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Synthesis and Characterization of Aurum Enroxin

Chandra Shekher[1], Rigvendera Singh Malik[2],Sandeep Kashyap[3],B.P.Yadav[4]

[1]*Dept.ofChemistry,DevtaCollege,Morna,Bijnor,(U.P.)*
[2] *Dept.ofChemistry,SSVCollege,Hapur,(U.P.)*
[3,4]*Dept.ofChemistry,MeerutCollege,Meerut,(U.P.)*

***Abstract:** In this paper we shall study synthesis and I-R studies of new drug AurumEnroxin which is formed when Enrofloxacin is treated with Auric chloride in acidic medium.*
Key Words:-Aurum Enroxin,Enrofloxacin,Auric chloride

INTRODUCTION

Recent development in the field of chemical research showed that life equally depends on organic as well as inorganic matter Which lead to another branch of chemistry called Bio-Inorganic chemistry [2-4].

Metal ions play a key role of prime importance in drugs. Most of the modem drugs are purely organic molecules and the use of metal containing drugs for both therapy and diagnosis is of increasing interest. However ancient Ayurvedic therapy did recognize the therapeutic role of metals in powdered from ego SwamaBhasma (gold powdwe), RajithaBhasma (silver powder),VangaBhasam(tin powder). The grain size of these (Bhasmas) powders is decided by the mode of their preparation. For exam.Satpuri (100 Times calcined)bhasma is less potent when compared with Sahasraputi (1000 times calcined) bhasma .Interestingly the heavy metal ions which are toxic to life are used are as drugs in Modem medicine for curing diseases like Cancer, Arthritis, and Tumors [6-8] In the field of allopathic medicine the role of metallic ions come to light on in the first quarter of 19 th Century[9].

Experimental Procedure;- 3.59 gm. of enrofloxacin is weighed and dissolved in about 375 ml. 0.1N HCL and heated up at 60°C-65°C till a clear pale yellow solution of pH = 6.7 is obtained. A solution of auric chloride is also prepared by dissolving 1.7 gm. auric chloride in 50 ml. distilled water. The solution of enrofloxacin is taken in a round bottom flask and heated constantly. Now the solution of auric chloride is added in it drop by drop within about 30 minutes. After the addition of both solution the reaction mixture of round bottom flask is heated on a heating plate at about 100-105°C temperature and is refluxed for about 4 hour using a water condenser. After completing the reflux the

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reaction mixture is transferred in a 500 ml. beaker and set aside for cooling. After the cooling of 4 hour white trap type crystals are formed in the beaker which are completely settled in about 10-12 hour. The reaction mixture is filtered through a watt man filter paper. The substance is washed 6-8 times with hike warm water. It is dried in hot air oven at 100-105°C temperature for about 3-4 hours.

Results:-The new drug is formed Aurum Enroxinwhich is formed when Enrofloxacin is treated with Auric chloride in acidic medium.

The colour of compound- shiny white pH of Compound = 8.8

A sharp rise in pH by 2.1 units indicates the formation of new drug. The melting point of substance = 299 C

The elemental studies carried for C,H,N,O,F& Au gives its molecular formula $C_{38}H_{44}N_6O_2Au$.

The structure is confirmed by the I.R. Studies as given below.

The I.R. Studies further confirmed the formation of new drug. Which are discussed below:-

The I.R. Spectra of quinolones are most indicative in the region 1800-1300 cm"^{1} because all groups which take part in reaction give strong absorption in this region. Comparing the main IR frequencies of gold complex with that of ciprofloxacin following observation are made.

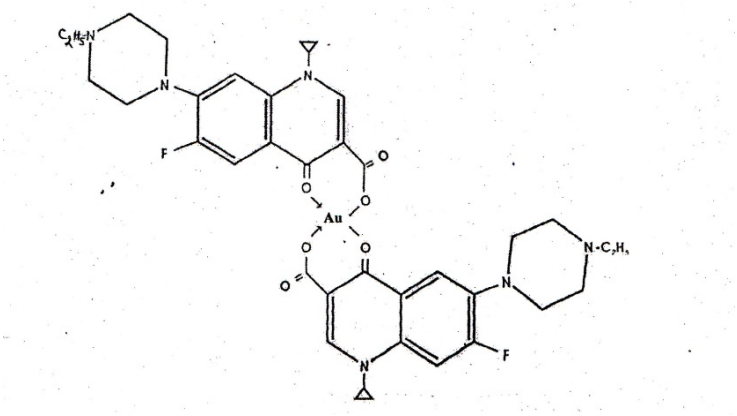
1. There is a very strong absorption peak in the spectrum of ligand ciprofloxacin at 1707.6 cm^{1}. The band 1707.6 cm^{1} due to the carboxylic group was not detected in the complex. This band is shifted to slightly higher wave numbers 1719.18 cm^{1} which is indicating the deprotonating of COOH group.
2. The band at 1618 cm1 in the I.R. spectrum of ciprofloxacin ascribed to the stretching vibration of oxygen of pyridine ring in the form of pyridine is also absent in the I.R. Spectrum of complex. Which confirms the involvement of pyridine oxygen in the formation of complex.
3. The new peaks obtained in the I.R. spectrum of complex al 1129.61 cm"1 and 1088.74 cm"1 are due to the complexation of gold with carboxylic acid group.
4. The new bands observed at 1268.07 cm-1 and 1188.27 cm-1 indicates the complexation of gold with oxygen of the pyridine ring.

