

References

- 1.R., Holm, G.W Everett Jr, A. Chakravorty, Progress in Inorganic Chemistry, Interscience, New York, 7 (1966), 83-214.
- 2.D.E Hamilton, R.S. Drago A. Zombeck, J. Am. Chem. Soc., 109 (1987), 374-379.
- 3.R.H Holm, J. Am. Chem. Soc., 82 (1960) 5632-5636.
- 4.D. Sinha, A.K Tiwari, S. Singh, G. Shukla, P. Mishra, H. Chandra, A.K Mishra, Eur. J. Med. Chem., 43, (2008), 160-165.
- 5.M.B Ferrari, F. Bisceglie, G. Pelosi, P. Tarasconi, R. Albertini, P.P Dall'Aglio, G. Sava, J. Inorg. Biochem., 98, (2004), 301-312.
- 6.G.S Kim, D.A Judd, C.L Hill, R.F Schinazi, J. Med. Chem., 37, (1994), 816-820.
- 7.B. Witkop, J. Am. Chem. Soc., 78, (1956), 2873-2882.
- 8.R.D Bach, C. Canepa, M.N. Glukhovtsev, J. Am. Chem. Soc., 121, (1999), 6542-6555.
- 9.J Hupe, Enzyme reactions involving imine formation. The Chemistry of enzyme action. Elsevier Science publishers B.V, Amsterdam, Netherland. 6 (1984), 271.
- 10.R.D Bach, C. Canepa, J. Am. Chem. Soc., 119, (1997), 11725-11733.
- 11.K.N Campbell, C.H Helbing, M.P Florkowski, and B.K Campbell, J. Am. Chem. Soc., 70, (1948), 3868-3870.
12. M. Witt, and H.F Grutzmacher, Int J Mass Spectrom, 165, (1997), 49-62.
- 13.J. Hine, C.Y. Yeh, J. Am. Chem. Soc., 89, (1967), 2669-2676.
- 14.W.R Abrams, R.G. Kallen, J. Am. Chem. Soc., 98, (1976), 7777-7789.
- 15.C.O.F.S BASES, , 13 The Chemistry Of Coordination Compounds Of Schiff Bases Bo West. New Pathways In Inorganic Chemistry, Cambridge University press, London, 1968, 303.
- 16.P.S Tobias, R.G. Kallen, J. Am. Chem. Soc., 97, (1975), 6530-6539.

17. J. Sayer, M. Peskin W. Jencks, *J. Am. Chem. Soc.*, 95, (1973), 4277-4287.
18. A.M. Bond, P.P. Deprez, R.D. Jones, G.G. Wallace, M.H. Briggs. *Anal. Chem.* 52, (1980), 2211-2213.
19. B. Janik, P.J. Elving. *Chem. Rev.* 68, (1968), 295-319.
20. Zuman, P. *Electroanal.* 18 (2006), 131-140.
21. Q.H. Xia, H.Q. Ge, C.P. Ye, Z.M. Liu. K.X. Su. *Chem. Rev.* 105, (2005), 1603-1662.
22. F. Fache, E. Schulz, M.L. Tommasino, M. Lemaire. *Chem. Rev.* 100 (2000) 2159-2232.
23. H. Bekta, N. Karaali, D. Ahin, A. Demirba, A. Karaoglu, and N. Demirba, *Molecules*, 15, (2010), 2427-2438.
24. G.G. Mohamed, *Spectrochim. Acta A*: 64, (2006), 188-195.
25. M.E. Hossain, M.N. Alam, J. Begum, A.M. Ali, M. Nazimuddin, F.E. Smith, and R.C. Hynes, *Inorganica chimica acta*, 249, (1996), 207-213.
26. U. Rabie, A. Assran, M. Abou-El-Wafa, *J. Mol. Struct.*, 872, (2008), 113-122.
27. E. Canpolat, M. Kaya, *J. Coord. Chem.*, 58, (2005), 1063-1070.
28. Y.H. Fan, S.Y. Bi, Y.Y. Li, C.F. Bi, S.T. Xie, *Rus. J. Coord. Chem.*, 34, (2008), 772-774.
29. C. Orvig, and M.J. Abrams, *Chemical reviews*, 99, (1999), 2201-2204.
30. K.H. Thompson, C. Orvig, *Dalton Transactions*, 6, (2006), 761-764.
31. M. Gielen, E.R. Tiekink, (eds) *Front Matter*, in *Metallotherapeutic Drugs and Metal-Based Diagnostic Agents: The Use of Metals in Medicine*, John Wiley and Sons, Ltd, Chichester, UK, (2005).
32. W.H. Brock, K.A. Jensen, C.K. Jorgensen, G.B. Kauffman. 11 (1982), 261-263.
33. R.H. Crabtree. *The Organometallic Chemistry of the Transition Metals*, 2nd ed.; Wiley: New York, 1994

