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Determination of some nitroaromatic compounds and some related pharmaceutical compounds using flow injection-chemiluminescence method

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A rapid flow injection-chemiluminescence (FI-CL) method was used for determination of 4-nitrophenol and some nitroaromatic compounds. These compounds, which have electron-donating group on the ortho and para positions, undergo on-line reduction using a minicolumn of zinc reductor in acidic medium to their corresponding aminophenols. The produced aminophenols were reacted with permanganate ion and polyphosphoric acid in the presence of dimethyl sulfoxide as enhancer for the produced CL. The method extended to include some related nitroaromatic compounds of pharmacological interest with similar structural formations representative such as metronidazole, furazolidone, nitrofurantoin and nitrazepam. Under the optimum conditions, calibration graphs were obtained in the concentration ranges (0.020-1.50 and 2.00-8.00) µg/ml for 4-nitrophenol, 0.50-14.0 µg/ml for metronidazole, 0.50-100.0 µg/ml for furazolidone, 0.50-60.0 µg/ml for nitrazepam and 3.0-35.0 & 50.0-120.0 µg/ml for nitrofurantoin. The method was successfully applied for the determination of these compounds in dosage. The aim of this work was to develop a simple and rapid method for the determination of 4-nitrophenol and related nitro-drug compounds, not requiring sophisticated instruments but giving results comparable with those obtained by the standard methods in British pharmacopeia.

Biography

Wshar Ali Ismael has his expertise in analytical chemistry and determination of pharmaceutical formulations. He has used flow injection analysis technique in his researches and has concluded chemiluminescence reactions in his research for detection and analysis of pharmaceutical compounds. He worked as a Lecturer in Chemistry Department, Education College, Salahaddin University, Erbil, Iraq since 1992 until now. He taught instrumental analysis in the Chemistry Department.

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