



2, 4-Dihydroxy-5-Bromo- α -Phenylacetophenone thiosemicarbazone (DHB- α -PAT) as Analytical Reagent: Studies on Pd(II) Chelate

Nitinkumar B. Patel* and Yashpalsinh J. Solanki

*Shree Jayendrapuri Arts and Science college, Bharuch-392002, Gujarat, **INDIA**

Email: solanki20002@yahoo.co.in

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ABSTRACT

Pd(II) was determined spectrophotometrically after complexing with 2, 4 Dihydroxy-5-bromo- α -phenyl acetophenone thiosemicarbazone (DHB- α -PAT) at room temperature at pH 2.0 in 50%(V/V) aqueous ethanol at 430nm. Beer's law was obeyed upto 17.02 ppm of Pd(II). Molar absorptivity and Sandell's sensitivity were found to be $3.869 \times 10^3 \text{ lit mol}^{-1} \text{ cm}^{-1}$ and $0.02750 \mu\text{g/cm}^2$ respectively. Composition of chelate was determined using Job's method of continuous variation and Yoe and Jones mole ratio method which was found to be 1:2 (M:L). The stability constant determined spectrophotometrically was found to be 1.36×10^9 . Gibb's free energy change for complex formation reaction was also calculated and found to be $-12.536 \text{ k cal/mol}$. From TGA, the energy of activation was calculated using Broido method and found to be 14.23 k cal/mol for decomposition. Study of Antibacterial activity of reagent and Pd(II)-DHB- α -PAT complex were also done using Broth Dilution Method. The reagent has been satisfactorily applied for the determination of Palladium in palladiated carbon sample.

Keywords: Spectroscopic determination, phenyl acetophenone thiosemicarbazone, DHB- α -PAT.