34. P.M. Graham, R.D. Pike, M. Sabat, R.D. Bailey, W.T. Pennington. *Inorg. Chem.* 39(22), 5121-5132.
35. M. Hariharan, F.L. Urbach. *Inorg. Chem.* 8, (1969), 556-559.
36. R. Holm, M. O'Connor, The stereochemistry of bis-chelate metal (II) complexes. *Progress in Inorganic Chemistry, Interscience, New York* 14, (1971), 241.
37. R. Prince, R. Spencer. *Inorg. Chim Acta.* 3, (1969), 54-58.
38. S.H. Makhlof, F.T. Parker, F.E. Spada, A. E Berkowitz. *J. Appl. Phys.* 81, (1997) 5561-5574.
39. S. Mukhopadhyay, D. Mandal, D. Ghosh, I. Goldberg, M. Chaudhury. *Inorg. Chem.* 42,(2003), 8439-8445.
40. R. Dubey, S. Abuzar, S. Sharma, R.K. Chatterjee, J.C. Katiyar. *J. Med. Chem.* 28, (1985), 1748-1750.
41. S. Edgar, D. Davis, J. Frazier, *Poultry Sc.* 36, (1957), 495.
42. A. Foroumadi, S. Ghodsi, S. Emami, S. Najjari, N. Samadi, M.A. Faramarzi, L. Biek Mohammadi, F.H Shirazi, A. Shafiee. *Bioorgan. Med. Chem. Lett.* 16 (2006) 3499–3503.
43. M. Das, S. Livingstone. *Brit J. Cancer.* 37, (1978), 466.
44. C.C. Guo, R.B. Tong, K.L. Li. *Bioorgan. Med. Chem.* 12, (2004), 2469-2475.
45. G.B. Bagihalli, P.G. Avaji, S.A. Patil, P.S. Badami. *Eur. J. Med. Chem.* 43, (2008), 2639-2649.
46. P. Chaudhary, R. Kumar, A.K Verma, D. Singh, V. Yadav, A.K Chhillar, R. Chandra, *Bioorgan. Med. Chem.*, 14, (2006), 1819-1826.
47. A.A. El-Emam, O.A. Al-Deeb, M. Al-Omar, J. Lehmann. *Bioorgan. Med. Chem.* 12, (2004), 5107-5113.

48. J.P. Yevich, J.S. New, D.W. Smith, W.G. Lobeck, J.D. Catt, J.L. Minielli, D.L. Temple Jr, J. Med. Chem., 29, (1986), 359-369.
49. M. Yu, M. Lizarzaburu, H. Beckmann, R. Connors, K. Dai, K. Haller, C. Li, L. Liang, M. Lindstrom, J. Ma, A. Motani, m. Wanska, A. Zhang, I. Li, J.C. Medina. Bioorg. Med. Chem. Lett. 20, (2010), 1758-1762.
50. M. Nath, S. Goyal. Main Group Met. Chem. 19, (1996) 75-102.
51. S. Kumar, D.N. Dhar, P. Saxena. J Sci Ind Res, 68, (2009), 181-187.
52. Lehninger, A.L., Biochemistry: the molecular basis of cell structure and function. 1975: Worth Publishers New York.
53. C.F. Barbas, A. Heine, G. Zhong, T. Hoffmann, S. Gramatokova, R. Bjornestedt, B. List, J. Anderson, E.A. Stura, I.A. Wilson, R.A. Lerner. Science, 278, (1997), 2085.
54. J.M. La Nauze, J.R. Coggins, H. Dixon. Biochemical J. 165 (1977), 409.
55. G.S. Harbison, J. Herzfeld. Biochemistry-US. 22 (1983), 1-5.
56. P. Otto, J. Ladik, K. Laki A. Szent-Gyorgyi. Proc. Nati. Acad. Sci. USA. 75, (1978), 3548.
57. M.D. Tsai. Biochemistry-US. 18, (1979), 1468-1472.
58. S. Ren, R. Wang, K. Komatsu, P. Bonaz-krause, Y. Zyrianov, C.E. McKenna, C. Csipke, Z.A. Tokes, E.J. Lien. J. Med. Chem. 45, (2002), 410-419.
59. V.A. Soloshonok, T. Ono. J. Org. Chem. 62, (1997), 3030-3031.
60. R.B. Ciccarelli, M.J. Solomon, A. Varshavsky. Biochemistry-US 24 (1985), 7533-7540.
61. R.O. Suara, J.E. Crowe Jr. Antimicro. Agents CH. 48, (2004), 783.
62. K. Yuasa, A. Naganuma, K. Sato, M. Ikeda, N. Kato, H. Takagi, M. Mori. Liver Int. 26, (2006), 1111-1118.

