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Anthocyanins in Red Beet Juice Act as Scavengers for Heavy Metals Ions such as Lead and Cadmium

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ABSTRACT

Recently many papers appeared on (Anthocyanins) as a complexing agent with metals ions**.** The aim of this research is to fitting pollution and poisoning by metals and their ions by forming complexes. Aqueous solution of anthocyanin from red beet is slightly acidic (pH 6.4) which attack metals slowly (oxidation process). As soon as metal ion forms the anthocyanin anion captures it and precipitate. Anthocyanin juice was shown a high antioxidant capacity in numerous studies. In this study anthocyanins are extracted and purified, then a series of complexes are prepared from reaction with the metal ions Pb(II) and Cd(II) after fixing the optimum conditions of (volume, concentration, temperature and pH). The UV-Vis spectra of these ions with pigment solution have been studied. The formula of complexes is deduced according to the continuous variation method (Jobs method**)** method which is obtained from the spectrophotometric studies of the complex solution. The ratios of ligand: metal obtained are 2: 1 for all complexes under study (depending on the above job method). The solid complexes are indicated by UV-Vis spectra that showed red shift when it compared with pigment solution spectra. Also infrared spectra are studied and showed appearance and disappearance of some peaks. The molar conductivity showed the absence of ionic property. The determination of magnetic susceptibility for all complexes showed that they have diamagnetic properties (i.e. all orbitals have pairs electrons)**.** According to the results, molar conductivity, magnetic susceptility and electronic configuration support the structural formula of complexes that have a ratio of ligand: metal equal 2: 1 and the suggested structures are tetrahedral.

Keywords: Anthocyanins, Red Beet Juice, Scavengers for Heavy Metals.