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On-line Vapor-Phase Generation Followed by Fourier-Transform Infrared Spectrometry for the Quantitative Analysis of Water-Soluble Penicillin G in Pharmaceutical Formulations

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The combination of vapor-phase generation (VPG) and Fourier-transform infrared (FTIR) spectrometry was performed as an alternative analytical technique for the determination of water-soluble penicillin G (PENG). Samples were transferred into a heated reactor, and a potassium iodate solution was injected into the reactor. Carbon monoxide (CO) generated under these conditions was carried *via* a N_2 gas carrier stream inside the IR gas cell, and the corresponding FTIR spectra were continuously recorded as a function of time. Analytical measurements were made using the maximum absorbance of the CO band at 2170 ± 4 cm^{-1}. Various factors influencing the analytical signals were evaluated and selected. The figures of merit of the proposed method involve a linear calibration curve over the range of 3 to 320 mg L^{-1}, a limit of detection of 0.5 mg L^{-1} and a precision of 2.6%. The method was successfully applied to PENG determination in pharmaceutical preparations.

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