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A review study of antibacterial properties of metal complex of 2-Anisilidene pyridine, 2-Anisilidene pyrimidine

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Abstract
2-Anisilidene pyridine and 2-Anisilidene pyrimidine (Schiff base) with the metal ion Cu(II), Co(II), Fe(III) are subjected to study as a antibacteral agent taking different species of gram-negative and gram-positive bacteria. Antibacterial activities of metal complex of 2- Anisilidene pyridine and 2-Anisilidene pyrimidine showed better inhibition against tested bacterial strain and higher compared to parent ligand.

Keywords: schiff base, 2-anisilidene pyridine, 2-anisilidene pyrimidine, gram-negative bacteria, gram-positive bacteria, antibacterial agent

Introduction
Metal complexes play an essential role in agricultural Pharmaceutical industrial science. Metal complexes of Nitrogen and Sulpher chelating ligand have attracted considerable attention because of their interesting physicochemical properties and pronounced biological activities. The Nitrogen and Sulpher atom play a key role in the coordination of metal at the active site of numerous metallobiomolecule.
In view of the growing interest in the antibacterial importance of metal complexes of Anisilidene pyridine and Anisilidene pyrimidine and in continuation of work [1-6] we report the comparative study of antibacterial activity of parent ligand and metal complexes Cu (II), Co(II), Fe(III)

Experimental
All reagent used were of chemically pure grade solvent were purified and dried according to standard procedure [7-11] antibacterial studies is carried out according to plate dilution method. The antimicrobial effect is mesured by the formation of zone of inhibition around the disk.
The metal complexes of 2-Anisilidene pyridine and 2-Anisilidene pyrimidine are also prepared by taking an aliquot of the concerned metal ion and to this 0.2% of reagent is added at the particular pH using buffer solution, metal complexes formed to be adsorbed on the foam, complex is eluted from the foam by squeezing with D.M.F.

Biological studies
Parents compound and the metal complexes prepared above is subjected to antibacterial activity [18-23]. For this we used more than one test organism to increase the chance of detecting antibiotic activity. The sensitivity of microorganism to free Schiff base and their complexes was determined by formation of zone of inhibition around the disk which incubated for 24 hours at 37˚C ±1 by using the diffusion method against different species of gram-positive and gram-negative bacteria such staphylococci, streptococci, E.coli, pseudomonas and klebseiella species [24].

Table 1: Antibacterial Activity Data of Different Concentrations of 2-Anisalidine Pyrimidine

Concentration mg./ml	Pseudomonas				E. coli spp				Streptococci				Klebsiella spp			
	I	II	III	Mean	I	II	III	Mean	I	II	III	Mean	I	II	III	Mean
005	14	12	15	13.3	8	12	13	11.0	16	9	14	13.0	10	7	7	8.0
250	11	10	13	11.3	14	15	10	13.0	12	13	11	12.0	-	-	-	-
150	13	11	14	12.6	19	18	11	16.0	10	10	10	10	-	-	-	-
50	15	13	10	12.6	11	13	14	12.6	11	12	10	11	-	-	-	-

Table 2: Antibacterial Activity Data of Different Concentrations of 2-Anisalidine Pyridine

Concentration mg./ml	Pseudomonas				E. coli spp				Streptococci				Klebsiella spp			
	I	II	III	Mean	I	II	III	Mean	I	II	III	Mean	I	II	III	Mean
500	13	11	10	11.3	12	12	13	12.3	8	16	14	16.0	-	-	-	-
250	10	12	11	11	13	10	12	11.6	11	12	11	11.3	-	-	-	-
150	12	11	10	11	14	14	14	14	14	10	12	12	-	-	-	-
50	11	10	11	10.6	12	12	11	11.6	13	9	11	11	-	-	-	-

Table 3: Antibacterial Activity of Metal Complaxes of 2-Anisalidine Pyrimidine

Concentration	Pseudomonas				E. coli spp				Streptococci				Klabsiella spp			
500 mg./ml	I	II	III	Mean	I	II	III	Mean	I	II	III	Mean	I	II	III	Mean
Ni(II)	18	22	22	20.6	14	22	18	18	21	19	21	20.3	10	15	19	14.6
Cu(II)	14	12	14	13.3	19	24	23	22.0	24	22	24	23.3	16	20	18	18
Fe(III)	14	12	10	12	15	17	10	17.0	12	15	14	13.3	11	10	11	10.6