63. A.J. Minn, G.P. Gupta, P.M. Siegel, P.D. Bos, W. Shu, D.D. Giri, A. Viale, A.B. Olshen, W.L. Gerald, J. Massagué *Nature*. 436, (2005). 518-524.
64. F.A. French, E.J. Blanz Jr, S.C. Shaddix, R.W. Brockman. *J. Med. Chem.* 17, (1974), 172-181.
65. J.R.J. Sorenson, W. Hangarter. *Inflammation*. 2, (1977), 217-238.
66. A. Shulman, F. Dwyer, *Chelating Agents and Metal Chelates*. Acad. Press, New York, 1964.
67. A.D. Garnovskii, A.L. Nivorozhkin, V.I. Minkin. *Coord. Chem. Rev.* 126, (1993), 1-69.
68. D. Chen, A. Martell. *Inorg. Chem.* 26, (1987), 1026-1030.
69. D.H. Busch, N.W. Alcock. *Chem. Rev.* 94, (1994), 585-623.
70. P. Dapporto, M. Formica, V. Fusi, M. Micheloni, P. Paoli, R. Pontellini, P. Rossi. *Inorg. Chem.* 39, (2000), 4663-4665.
71. G.N. De Iuliis, G.A. Lawrance, S. Fieuw-Makaroff. *Inorg. Chem. Commun.* 3 (2000), 307-309.
72. J.C. Bayon, P. Estaban, G. Net, P.G. Rasmussen K.N. Baker, C.W. Hann, M.M. Gumz. *Inorg. Chem.* 30 (1991), 2572-2574.
73. S.S. Tandon, L.K. Thomson, J.N. Bridson, V. McKee, A.J. Downard *Inorg. Chem.* 31, (1992), 4635-4642.
74. R. Gagne, C.L. Spiro, T.J. Smith, C.A. Hamann, W.R. Thies, A.D. Shiemke. *J. Am. Chem. Soc.* 103, (1981), 4073-4081.
75. M. Suzuki. *Accounts Chem. Res.* 40, (2007), 609-617.
76. K.D. Karlin, Y. Gultneh. *Binding and Activation of Molecular Oxygen by Copper Complexes*. *Progress in Inorganic Chemistry*. 35, (2007) John Wiley & Sons, Inc., Hoboken, NJ, USA.

77. Kumar, N. *Mayo Clin. Proc.* 81, (2006), 1371-1384.
78. D. Beshgetoor, M. Hambidge. *Am. J. Clin. Nutr.* 67, (1998), 1017.
79. R. Aasa, B.G. Malmstrom, P. Saltman. *T. vanguard. Biochim. Bioph. Acta.* 75, (1963), 203-222.
80. J.R. Forbes, G. Hsi, D.W. Cox. *J. Biol. Chem.* 274, (1999), 12408.
81. R. Malkin, B.G. Malmstrom. *Adv. Enzymol. RAMB* 75, (1970), 177-244.
82. N.I. Krinsky, *Exp. Biol. M.* 200, (1992), 248.
83. P. Oestreicher, R.J. Cousins. *J. Nutr.* 115, (1985), 159.
84. G.W. Evans. *Physiol. Rev.* 53, (1973), 535-570.
85. G.W. Evans. *Physiol. Rev.* 17 (1973), 225-249.
86. Gubler, C.J. *J. Am. Med. Assoc.* 161, (1956), 530.
87. J. Mason, M. Lomand, J.C. Tressol, G. Mulryan. *Brit. J. Nutr.* 59, (1988), 289-300.
88. K.G.D. Allen, L.M. Klevay. *Altschul. S.Y.* 29, (1978), 81-93.
89. I. Bremner. *Am. J. Clin. Nutr.* 67, (1998), 1069.
90. M.J. Salgueiro, M. Zubillaga, A. Lysionek, M.I. Sarabia, R. Caro, T.D. Paoli, A. Hager, R. weill, J. Boccio. *Nutr. Res.* 20, (2000), 737-755.
91. A. Prasad. *Annu. Rev. Pharmacol.* 19, (1979), 393-426.
92. M. Shahbazi, N. Naghdi, S. Tahmasebi, M. Sheikh, N. NamvarAsl, A. Kazemnejad. 128, (2009), 232-238.
93. A.W. Root, G. Duckett, M. Sweetland, E.O. Reitter. *J. Nutr.* 109, (1979), 958.
94. G.F. Nordberg, T. Jin, Q. Kong, T. Ye, S. Cai, Z. Wang, F. Zhuang, X. Wu. *Sci. Total Environ.* 199, (1997), 111-114.
95. R.A. Goyer, C.R. Miller, S. Zhu, W. Victor. *Toxicol. Appl. Pharm.* 101, (1989), 232-244.

