Development Of A Flow Injection Gold Nanoparticle Catalyzed Chemiluminescence Method For The Indirect Determination Of Mefenamic Acid.

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In this work, a sensitive flow injection chemiluminescence detection (FI-CL) method based on luminol oxidation by periodate and amplified by gold nanoparticle colloids was developed for the indirect determination of mefenamic acid. The method is based on the CL emission generated during the oxidation of luminol with the excess of periodate that remains after oxidation of mefenamic acid within the time period of 15 min at room temperature. Gold nanoparticles amplify the signal as a function of their size and concentration with optimum gold nanoparticles colloids of 4.0 nm [1]. The experimental conditions in terms of reagents concentration, pH, flow rate and sample volume, were studied and optimized. The entire study was performed in two different concentration ranges; the first in the range of 0.5–5.0 μg L⁻¹ and the second in the range of 10–50 μg L⁻¹. The detection limit is restricted from the noise level and at S/N=3 was found to be 0.37 μg L⁻¹ with RSD(%)=5.9 for four replicate samples and RSD(%)=4.1 for fifteen replicate measurements. The method was successfully applied to the determination of mefenamic acid in pharmaceutical formulations.

References