Physicochemical Investigation of Some Antidiabetic Compounds

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Physicochemical Investigation of Some Antidiabetic Compounds

Abstract

Simple and rapid potentiometric, voltammetric and chromatographic methods for the determination of some noninsulinic drugs; namely, rosiglitazone, pioglitazone, glimepiride and glyburide, in their pure standards and as pharmaceutical dosage were studied. The fundamental optimum conditions of each method were investigated. The tested antidiabetic drugs could be determined potentiometrically in the concentration range 10^{-2}-10^{-6} M with reasonable life span at carbon paste and polyvinyl chloride membrane electrodes as sensitive sensors. Also a well defined irreversible and diffusion controlled anodic beak was obtained for each of the tested drugs using the voltammetric technique. The carbon paste discs and glassy carbon electrodes show linear response in the concentration range (10^{-3}-3.5x 10^{-6} M) in the differential pulse voltammetry. Also, the developed HPLC methods were efficiently isocratically separated the tested drugs on Agilant octadecyl silica C_{18} 15 cm column at a flow rate of 1.5 mL/min, and 25°C. The detection wavelength was 215 nm for rosiglitazone and 280 nm for pioglitazone, glimepiride and glyburide. Good calibration curves were obtained in the concentration range (10^{-3}-10^{-6} M). The results of these investigations were compared with those of the reference HPLC method. The investigated methods were fairly good and compared to the reference method.

Key words: noninsulinic drugs; carbon paste; glassy carbon; PVC, HPLC.

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