- 96 J. Godt, F. Scheidig, C. Grosse-Siestrup, V. Esche, P. Brandenburg, A. Reich, D.A. Groneberg. *J. Occup. Med. Toxicol.* 1, (2006), 22.
- 97 M. Webb. *Brit. Med. Bull.* 31(1975), 246-250.
- 98 V. Hiatt, J.E. Huff. *Intern. J. Environ. Stud.* 7, (1975), 277-285.
- 99 K.G. Danielson, S. Ohi, P.C. Huang. *J. Histochem. Cytochem.* 30, (1982), 1033.
- 100 M.G. Cherian, R.A. Goyer. *Life Sciences*, 23, (1978), 1-9.
- 101 K.S. Squibb, R.J. Cousins, B.L. Silbon, S. Levin. *Exp. Mol. Pathol.* 25, (1976), 163-171.
- 102 C.D. Klaassen, J. Liu, S. Choudhuri. *Annu. Rev. Pharmacol.* 39, (1999), 267-294.
103. D. Elias, R. Gillis. *Aust. J. Chem.* 19, (1966), 251-255.
104. R.J. Angelici. *Synthesis and technique in inorganic chemistry.* W.B. Saunders, London, 1977.
105. H. Nazir, M. Yildiz, H. Yilmaz, M.N. Tahir, D. Ulku. *J. Mol. Struct.* 524, (2000.), 241-250.
106. H.H. Freedman. *J. Am. Chem. Soc.* 83, (1961), 2900-2905.
107. L.E. Khoo, J.P. Charland, E.J. Gabe, F.E. Smith. *Inorg. Chim. Acta.* 128, (1987.), 139-145.
108. M.R. Mahmoud, M.T. El-Haty. *J. Inorg. Nucl. Chem.* 42, (1980), 349-353.
109. H. Temel, S. Ilhan, M. Sekerci, R. Ziyadanogullari. *Spectr. Lett.* 35, (2002), 219-228.
110. R.M. Issa, A.M. Khedr, H.F. Rizk. *Spectrochim. Acta. A:* 62, (2005), 621-629.
111. E.V. Basiuk, V.A. Basuik, J.G. Banuelos, J.S. Blesa, V.A. Pokrovsky, T.Y. Gromovoy, A.V. Mischanchuk, B.G. Mischanchuk. *J. Phys. Chem.* 106, (2002), 1588-1597.
112. S. Tanabe, T. Ebata, M. Fuji, N. Mikami. *Chem. Phys. Lett.* 215, (1993), 347-352.

113. H. Adams, N.A. Bailey, I.K. Campbell, D.E. Fenton, Q. He. *J. Chem. Soc., Dalton Trans.*11, (1996), 2233-2237.
114. P.K. Dutta, J.A. Hutt. *J. Raman. Spectrosc.*18, (1987), 339-344.
115. M.S. Liao, S. Scheiner. *J. Chem. Phys.*114, (2001), 9780.
116. H.B. Oh, C.Lin, H.Y. Hwang, H.Zhai, K. Breuker, V. Zabrouskov, B.K. Carpenter, F.W. McLafferty. *J. Am. Chem. Soc.*127, (2005), 4076-4083.
117. S. Hamamci, V.T. Yilmaz, W.T.A. Harrison. *J Mol. Struct.*734, (2005), 191-195.
118. H.L. Spell. *Anal. Chem.*41, (1969), 902-905.
119. S. Sen, P. Talukder, G. Rosiar, S. Mitra. *Struct. Chem.*16 (2005), 605-610.
120. D.T. Moore, J. Oomens, J.R. Eyler, G. Helden, G. Meijer, R.C. Dunbar. *J. Am. Chem. Soc.*127, (2005), 7243-7254.
121. G.C. Van Stein, G.V. Koten, K. Vrieze, C. Brevard, A.L. Spek. *J. Am. Chem. Soc.*106, (1984), 4486-4492.
122. B.S. Garg,M.R.P.Kurup,S.K. JainY.K.Bhoon. *Transit. Metal Chem.* 13, 1(988), 309-312.
123. M.M. Ibrahim, C.P. Olmo, T. Tekeste, J. Seebacher, G. He, J.A.M. Calvo, K. Bohmerle, G. Stenfeld, H. Brombacher, H. Vahrenkamp. *Inorg. Chem.* 45 (2006), 7493-7502.
124. J. Kovacic. *Spectrochim. Acta. A*:23, (1967), 183-187.
125. Y. Matsuda, T. Ebata, N. Mikami. *J. Chem. Phys.* 110 (1999), 8397.
126. R.M. Lees, Z.D. Sun, B. Billingham. *J. Chem. Phys.* 135, (2011) 104306.
127. J.J. Workman. *Appl. Spectrosc. Reviews*, 31, (1996), 251-320.
128. A. Sabatini, I. Bertini. *Inorg. Chem.* 4 (1965), 959-961.

129. C. Wang, S. Shieh, E. LeGoff, M.G. Kantzidis. *Macromolecules*. 29, (1996), 3147-3156.
130. R.C. Felicio, G.A. da Silva, L.F. Ceridorio, E.R. Dockal. *Syn. React. Inorg. Met.* 29,(1999), 171-192.
131. R. Heacock, L. Marion. *Can. J. Chemistry*. 34, (1956), 1782-1795.
132. P. Krueger, J. Jan. *Can. J. Chemistry*. 48, (1970), 3236-3248.
133. N. Zotov, K. Petrov, M. Dimitrova-Pankova, J. *Phys. Chem. Solids*. 51, (1990), 1199-1205.
134. S. Liu, L. Gelmini, S.J. Rettig, R.C. Thompson, C. Orgive. *J. Am. Chem. Soc.* 114, (1992), 6081-6087.
135. E.C. Alyea, A. Malek. *Can. J. Chem.* 53, (1975), 939-944.
136. E. Lopez-Torres, M.A. Mendiola, J. Rodriguez-Procopio, M.T. Sevilla, E. Colacio, J.M. Moreno, I. Sobrados. *Inorg. Chim. Acta*. 323, (2001), 130-138.
137. J.A. Castro, J. Romerio, J.A. Garcia-vaz-quiz, A. Sousa, E.E. Castellano, J. Zuckerman-Schpector. *J. Coord. Chem.* 28, (1993), 125-132.
138. E. Canpolat, M. Kaya, A. Yazıcı. *Spectrosc. Lett.* 38, (2005), 35-45.
139. R. Akaba, H. Sakuragi, K. Tokumaru. *Bull. Chem. Soc. Japan*. 58, (1985), 301-303.
140. L. Sobczyk, *Berichte der Bunsengesellschaft für physikalische Chemie*. 102, (1998), 377-383.
141. L. Shi, H.M. Ge, S.H. Tuan, H.Q. Li, Y.C. Song, H.L. Zhu, R.X. Tan. *Eur. J. Med. Chem.* 42, (2007), 558-564.
142. M.M. Abd-Elzaher. *Appl. Organomet. Chem.* 18, (2004), 149-155.
143. B. Murukan, K. Mohanan. *J. Enzym. Inhib. Med. Ch.* 22, (2007), 65-70.
144. R.S. Azarudeen, A.R. Burkanudeen. *J. Inorg. Organomet. P.* (2011) 1-16.

