Polymeric Matrix Membrane Sensors for Stability Indicating Potentiometric Determination of Bambuterol Hydrochloride and Its Metabolite Terbutaline

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Abstract

The construction and electrochemical response characteristics of polyvinyl chloride (PVC) membrane sensors for determination of bambuterol hydrochloride (BH) in presence of its degradation products are described. The sensors are based on the ion association complexes of BH cation with sodium tetraphenyl borate (BH-TPB) [sensor 1] or ammonium reineckate (BHRNC) [sensor 2] counter anions as ion exchange sites in PVC matrix. Fast and stable Nernstian responses in the range 10-5 -10-2 M for BH over the pH range 5–8 revealed the performance characteristics of these electrodes, which were evaluated according to International Union of Pure and Applied Chemistry recommendations. The two proposed sensors are used for determination of BH, in pure form, in presence of its degradation product and in pharmaceutical formulations. Validation of the method according to the quality assurance standards showed suitability of the proposed electrodes for use in the quality control assessment of BH. The recoveries for determination of BH by the two proposed selective electrodes were 100.07 ± 1.008, 99.93 ± 0.920, for sensor 1 and sensor 2, respectively. Statistical comparison between the results obtained by this method and the official non-a method of BH was done, and no significant difference was found.

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