

## Complexation of Zn (II) with Gliquidone an oral anti-diabetic drug

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### ABSTRACT

Gliquidone (Glurenorm) is chemically 1-Cyclohexyl-3-4- (2-(3,4-dihydro-7-methoxy-4, 4-dimethyl-1, 3-dioxo-2 (I-H)- Isoquinoly) ethyl benzene sulphenyl urea, an oral antidiabetic agent, forms 2:1 complex with zinc acetate in alcoholic medium. The present study describes the synthesis, analysis and composition of gliquidone Zn complex.

**Key words:** Gliquidone, Oral, diabetic drug.

### INTRODUCTION

Since Alfred Werner's<sup>1</sup> discovery of coordination compounds of transition metal on the late nineteenth century, the developments in this area of research has been expanding at an exponential rate in many direction making this an interesting topic with wide range of applications in various fields. Diabetes is a deceptive disease and if not detected in early stage may cause even death. The discoveries of oral hypoglycemic agents have revolutionized the treatment of diabetes. Therefore in continuation of our previous work<sup>2-6</sup> on oral

hypoglycemic agents, it was desired necessary to synthesize and study a Zn-gliquidone complex which is present here.

Ligand metal ratio for the formation of gliquidone-Zn complex was determined by conductometric titration using mono-variation method. The results of this titration indicate that gliquidone unites with zinc in the ratio of 2:1. Aqueous alcohol was used as a solvent for the titration. The formation of the complex in 2:1 (ligand-metal ratio) was further confirmed by Job's method<sup>7</sup> of continuous variation as modified by Turner and

**Table - 1: Gliquidone-Zn-complex as  $(C_{27}H_{23}N_3O_6S)_2Zn$**

|                     |   |                             |
|---------------------|---|-----------------------------|
| Composition         | : | $(C_{27}H_{23}N_3O_6S)_2Zn$ |
| Appearance          | : | White crystals              |
| Ligand-metal ratio  | : | 2:1                         |
| m.p. of the complex | : | 173°C                       |
| % of the metal      | : | Found 5.97, required (5.69) |
| % of Nitrogen       | : | Found 7.85, required (7.50) |
| % of Sulphur        | : | Found 6.18, required (5.72) |

Anderson<sup>9</sup>. Pure Gliquidone m.p. 178°C (lit. 178°C) 2.638 g and Zinc acetate 0.547g in 2:1 proportion were separately dissolved in minimum quantity of absolute alcohol. Ligand solution was added gradually with constant stirring to metal salt solution, a thick curdy precipitate was observed. By adjusting the pH (5.5-6) by the addition of dilute NaOH solution and refluxing for four hours, white crystal were obtained. The complex was washed with absolute alcohol dried and weighed. Yield 59% with m.p. 173°C.

Zinc was estimated in the complex as pyrophosphate gravimetrically, nitrogen by kheldhal's method using modified digestion mixture<sup>9-10</sup>. Sulphur was estimated by Messenger's method. The analytical results are given in Table -1.

Stoichiometry, analytical data and infra-red spectroscopy verifies the composition of gliquidone-Zn-complex as  $(C_{27}H_{23}N_3O_6S_2)Zn$ .

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