU's detection in bulk powder, in laboratory combinations and in complex dosage form and also their simultaneous in-line monitoring of their dissolution profiles. The benefits of the newly introduced ñDouble-Dipò approach are emphasized with a notably curtailing in solvent consumption and waste generation

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