Iron-selective Poly(Vinyl Chloride) Membrane Electrode Based on Norfloxacin as a Neutral Carrier

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In the present study ion-selective PVC membrane sensor for iron ions based on (norfloxacin)1-ethyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-piperazinyl)-3-quinoline carboxylic acid (NOR) as adequate ionophor has been prepared and studied. The electrode exhibit a good response for Fe^{3+} over a linear range from 1.0×10^{-5} to $1.0 \times 10^{-1} \text{ mol l}^{-1}$ with a slope of 19.58 ± 0.2 and $19.27 \pm 0.2 \text{ mV}$ per decade and a detection limit of $(5.0 \pm 1.0) \times 10^{-6} \text{ mol l}^{-1}$ for *o*-nitrophenyl octyl ether (*o*-NPOE) and dioctylphthalate (DOP) plasticized based membrane sensors, respectively. The investigated membrane electrode revealed good and fast response in a pH range of 3.0–8.0 for more than 4.0 months without any considerable difference in potentials. The proposed sensor shows comparatively good selectivities with respect to alkali, alkaline earth and some transition and heavy metal ions. It was utilized as an indicator electrode in potentiometric determination of iron ions in some real samples.

Keywords: PVC sensor; Environmental samples; Iron (III) determination; Norfloxacin.

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