Hence all above evidences indicate that in the aurum enroxin the gold atom is co-ordinated with pyridone oxygen atom and one of the cafboxylic oxygen of quinolone molecule.

According to all the above evidences the assumed structure of newly synthesized aurum enroxin may be written as follows:-

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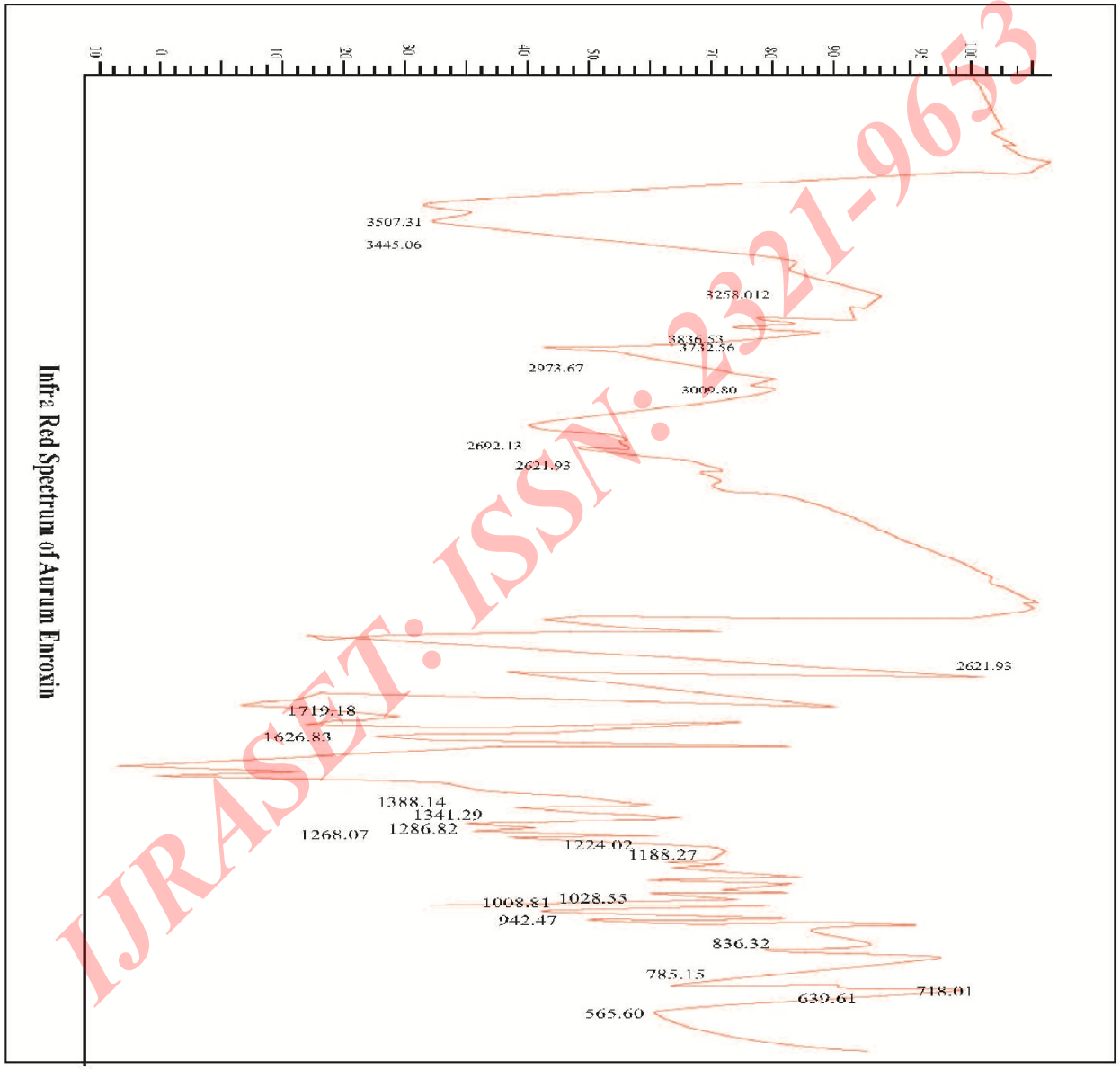
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Structure of Aurum Enroxin



