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Sequential injection method for iron determination using an hexadentate 3,4-hidroxypiridinone chelator

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The use of 3,4-hydroxypyridinones (3,4-HPO) as low toxicity chromogenic reagents for iron determination has been previously addressed [1]. The results obtained with bidentate 3,4-HPO ligands, complexing iron(III) in a 3:1 stoichiometry, showed that a better detection limit was desirable. In this context, the use of an hexadentate 3,4-HPO ligand, that itself provides a six coordination sphere for iron(III) and also exhibits a higher solubility in water, was considered. In this work, an automatic methodology based on the use of hexadentate piridinones is proposed for the spectrophotometric iron speciation in natural waters. Sequential injection analysis has been used with advantages in terms of consumption values, waste production and overall automation [2]. So, a sequential injection method was developed for the spectrophotometric determination of iron(III) with possible in-line pre-concentration (Fig.1).

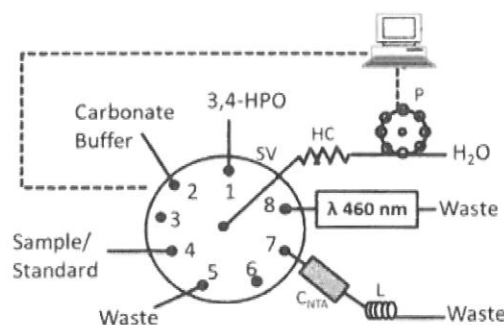


Fig.1 - Sequential injection manifold for the determination of Iron(III) using the 3,4-HPO ligand; SV, selection valve, P, peristaltic pump; HC, holding coil; C_{NTA}, column packed with NTA resin; L, coil with 75 cm length.

[1] R.B.R. Mesquita, R. Suárez, V. Cerdà, M. Rangel, A.O.S.S. Rangel, *Talanta* 108 (2013) 38–45.

[2] R.B.R. Mesquita, A.O.S.S. Rangel, *Anal. Chim. Acta*, 2009, 648, 7-22.

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