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GREENER SEQUENTIAL INJECTION METHOD FOR IRON SPECTROPHOTOMETRIC DETERMINATION IN FRESH AND MARINE WATERS

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Iron is an important micronutrient for living organisms as it participates in a variety of biological functions. However, as it can be introduced in the environment by human activity, it may exceed the allowed limits. In high concentrations, iron affects water quality, causing aesthetic effects, namely water colour, taste and odour, thus making iron quantification of high interest. The spectrophotometric methods recommended for iron quantification often employ toxic reagents. Being green chemistry a concern nowadays, it is important to develop a more benign analytical chemistry. In this work, a sequential injection method for the spectrophotometric determination of iron, using the iron chelator [1], (1-(3'-methoxypropyl)-2-methyl-3-benzyloxy-4-(1H)pyridinone - MRB13), is described. Additionally, the applicability of the method to recreational waters with different salinity contents was accessed. For that purpose, two strategies were employed: one of them resorting to an on-line solid phase extraction (SPE) step targeting the sample matrix clean-up and/or iron enrichment, and the other without resorting to SPE. The SPE strategy was achieved by resorting to a nitrilotriacetic acid (NTA) resin column. The developed method proved to be an efficient tool for iron monitoring in different types of water.

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