145. K.C. Fang, Y.L. Chen, J.Y. Sheu, T.C. Wang, C.C. Tzeng. 43, (2000), 3809-3812.
146. G. Batley, D. Graddon. Aust. J. Chem. 20, (1967), 885-891.
147. N. Raman, Y.P. Raja, A. Kulandaisamy. Proc. Indian Acad. Sci. 113, (2001), 183-189
148. N. Raman, C. Thangaraja, S. Johnsonraja. Cent. Eur. J. Chem. 3(2005), 537-555.
149. S. Zolezzi, A. Decinti, E. Spodine. Polyhedron. 18, (1999):, 897-904.
150. S.S. Ben-saber, A.A. Maihub, S.S. Hudere, M.M. El-ajaily. Microchem. J. 81, (2005), 191-194.
151. D.M. Boghaei, S. Sabounchei, S. Rayati. Syn. React. Inorg. Met. 30, (2000), 1535-1545.
152. A. Osowole, G. Kolawole, O. Fagade. Syn. React. Inorg. Met. 35, (2005), 829-836.
153. A. Osowole, G. Kolawole, O. Fagade. Journal of coordination chemistry, 61, (2008), 1046-1055.
154. K. Singh, M.S. Barwa, P. Tyagi. Eur. J. Med. Chem. 41, (2006), 147-153.
155. P. Sanz, O. Mo, M. Yanez, J. Elguero. J. Phys. Chem. 111, (2007), 3585-3591.
156. A. Trujillo, S. Sinbandhit, L. Toupet, D. Carrillo, C. Manzur, J.R. Hamon. J. Inorg. Organomet. P. 18, (2008) 81-99.
157. N. Raman, V. Muthuraj, S. Ravichandran, A. Kulandaisamy. J. Chem. Sci. 115, (2003), 161-167.
158. L.A. Saghatforoush, A. Aminkhani, S. Ershad, G. Karimnezhad, G. Ghammamy, R. Kabiri. Molecules. 13, (2008), 804-811.
159. H.L. Singh. Spectrochim. Acta. A. 76, (2010), 253-258.
160. A.A.A. Emara, A.A.A. Abou-Hussen. Spectrochim. Acta. A. 64, (2006), 1010-1024.
161. A.K. Singh, S. Kumari, P.R. Shakya, T.R. Rao. Mat. Sci. Eng. C. 31, (2011), 1111-1114.

162. A.K. Singh, S. Kumari, T.R. Rao. *Mat. Sci. Eng. C*. 31, (2011), 1144-1147.
163. U.N. Tripathi, M.S. Ahmad, G. Venubabu. *Turk. J. Chem.* 31, (2007), 45.
164. P.R. Shakya, A.K. Singh, T.R. Rao. *Spectrochim. Acta. A*. 79, (2011), 1654-1659.
165. N. Raman, S. Ravichandran, C. Thangaraja. *J. Chem. Sci.* 116, (2004), 215-219.
166. W. Zishen, L. Zhiping, Y. Zhenhuan. *Transit. Met. Chem.* 18, (1993), 291-294.
167. A.J. Ahlam N.M. Abbas. *Bioinorgan. Chem. Appl.* 2011,(2011), 1-15.
168. P. Krishnamoorthy, P. Sathyadevi, K. Deepa, N. Dharamaraj. *Spectrochim. Acta. A*. 77, (2010), 258-263.
169. M.M. Tamizh, K. Mereiter, K. Kirchner, B.R. Bhat, R. Karvembu. *Polyhedron*, 28, (2009), 2157-2164.
170. T. Mizuta, C. Miyaji, T. katayama, J. Ushio, K. Kubo, K. Miyoshi.. *Organometallics*. 28, (2008), 539-546.
171. A. Prasad, C.P. Rao, S. Mohan, A.K. Singh, R. Prakash, T.R. Rao. *Syn. React. Inorg. Met.* 39 (2009), 129-132.
172. O. Puralimardan, A.C. Chamayau, C. Janiak, H Hosseini-Monfared. *Inorg. Chim. Acta.* 360,(2007), 1599-1608.
173. T.A. Khan, S. Naseem, S.N. Khan, A.U. Khan, M. Shakir. *Spectrochim. Acta. A*. 73, (2009), 622-629.
174. N. Raman, C. Thangaraja. *Transit. Met. Chem.* 30, (2005), 317-322.
175. S. Chandra, L.K. Gupta, D. Jain. *Spectrochim. Acta. A*. 60, (2004), 2411-2417.
176. T. Achard, Y.N. Belokon, J.A. fuentes, M. North, T. Persons. *Tetrahedron*, 60, (2004), 5919-5930.
177. S. Mishra, M. Goyal, A. Singh. *Main. Group. Met. Chem.* 25, (2002), 437-444.

