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Synthesis and Physico-Chemical Parameters of Thiazine

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ABSTRACT

Thiazine area group of heterocyclic organic compounds Thiazine was synthesized from chalcone and purity check by TLC the characterization of Thiazine was done by IR H1 H1-NMR and mass spectrometer and UV Visible spectrophotometer .The physicochemical parameters of heterocyclic Thiazine such as density, viscosity, absorbance has been studied at different concentration, temperature and solvent.

Keywords:-Heterocyclic,density,absorbance,temperature,solvent etc.

I. INTRODUCTION

Thiazine is a six membered heterocyclic compound. Which contains two hetero atoms (N and S) are present in the heterocyclic ring at 1,4 position¹.the thiazine exits in three isomeric forms 1,2 thiazine,1,3 thiazine and 1,4 thiazine. Thiazine is a fairly basic diuretics supplement it reduces water and increase vascularity, so that it is also use as anabolic agent in medicine.². The ability of thiazine to exhibit antibacterial^{3,4}, anti-inflammatory⁵ and used as cannabinoid receptor agonist⁶.Heterocyclic compounds are abundant in nature and are of great significance to life because their structural subunits exist in many natural products such as vitamins, hormones, antibiotics etc7. They have attracted considerable attention in the design of biologically active molecules8.A practical method for the synthesis of such compounds are of great interest in the synthetic organic chemistry. Theheterocycles, 1,3-thiazines are a class of heterocyclic compounds with a lot of biological activity, such as antimicrobial9, antitumor10, antioxidant11 calcium channel modulators12 and antipyretic¹³.Many people have synthesized different 1, 3-thiazines . Thiazines are very useful units in the fields of medicinal and pharmaceutical field and have been reported to shows a variety of biological activities such as blood platelet aggregation inhibitors¹⁴, antipsychotic¹⁵, antiviral, antimicrobial¹⁶. Thiazine nucleus is a pharmacophore of cephalosporin that occupy a very important place in the field of antibiotics and antifungal activity of thiazine nucleus is due to the presence of thiourea linkage in its structure. Chalcones and their analogues having α , β - unsaturated carbonyl system are very versatile substrates for the evolution of a various reactions and physiologically active compounds. The reaction of thiourea with α , β - unsaturated ketones results in 1, 3- thiazine. There has been well focused that the presence of 4-phenyl moieties as well as 2substituted amino group present in the thiazine ring is an important structural feature, and resulting molecule would shows promising biological activities¹⁷.Physicochemical Parameter of Thiazine in physicochemical properties are important indicators used in hazards exposure and risk assessments hence in this experiment

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the physicochemical parameters Were studied in solvent 1,4 dioxane also absorbance is taken from visible spectrophotometer.Density and Viscosity are affected by temperature and concentration .which exhibit, When the temperature is raised the particles in it start to move apart bringing down liquid density.The value of viscosity also decrease or liquid becomes less viscous the density and viscosity where taken in solvent 1,4 dioxane at different concentration .The density was measured by using pycnometer and viscosity by Ostwald viscometer.

II. PHYSICAL ASPECT OF THIAZINE

Solubility of Thiazine was studied in 1,4 Dioxane and DMF solvents.

A) Density and Viscosity of Thiazine in DMF solvent was taken At different concentration at Temperature:-

312.15K				
Conc.(M)	Density (ρ)(g.cm ⁻³)	Viscosity (IJ.10 ⁻³)poise		
0.05M	0.4932	1.04642		
0.025M	0.49	0.99483		
0.0125M	0.4748	0.90676		
0.0625M	0.4736	0.88270		
0.003125M	0.4658	0.84716		



Graph A :-Conc. Vs density. B)Conductance and Absorbance of Thiazine was taken At different concentrationsin 1,4Dioxane solvent at

temperature:-313. 15K

Conc.(M)DMF Solvent	CONDUCTANC(20µS)	ABSORBANCE
		((Amax480)
0.1M	0.55	1.995
0.05	0.52	1.993
0.025M	0.42	0.547

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GraphD:-Conc Vs Absorbanc

III. RESULT AND DISSCUSION

In viscosity measurements different concentrations of solutions depend on the size of the molecule and molecular weight..If the concentration of solution increases then interaction between solute and solvent increases that leads to enhance intermolecular attraction that contribute to a resistance to flow and hence viscosity increases. The density slightly change by changing the concentration Astheir temperature increases, viscosity decreases at different concentrations, the viscosity is depend on solvent density and interaction between solute and solvent molecule, Here the solvent 1,4 Dioxane is having higher density.

CONDUCTANCE OF THIAZINE AT DIFFERENT CONCENCTRATION IN 1,4 DIOXANE SOLVENT-The conductance is measured by conductivity meter .Conductance study exhibit that as the concentration decreases conductance also decreases. Because on dilution as volume of solution increases .Thus, the number of ions per ml decreases. This results into decrease in conductance.

Visible spectroscopy studies shows that absorbance decreases with decrease in concentration. Because solution that are more concentrated have a larger number of molecules that interact with the light that enters, thus increasing its absorbance.

SYNTHETIC METHODS OF THIAZINE:-

The 1,3 thiazine is synthesized from the coumaran -3-one derivative were prepared from equimolar mixture of 2-hydroxyacetophenone and benzaldehyde.thechalcone undergoes cyclisation process in presence of mercuric acetate with solvent give coumaran-3-one derivative.Coumaran-3-one,thourea refluxed for 4 Hrs in alkaline medium followed by acidification product get separate out .Crystallized the product with ethanol.

IV. CONCLUSION

In this work the physico-chemical properties of thiazine was studied .it was concluded that physico-chemical properties of a compound depends upon nature of solvent concentration and temperature. If concentrationdecreases density, Viscosity, Conductance, and absorbance also decreases. Due to solute solvent interaction. Visible spectroscopy study exhibit that absorbance decreases with decrease in concentration.

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