ELSEVIER

Talanta 58 (2002) 1293–1300

Talanta

www.elsevier.com/locate/talanta

Reverse flow injection spectrophotometric determination of iron(III) using norfloxacin

Teraboon Pojanagaroon [a], Surasak Watanesk [a], Vichitr Rattanaphani [b], Saisunee Liawrungrath [a,*]

[a] *Department of Chemistry, Water Research Center (WRC), Faculty of Science, Chiang Mai University, Chiang Mai 50202, Thailand*
[b] *School of Chemistry, Institute of Science, Suranaree University of Technology, Nakhonratchasima 30000, Thailand*

Received 23 March 2002; received in revised form 25 April 2002; accepted 27 April 2002

Abstract

A reversed flow injection colorimetric procedure for determining iron(III) at the μg level was proposed. It is based on the reaction between iron(III) with norfloxacin (NRF) in 0.07 mol l^{-1} ammonium sulfate solution, resulting in an intense yellow complex with a suitable absorption at 435 nm. Optimum conditions for determining iron(III) were investigated by univariate method. The method involved injection of a 150 μl of 0.04% w/v colorimetric reagent solution into a merged streams of sample and/or standard solution containing iron(III) and 0.07 mol l^{-1} ammonium sulfate in sulfuric acid (pH 3.5) solution which was then passed through a single bead string reactor. Subsequently the absorbance as peak height was monitored at 435 nm. Beer's law obeyed over the range of 0.2–1.4 μg ml^{-1} iron(III). The method has been applied to the determination of total iron in water samples digested with HNO_3–H_2O_2 (1:9 v/v). Detection limit (3σ) was 0.01 μg ml^{-1} the sample through of 86 h^{-1} and the coefficient of variation of 1.77% ($n = 12$) for 1 μg ml^{-1} Fe(III) were achieved with the recovery of the spiked Fe(III) of 92.6–99.8%.

Keywords: Iron(III); Reverse flow injection spectrophotometric; Norfloxacin (NRF)