Abstract

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Development of a new method based on gold nanoparticles for determination of uric acid in urine samples

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Abstract

In this study, a simple and reliable Au NPs based method has been offered for the determination of uric acid in urine samples. In the first stage, gold nanoparticles were synthesized using the chemical reduction method and then applied as a sensor to measure uric acid concentration based on its strong reducing property. The main parameters affecting on response signals such as pH, reagent concentration, and time are optimized. Under the optimum conditions, the calibration graphs were linear in the range of 0.5 – 10.0 mg.L-1 with limits of detection of 0.2 mg.L-1 and RSD% of 1.2%. The validated method is shown to be promising for uric acid analysis with some advantages such as good repeatability and fast response time property. The method was successfully used for the determination of uric acid in urine samples of healthy subjects and kidney patients. The found concentration range for uric acid in the investigated urine samples was reported to be 29.0 – 57.0 mg.L-1 and 75.0 – 346.0 mg.L-1 respectively for the healthy subjects and the patients which these values are confirmed by a standard method used for uric acid analysis.

Biography

The Anoushka Khanna is a senior research fellow at the Institute of Nuclear medicine and Allied Sciences, India. She is in the third year of her Ph.D. and is a holder of DST-INSPIRE fellowship. She has qualified UGC NET exam twice. The Anoushka Khanna is a senior research fellow at the Institute of Nuclear medicine and Allied Sciences,India. She is in the third year of her Ph.D. and is a holder of DST-INSPIRE fellowship. She has qualified UGC NET exam twice. The Anoushka Khanna is a senior research fellow at the Institute of Nuclear medicine and Allied Sciences, India. She is in the third year of her Ph.D. and is a holder of DST-INSPIRE fellowship.

