Membrane Sensors for The Selective Determination of Terazosin, Hydrochloride Dihydrate in Presence of Its Degradation Product

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Abstract

The construction and electrochemical response characteristics of polyvinyl chloride (PVC) membrane sensors for determination of terazosin hydrochloride dihydrate (THD) in presence of its degradation product are described. The sensors are based on the ion association complexes of THD cation with sodium tetraphenyl borate (THD-TPB) [sensor 1] or ammonium reineckate (THD-RNC) [sensor 2] counter anions as ion exchange sites in PVC matrix. The performance characteristics, sensitivity and selectivity of these electrodes in presence of THD alkaline degradation product were evaluated according to IUPAC recommendations. It reveals a fast, stable and linear response for THD over the concentration range 10-5-10-2 M with cationic slopes of -30.90and -31.16 mV per concentration decade with sensors 1 and 2, respectively. These sensors exhibit fast response time (15-30sec), low quantitation limit (5.6x10-6 and 5.2x10-6M, respectively), and good stability (30-45 days). The direct potentiometric determination of THD using the proposed sensors gave average recoveries of 100.03±1.052 and 99.97±0.927 for sensor 1 and sensor 2, respectively. The sensors are used for determination of THD, in pure form, in presence of its degradation product and in tablets. Validation of the method shows suitability of the proposed sensors for use in the quality control assessment of THD and for routine analysis as stability indicating method. The developed method was found to be simple, accurate and precise when compared with a reference HPLC method.

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