178. H. Koksall, M. Dolaz, M. Tumer, S. Serin. *Syn. React. Inorg. Met.* 31, (2001), 1141-1162.
179. M. Tumer, C. Celik, H. Koksall, S. Serin. *Transit. Met. Chem.* 24, (1999), 525-532.
180. P. Stabnikov, G.I. Zharkova, I.A. Baidina, S.V. Tkachev, V.V. Krisyuk, I.K. Igumenov. *Polyhedron.* 26, (2007), 4445-4450.
181. H. Halouani, I. Dumazet-Bonnamour, M. Perrin, R. Lamartine. *J. Org. Chem.* 69 (2004), 6521-6527.
182. M.A. Ali, R. Bose. *J. Inorg. Nucl. Chem.* 39, (1977), 265-269.
183. R. Karvembu, S. Hamalatha, R. Prabakaran, K. Natarajan. *Inorg. Chem. Commun.* 6, (2003), 486-490.
184. K.K. Narang, V.P. Singh. *Transit. Met. Chem.* 18, (1993), 287-290.
185. M.T.H. Tarafder, K.T. Jin, K.A. Crouse, A.M. Ali, B.M. yamin, H.K. Fun. *Polyhedron.* 21 (2002), 2547-2554.
186. A. Bottcher, T. Takeuchi, K.I. Hardcastle, T.J. Meade, H.B. Grey. *Inorg. Chem.* 36 (1997), 2498-2504.
187. R. Ramesh, S. Maheswaran. *J. Inorg. Biochem.* 96, (2003), 457-462.
188. M. Hitchman. *Inorg. Chem.* 16, (1977): p. 1985-1993.
189. P.B. Ayscough. *Electron spin resonance.* 7. (1982), Royal society of chemistry.
190. Y. Nishida, S. Kida. *Coord. Chem. R.* 27, (1979) 275-298.
191. A. Schweiger. *Electron Nuclear Double Resonance of Transition Metal Complexes with Organic Ligands: Structure and Bonding.* 51, (1982), 1-119.
192. L. Banci, A. Bancini, C. Banelli, D. Gatteschi, C. Zanchini. *Spectral-structural correlations in high-spin cobalt (II) complexes. Structures versus Special Properties,* 52,(1982), 37-86.

193. Y. Nishida, K. Hayashida, A. Sumita, S. Kida. *Inorg. Chim. Acta.* 31, (1978), 19-23.
194. E. Canpolat, M. Kaya, A. Yazıcı. *Rus. J. Coord. Chem.* 30, (2004), 87-93.
195. E. Canpolat, M. Kaya, J. *Coord. Chem.* 57, (2004), 25-32.
196. T.A. Betley, J.C. Peters. *Inorg. Chem.* 42, (2003), 5074-5084.
197. D.M. Jenkins, T.A. Batley, J.C. Peters. *J. Am. Chem. Soc.* 124 (2002), 15336-15350.
198. B. Ortiz, S.M. Park. *B. Kor. Chem. Soc.* 21, (2000), 405-411.
199. I. Fleming, *Frontier orbitals and organic chemical reactions.* 731, (1976), Wiley New York.
200. B. A. Goodman, J.B. Raynor, *Electron spin resonance of transition metal complexes.* *Adv. Inorg. Chem. Radiochem.* 13, (1970) 362. Academic press INC, Newyork, Newyork.
201. K.D. Demadis, C.M. Hartshorn, T.J. Meyer. *Chem. Rev.* 101, (2001), 2655-2686.
202. P. Knochel, R.D. Singer. *Chem. Rev.* 93, (1993), 2117-2188.
203. M. Shebl. *J. Coord. Chem.* 62, (2009), 3217-3231.
204. G.A. Kolawole, A.A. Osowole. *J. Coord. Chem.* 62, (2009), 1437-1448.
205. J.G. Martin, S.C. Cummings. *Inorg. Chem.* 12, (1973), 1477-1482.
206. M.M. Dolaz, Tumer, M. Digrak. *Transit. Met. Chem.* 29, (2004), 528-536.
207. R. Parashar, R.C. Sarma, A. Kumar, G. Mohan. *Inorg. Chim. Acta.* 151, (1988), 201-208.
208. H. Miyasaka, H.N. Matsumoto, N. Re, R. Crescenzi, C. Floriani. *Inorg. Chem.* 37, (1998), 255-263.
209. A.A.A. Abu-Hussen. *J. Coord. Chem.* 59, (2006), 157-176.
210. N. Mondal, V. Gramlich, S. Ozra Ghodsi. *Polyhedron.* 20, (2001), 135-141.
211. H. Koksai, M. Tumer, S. Serin. *Syn. React. Inorg. Met.* 26, (1996), 1577-1588.

