Ovidius University Annals of Chemistry Volume 18, Number 1, pp 9-12, 2007

The investigation of the interaction of epirubicin HCl with Fe(III) and the determination of the formation constant of the EPR HCl-Fe(III) complex

Serap AYAZ*, Filiz ARIOZ OZDEMIR and Mürşit PEKIN

Department of Analytical Chemistry, Marmara University Faculty of Pharmacy, Tıbbiye Cad. 81010 Haydarpasa/Istanbul ,Turkıye

Abstract. Epirubicin HCl is anticancer drug used in various types of cancer. Anemia is one of the side effects of these drugs. Complexation of these types of drugs with iron are mentioned as one of the reasons of the anemia. Since most of the drugs are weak acids or weak bases, their stabilities depend on their dissociation constants. In order to calculate the formation constant of Fe(III)- EPR HCl complex, the dissociation constans of EPR HCl which was found in our former potentiometric study, was repeated using the same method. The formation constant of Fe(III)-EPR HCl complex was determined as LogK = 25.82, again using potentiometric method. As a result of the reaction between Fe(III) and EPR.HCl, a dark red coloured product with a maximum absorption at 610 nm in aqueous medium was formed. Reaction runs quantitatively at room temperature, between pH=4.5 in 10 minutes. Epirubicin HCl amount which is 7 times Fe(III) amount is adequate for the completion of the reaction and the colour of the product remains stable for 24 hours. It was found that Fe(III)- EPR HCl complexes of 1/1 at pH=2.5 and 1/3 at higher pH's (pH = 4.5 and pH = 7.4) were formed using Job's method.

Keywords: Anticancer drugs, epirubicin HCl, iron

ISSN-1223-7221