

ABSTRACT

The distinct complexing potentiality of several hydroxyanthraquinones (HAQs) e.g. 1-hydroxyanthraquinone, alizarin (1,2-dihydroxyanthraquinone), quinizarin (1,4-dihydroxyanthraquinone), chrysazin (1,8-dihydroxyanthraquinone), emodin (1,3,8-trihydroxy-6-methylanthraquinone, quinalizarin (1,2,5,8-tetrahydroxyanthraquinone) and alizarin red S (1,2-dihydroxyanthraquinone-3-sulphonic acid) towards the sensitive determination of metal ions have been investigated by spectrophotometry in various solvent systems as well as in micellar media. Exploiting first derivative spectrophotometry and proper choice of micellar environment (nonionic, cationic and anionic) both selectivity and sensitivity of the determination of several metal ions (Be^{II} , Mg^{II} , Ca^{II} , Cu^{II} , Al^{III}) have been improved to a great extent.

Emodin, the most common naturally occurring HAQ has shown great promise as spectrophotometric reagent for Be^{II} , Mg^{II} , Ca^{II} , and Cu^{II} . Micellar interaction with emodin along with other HAQs are studied using solubility, UV-visible spectrum and acid-base property of HAQs in water, various organic solvents as well as in different micellar media. Optimum conditions for determination, statistical analysis and

composition of complexes by mole ratio method, Job's method and Asmus method are discussed.

Key words: Spectrophotometry, Derivative spectrophotometry, Zero-crossing measurement, Asmus method, Sensitivity, Selectivity, Dye-Micelle interaction, Critical micelle concentration, Stern layer, Electrical potential.