212. G.G. Mohamed, M. Omar, A.M.M. Hindy *Spectrochim. Acta. A.* 62, (2005), 1140-1150.
213. S. Ilhan, H. Tamel, I. Yilmaz, M. Sekerci. *J. Organomet. Chem.* 692, (2007): p. 3855-3865.
214. M. Sonmez, A. Levent, M. Sekerci. *Russ. J. Coord. Chem.* 30, (2004), 655-660.
215. M.S. Nair, R.S. Joseyphus. *Spectrochim. Acta. A.* 70, (2008), 749-753.
216. Z.H. Abd El-Wahab. *Spectrochim. Acta. A.* 67, (2007), 25-38.
217. F. Hamurcu, A.B. Gunduzalp, S. Cete, B. Erk. *Transit. Met. Chem.* 33, (2008.), 137-141.
218. A.W. Addison, T.N. Rao, J. Reedijk, J.V. Rijn, G.C. Verschoor. *J. Chem. Soc., Dalton Trans.* (1984) 1349-1356.
219. B. Ganter, S. Tugendreich, C.I. Pearson, E. Ayanoglu, S. Baumhueter, K.A. Bostian, L. Brady, L.J. Browne, J.T. Calvin, G.J. Day, N. Breckenridge, S. Dunlea, B.P. Eynon, L.M. Furness, J. Ferng, M.R. Fielden, S.Y. Fujimoto, L. Gong, C. Hu, R. Iduri, M.S.B. Judo, K.L. Kolaja, M.D. Lee, C. Mc Sorley, J.M. Minor, R.V. Nair, G. Natsoulis, P. Nguyen, S.M. Nicholson, H. Pham, A.H. Roter, D. Sun, S Tan, S Thode, A.M. Tolley, A. Vladimirova, J. Yang, Z. Zhou, K. Jarnagin. *J. Biotechnol.* 119, (2005), 219-244.
220. M.N. Akhtar, K.W. Lam, F. Abas, M.S. Ahmad, S.A.A. Shah, M. Atta-ur-Rahman, I. Choudhary, N.H. Lajis. *Bioorg. Med. Chem. Lett.* 21, (2011), 4097-4103.
221. D.O. Kennedy, F.L. Dodd, B.C. Robertson, E.J. Okello, J.L. Reay, A.B. Scholey, C.F. Haskell. *J. Psychopharmacol.* 0, (2010), 1-13.
222. P. Camps, X. Formosa, C. Galdeano, T. Gomez, D. Munoz-Torrero, L. Ramirez, E. Viayna, E. Gomez, N. Isambert, R. Lavilla, A. Badia, M.V. Clos, M. Bartolini, F.

- Mancini, V. Andrisano, A. Bidon-Chanal, O. Huertas, T. Dafni, F.J. Luque. *Chem-Biol-Interact.* 187, (2010), 411-415.
- 223 D.S. Pisoni, J.S. Costa, D. Gamba, C.L. Petzhold, A.A. Borge, M.A. Ceschi, P. Lunardi, C.A.S. Goncalves. *Eur. J. Med. Chem.* 45, (2010), 526-535.
- 224 K. Gholivand, Z. Hosseini, S. Farshadian, H. Naderi-Manesh, *Eur. J. Med. Chem.* 45, (2010), 5130-5139.
- 225 V. Zarotsky, J.J. Sramek, N.R. Cutler. *Am. J. Health-Syst. Pharm.* 60, (2003), 446-452.
- 226 C. Filomena, S. Silvio, M. Mariangela, M. Federica, A.S. Giancarlo, U. Dimitar, T. Aurelia, M. Francesco, D.L. Roberto. *J. Ethnopharmacol.* 116, (2008), 144-151.
- 227 V.I. Turiiski, A.D. Krustev, V.N. Sirakov, D.P. Getova. *Eur. J. Pharmacol.* 498, (2004), 233-239.
- 228 A.R. Ndhlala, M. Moyo, J.V. Staden. *Molecules.* 15, (2010), 6905-6930.
- 229 P.H. Axelsen, M. Harel, I. Silman, J.L. Sussman. *Protein Sci.* 3, (1994), 188-197.
- 230 M. Bartolini, C. Bertucci, V. Cavrini, V. Andrisano. *Biochem. Pharmacol.* 65 (2003), 407-416.
- 231 D. Da-Ming, C.R. Paul. *Curr. Pharm. Des.* 10, (2004), 3141-3156.
- 232 M.L. Bolognesi, V. Andrisano, M. Bartolini, R. Banzi, C. Melchiorre. *J. Med. Chem.* 48, (2005), 24-27.
- 233 O.A. Aremu, S.O. Amoo, A.R. Ndhlala, J.F. Finnie, J.V. Staden. *Food Chem. Toxicol.* 49, (2011), 1122-1128.
- 234 M.R. Loizzo, R. Tundis, F. Conforti, F. Menichini, M. Bonesi, F. Nadjafi, N.G. Frega, F. Menichini. *Nutr. Res.* 30, (2010), 823-830.
- 235 E.S. de Souza Almeida, V.C. Filho, R. Niero, B.K. Clasen, S.O. Balogun, D.T.O. *J. Ethnopharmacol.* 134, (2011), 630-636.

