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LITERATURE REVIEW ON SCHIFF BASE.

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ABSTRACT:

Schiff base have appreciable recognition in literature . It is a part of organic chemistry. It shows nitrogen with double bond in stereochemistry. It belongs to azomethine group with structural formula RHC=NR[1]. Primary amines and carbonyl compounds react to derived Schiff base from condensation reaction. In 1864 schiff reported this reaction. It attracts the attention in literature. A number of studies represented SP^2 hybridized orbital of nitrogen atom with lone pair with electrons. The stable molecule of Schiff base with metal indicates medicinal properties as anticancer , antimicrobial , anti inflammatory and anti fungal properties.

KEYWORDS: Schiff base ; Stereochemistry ; Condensation ; Hybridized orbital ; Medicinal properties.

INTRODUCTION:

Schiff base plays important role in coordination chemistry. Schiff base derived by condensation reaction between primary amines ($R\text{-}NH_2$) and carbonyl compounds(RCOR')[1,2]. Where the R group can be either alkyls and aryl[3]. All organic , inorganic and analytical chemistry turned their attraction towards Schiff base. Because when transition metal ions or inner transition metal ions formed stable molecule with Schiff base[4]. It gives strong useful applications like biochemical applications as anticancer , anti inflammatory, antifungal, antimicrobial properties[5,8]. According research on Schiff base , moreover industrial applications are found. There bases are present to formed complex between d-block metals and lanthanides[9]. The Schiff base consist of donor atoms. By substituting nitrogen oxygen can be associated with NO or N_2O_2 [10] .These acts as multiple electron donor ligands like amines , amides and phosphines[11]. Overall , Schiff base plays important in coordination chemistry for complex formation[12].

DISCUSSION:

Pritesh Kumar, M Thakur, jatin D did a new ,safe and environmental friendly method that was employed to synthesized Schiff base utilizing lemon juice as a catalyst. They examined that by inhibiting analysed enzyme to anti diabetic research may lower the postprandial glucose level [13].

When C elegans exposed to Schiff base these compound delayed paralysis to treated worms compared with controls by under scoring their beneficial properties. They suggested that the substance can be used in the food and pharmaceutical industries[6].

S. Vidya Sagar Babu, K.S.V Krishnarao and colligues observed the Ln(III) schiff base family has luminocense and DNA binding properties. In presence of N_3O_2 Doner they synthesized Schiff base ligand. Schiff base forms complex with Pr, Nd, Sm and Eu. Analytical data shows that the ligand bind with one primary amine , two azomethine and two naphthalic oxygen atoms. The complex have chelating ability which can be transfer energy to lanthanide ions which acts as chromophore. Therefore complex have good binding capacity with DNA[7].

Nidhi, Siddharam, Devendra Pratap Rao , Amit K Gautam studied therapeutic applications of Schiff base. The review paper entitled with “Schiff base and their therapeutic applications .” Schiff base shows it’s essential antimicrobial properties. Schiff base can be used in various fields like biological , industrial as well as coordination chemistry. For antifungal propertiesit can show minimum inhibitory concentration against variety of bacterial stains tested as compared to fluconazole[8].

A review paper by ‘wali A.Z’ studied the biological activities of Schiff base and their complexes. This paper highlights that Schiff base is used for synthesis of many organic compounds. It includes various antimicrobial activities such as antifungal , antimalerial, anti inflammatory . anti viral and anti-pyratic properties[9].

‘Jing Xie et al’have synthesized two complexes od lanthanides(La,Ce) with hydrazone Schiff base. He observed that two complex shows cytotoxic activity against cancer cell lines. That call cell lines are Human lung cancer cell line A549 and human gastric cancer cell lines BGC823 and SGC7901. So these complexes are useful for biomedical applications as a human cancer therapeutic fields[10].

A research paper entitled “Iron (III) and zinc (II) monodentate Schiff base metal complexes: Synthesis, characterisation and biological activities” focused on the derivatives of the Schiff base ligand. They were synthesized iron (III) and zinc(II)metal complexes. Then, spectal characterization followed by screened through bioassays i.e antibacterial, antifungal, antioxidant and cytotoxic assays. All results of spectral characterization techniques are supported to metal complex[11].

Dr Sharad Sankhe, Shashank Parab synthesized nine Schiff base complex of inner transition metal from n"-[(z)-(4-fluorophenyl)methylidene]-n"-[(1e,2e)-2- hydroxyimino)-1,2- diphenylethylidene] thiocarbonohydrazide. It clearly shows antibacterial properties. also non-electrolytic behavior , distinctive colours , decomposition at elevated temperature were seen. For all chemicals cytotoxic effect observed[26].

CONCLUSION:

Schiff base plays important role by synthesize various industrially and physiologically beneficial chemicals as well as it exhibits broad spectrum of well known biological effects. In pharmaceutical and medicinal chemistry . It has ability to coordinate with metal ion for relevent biological activities to make them potential for therapeutics applications. shiff base have diverted scientists attention by development of drugs. This review highlighting the applications of Schiff base.

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