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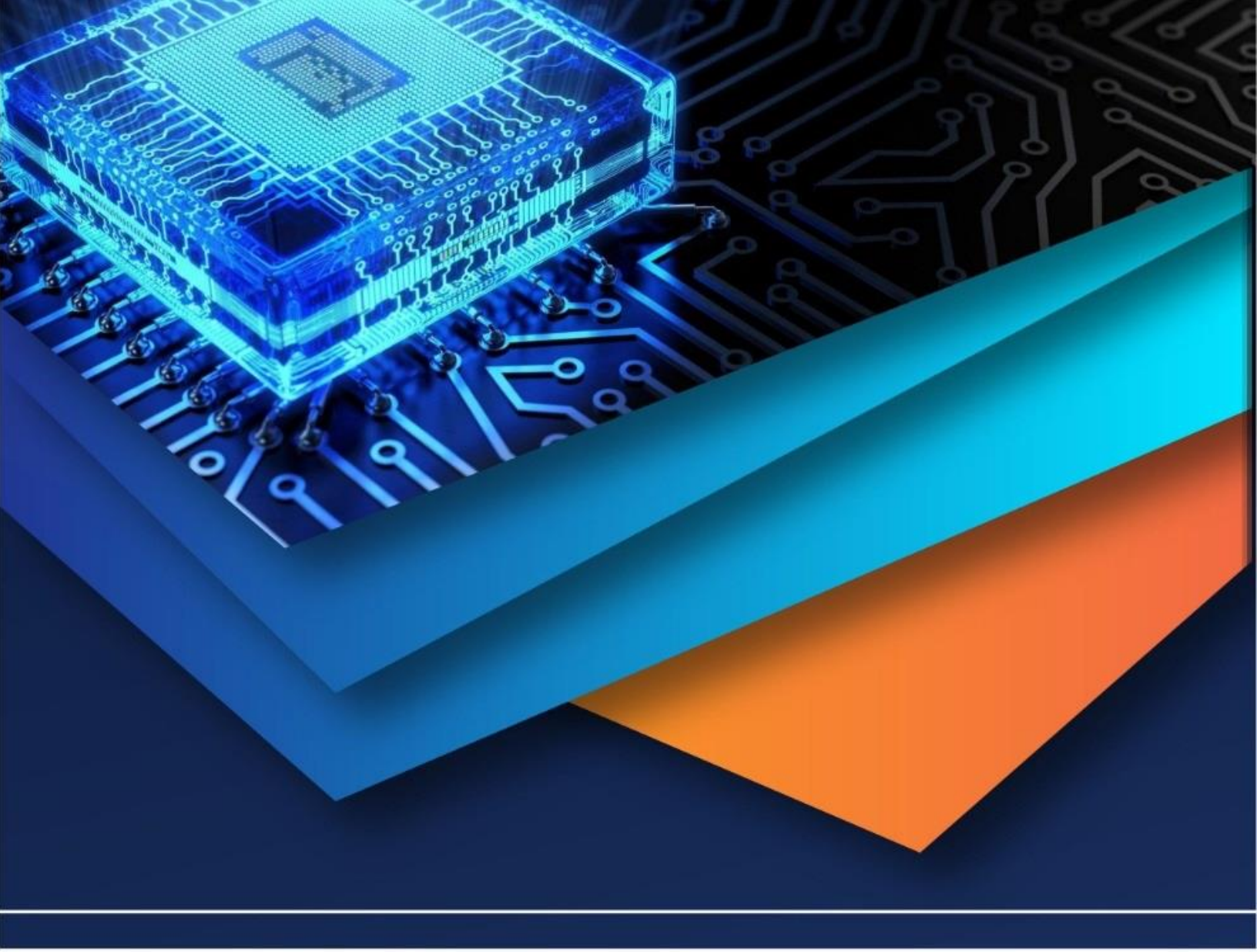
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