Ultrasonic Assisted Cloud Point Extraction For Indirect Spectrophotometric Determination Of Chromium (VI)

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A new and simple analytical procedure was developed for indirect spectrophotometric determination of Cr(VI) after cloud point extraction at room temperature. The method is based on reduction of Cr(VI) by iodide, formation of I3−, and further induction of the clouding phenomena of cetyltrimethylammonium bromide (CTAB) by I3− at room temperature. The spectrophotometric measurement of the separated phase was used for determination of Cr(VI). The reactions and clouding phenomena were accelerated by ultrasonic waves. The Optimization of the parameters and effect of interferences were investigated. Under optimized conditions Cr(VI) can be determined in the range 20-400 ng mL⁻¹. Detection limit and relative standard deviation for (n = 5; c = 0.1 mg L⁻¹) were 15 ng mL⁻¹ and 2.6 %, respectively with 10 ml sample volumes. The accuracy of the method was tested by analyzing of reference materials and obtained results were in good agreement with certified values. The method is simple, rapid, and clean for determination of Cr(IV).

References