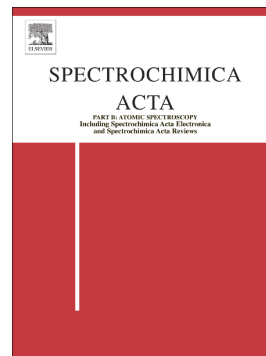


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Energy dispersive X-ray fluorescence spectrometry for the direct multi-element analysis of dried blood spots

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Abstract

Home-based collection protocols for clinical specimens are actively pursued as a means of improving life quality of patients. In this sense, dried blood spots (DBS) are proposed as a non-invasive and even self-administered alternative to sampling whole venous blood. This contribution explores the potential of energy dispersive X-ray fluorescence spectrometry for the simultaneous and direct determination of some major (S, Cl, K, Na), minor (P, Fe) and trace (Ca, Cu, Zn) elements in blood, after its deposition onto clinical filter papers, thus giving rise to DBS.

For quantification purposes the best strategy was to use matrix-matched blood samples of known analyte concentrations. The accuracy and precision of the method were evaluated by analysis of a blood reference material (Seronom™ trace elements whole blood L3). Quantitative results were obtained for the determination of P, S, Cl, K and Fe,

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