

Ramin MALEKI<sup>1,3</sup>, Reza HOSSEINZADEH<sup>1</sup>, Hossein MEHRABI<sup>2</sup>,

Ali HASSANZADEH<sup>3</sup> and Khalil FARHADI<sup>3</sup>


Food & Chemical Analysis Research Lab., Iranian  
Academic Center for Education,

<sup>1</sup>Culture & Research (ACECR), Urmia-IRAN

<sup>2</sup>Department of Chemistry, Faculty of Science, Isfahan University, Isfahan-IRAN

<sup>3</sup>Department of Chemistry, Faculty of Science,  
University of Urmia, Urmia-IRAN

e-mail: khalil.farhadi@yahoo.com,; kh.farhadi@mail.urmia.ac.ir

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 [Authors](#)



[chem@tubitak.gov.tr](mailto:chem@tubitak.gov.tr)

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**Abstract:** A new Fe<sup>3+</sup> ion-selective membrane electrode based on 6-ketomethyl phenanthridine (6-KMPT) and 1-(4-dimethyl aminophenyl)-2-(5H-phenanthridine-6-ylidene)-ethanone, which were incorporated in a plasticized polyvinyl chloride (PVC) membrane, is described. The optimized membrane demonstrated a linear dynamic range of  $5.2 \times 10^{-6}$ - $1.0 \times 10^{-2}$  M, with a near Nernstian slope of 19.5  $\mu$ mV per decade and a detection limit of  $1.2 \times 10^{-6}$  M. The electrode showed high selectivity for Fe<sup>3+</sup> ions in comparison to other metal ions. The effect of membrane composition on the potential response of the electrode was studied. The best performance was observed for the membrane comprised of electroactive material (6-KMPT), dioctyl phthalate (DOP) as plasticizer, and PVC in the optimum ratio of 5:67:28% w/w. The pH working range of the sensor was 1.2-3.0. The proposed Fe<sup>3+</sup> sensor was successfully used for determining the presence of iron in pharmaceuticals and the results were in good agreement with the value obtained using the atomic absorption spectroscopic method.

**Key Words:** 1-(4-Dimethyl aminophenyl)-2-(5H-phenanthridine-6-ylidene)-ethanone, Fe(III) ion-selective electrode, PVC membrane

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