Table 4: Antibacterial Activity of Metal Complaxes of 2-Anisalidine Pyridine

Concentration	Pseudomonas				E. coli spp				Streptococci				Klabsiella spp			
500 mg./ml	I	II	III	Mean	I	II	III	Mean	I	II	III	Mean	I	II	III	Mean
Ni(II)	16	18	19	17.6	15	12	11	12.6	20	19	18	19.0	12	18	17	15.6
Cu(II)	13	12	15	13.3	16	14	22	17.3	26	23	24	24.3	12	15	14	13.6
Fe(III)	11	12	15	12.6	12	13	15	13.3	10	11	14	11.6	11	15	13	13.0

Activity Range

16-18mm - moderate activity
10-16mm - mild activity
Below 10mm - weak or no activity

Result and Discussion

These 2-Anisilidene pyridine and 2-Anisilidene pyrimidine were subjected to find out their antibacterial activity against gram-negative and Gram-positive bacteria against a Schiff base taken in work. The antibacterial activity data obtained are listed in table 1-4.

From the table it is evident that 2-Anisilidene pyridine and 2-Anisilidene pyrimidine showed a big difference in activity against different bacteria (As high as against E. coli at 100mg/ml concentration and as low as against Klebsiella spp. At various concentration) but most of these shows activity in mild range. The synthesized metal complexes of these Schiff bases shows higher biological activities compared to the free legend.

Reference

1. Rai BK, Anand Rahul, Asian J. chem, 2013, 25480.
2. Rai BK, Thakral Amrita, Divya, Asian J. chem. 2013; 25:583.
3. Rai BK, Kumar Arun, Asian J. chem. 2013; 25:1169.
4. Rai BK. J Indian chem. soc. 2013; 90:105.
5. Singh NK, Srivastva AK, Agarwal RC. Indian J chem. 1984; 22A:704.
6. Pathak RB, Bahal SC. J Antibact-Antifungal Agent. 1984; 12:73
7. Narang KK, Gupta JK. Curri Sci. (India). 1976; 45:536-744.
8. Ferguson LN, Loyal NL, Kelley I, Amm J. chem. Soc. 1951; 73:3707.
9. Charette J. Spectrochem. Acta. Part A. 1967; 23:208.
10. Boklehurst P. Tetrahedron. 1962; 18:299.
11. El-Bayoumi MA. El- Aasmaen M, Abdel Halim F. J Am. Chem., Soc. 1971; 93:586.
12. El- Ansary AK, Darwish NA, Issa YM, Hassib H. Egypt, J Ind. Chem., So. 1990; 33:29.
13. Alarcon, Seergion, Oliveri, alejandroc, Nordon, Alion, Horri, Robink, J Chem. Soc. Perkin. 1996; 11:2293.
14. Ruan, Wenjuan, Zhu. zhiang; Chem., Hogwei; Bu; Xianhe; Zhihui; Shao, Ying; chen, Yunti Wuli Xuaxue Xueabo. 1997; 13:603.
15. Zhang Yong. zhau, Chur Yuan; You, Xiaozeg. Chin. Chem. Lett. 1997; 8:323.
16. Brelzezinski. bogumil; Rozwadoaski, Zbigniew; Dziembowska, Teresa; Zunder Georg J mol. struct. 1998; 440:73.
17. Takase A, Sakagami S, Koga T, Nonaka K, J Mater. Sci Lett. 1997, 16.
18. Andotra CS, Langer TC, Kotha Amrita. J Ind. Chem. Soc. 1997; 74:159.
19. Misra, Lallan Jha, Anjali. Yadav Ajak K. Transition Met. Chem. 1997; 22:406.
20. Joshi Hasmukh. Upadhyay, Paresh; and Baxi, A.J., J. Ind. Chem. Soc. 1990; 67:779.
21. Kassem EMM, Fathalla OA. Farouka, Bull-Nate Res. Cent. 1997; 22:97.
22. Narang KK, Gupta JK. Curr. Sci. 19976; 45:536.
23. Malhotra B, Dwivedi AK, Hora V, Hora IM. J Ind. Chem. Soc. 1990; 67:74.
24. Bryant M. Antibiotics and their Laboredory control, Butter-worth London, 1968.