ABSTRACT

Organic reagents of various classes were employed as chromogenic reagents for the quantification of Metals. Literature Survey reveals that, the hydrazones exhibit excellentchromogenic propertyfor the determination of metals by Spectrophotometry. In this point of view of the scholar focused on synthesizing novel hydrazones viz. 3-Diacetylmonoxime-3-amino-4-hydroxybenzoylhydrazone(DMAHBH) and 3,5-Dimethoxy-4-hydroxybenzal-dehydeisonicotinoylhydrazone (DMHBIH). The structure has been elucidated by using IR, NMR and Mass Spectra. All the above organic reagent analytes form complexes with Cadmium(II), Lead(II) Vanadium(V)and Copper (II)

The precise estimation of Cadmium (II) ,Lead(II) Vanadium(V)and Copper (II) was performed using DMAHBH & DMHBIH. The yellow coloredmetal complexes were formed in the p^Hrangeof 3-10 with DMAHBH andDMHBIH. The maximum absorbance (λ max) wasobserved at 378,386, 370 and 412nm for DMAHBH complexes of Cadmium (II), Lead (II) Vanadium (V) and Copper (II) .The absorbance (λ max) of DMHBIH complexes were recorded at 371 and 430 nm for Cadmium (II) and Lead (II). For the above systems the derivative spectrums are also recorded (1^{st}&2^{nd} Order) and the maximum absorbance (λ max) was observed at 430, 460 nm for (Cd (II)-DMAHBH), 448,468 nm (Pb (II)-DMAHBH), 435, 454 nm (V(V)-DMAHBH), and 466, 479nm (First & Second order) for (Cu (II)-DMAHBH) 436,468 nm(Cd II)-DMHBIH) and 470, 539 nm (Pb (II) DMHBIH) respectively. The molar absorptivity (**ε**) of the above complexes were 2.94 X 10^4, 1.875 X 10^4, 3.12 X 10^4,1.65 X 10^4, 3.66 X 10^4 and 1.82 X 10^4 $l.mol^{-1}.cm^{-1}$ respectively. The Beers law validity range (µg/ml) was found to be 0.5035-5.0535, 0.279-2.79, 0.243-2.438,0.3178-3.813 0.5035-5.0535 and 0.414-10.360. All the above complexes forms 1:1 ratio and stability constants (β) were 8.58X10^7, 8.8 X 10^6, 6.42X 10^7, 7.15 X 10^5, 2.06 x 10^7, and 8.99 X 10^6 respectively.

The developed methods were employed in the quantification of Cadmium (II), Lead (II) Vanadium (V) and Copper (II) in various samples like alloys, water, biological, soil, tobacco (Cigarette), Food and Plant Materials. The various foreign ions like anions &cations interferences were also studied.