- 236 G.J. Dockray, A. Varro, R.Dimaline, T. Wang. *Annu Rev Physiol.* 63, (2001), 119-139.
- 237 F. Mary, C. Brucker, M. Ann. *J. Nurse-Midwifery.* 42, (1997), 145-162.
- 238 R.C. DeNovo. Diseases of the stomach, in Tams TR (ed): *Handbook of SmallAnimal Gastroenterology*, ed 2. Philadelphia, WB Saunders, (2003), 160.
- 239 J.G. Wooten, A.T.Bliklager, K.A. Ryan, S.L. Marks, J. Mac Law, B.D.X. Lascelles. *Am. J. Vet. Res.* 69, (2008), 457-464.
- 240 D. Milkes, L.B. Gerson, G. Triadafilopoulos. *Am. J. Gastroenterol.* 99, (2004), 991-996.
- 241 C. Jong-il, R. Hanumatha, R. Balaji, S. Nak-Yun, K. Jae-Hun C. ByeongSoo, A. Dong Hyun C. Hong-Seok, K. Keon-Wook, L. Ju-Woon. *Chem-Biol Interact.* 183, (2010), 249-254.
- 242 E.R.V. Rios, N.F.M. Rocha, E.T. Venancio, B.A. Moura, M.L. Feitosa, G.S. Cerqueira, L.K.A.M. Leal. *Chem-Biol-Interact.* 188, (2010), 246-254.
- 243 W.P. John. *Rapid Review Biochemistry*, 2nd ed. Mosby, inc. Elsevier. 2007
- 244 X. Mei, X. Luo, S. Xu, D. Xu, Y. Zheng, J. Lv. *Chem-Biol-Interact.* 181, (2009), 316-321.
- 245 W. Opoka, D. Adamek, M. Plonka, W. Reczynski, B. Bas, D. Drozdowicz, T. Brzozowski. *J. Physiol. Pharmacol.* 61, (2010), 581-591.
- 246 M. Odashima, M. Otaka, M. Jin, I. Wada, Y. Horikawa, T. Matsuhashi, S. Watanabe. *Life Sci.* 79, (2006), 2245-2250.
- 247 G. Faa, V.M. Nurchi, A. Ravarino, D. Fanni, S. Nemolato, C. Gerosa, K. Geboes *Coord. Chem. Rev.* 252, (2008), 1257-1269.

- 248 S.R. Choi, S.A. Lee, Y.J. Kim, C.Y. Ok, H.J. Lee, K.B. Hahm. *J. Physiol. Pharmacol.* 60, (2009), 5-17.
- 249 A.K. Singla, H. Wadhwa. *Intern. J. Pharm.* 120, (1995), 145-155.
- 250 D.G. Nathan, *J. Am. Med. Assoc.* 287, (2002), 2424.
- 251 Y. Prashanthi, K. Kiranmai, N.J. Subhashini, P. Shivaraj. *Spectrochim. Acta A.* 70, (2008), 30-35.
- 252 U.M. Rabie, A.S.A. Assran, M.H.M. Abou-El-Wafa. *J. Mol. Spectr.* 872, (2008), 113-122.
- 253 E. Canpolat, M. Kaya. *J. Coord. Chem.* 58, (2005), 1063-1070.
- 254 C.S. Morrow, K.H. Cowan. *Ann. NY. Acad. Sci.* 698, (1993), 289-312.
- 255 V. Tomar, G. Bhattacharjee, A. Kumar. *Bioorgan. Med. Chem. Lett.* 17,(2007), 5321-5324.
- 256 W. Dixon. *Design and Analysis of Quantal Dose-Response Experiments (with Emphasis on Staircase Designs)*. Dixon Statistical Associates, Los Angeles, CA, USA, 1991.
257. G.L. Ellman, K.D. Courtney, R.M. Featherstone, *Biochem. Pharmacol.* 7, (1961), 88-95.
- 258 R.A. Laskowski, V.V. Chistyakov, J.M. Thornton. *Nucleic. Acids. Res.* 33, (2005.), 266-268.
- 259 J. Rouleau, B.I. Iorga, C. Guillou. *Eur. J. Med. Chem.*46, (2011), 2193-2205
- 260 I.F.F. Benzie, J. Strain. *Methods. Enzymol.* 299, (1999), 15-27.
- 261 J. Yu, L. Wang, R.L. Walzem, E.G. Miller, L.M. Pike, B.S. Patil. *J. Agric. Food Chem.* 53, (2005), 2009-2014.
- 262 P. Twentyman, M. Luscombe. *Brit. J. Cancer.* 56, (1987), 279.

- 263 M. Ferrari, M.C. Fornasiero, A.M. Isetta. *J. Immunol. Methods.* 131, (1990), 165-172.
- 264 A. Bugrim, T. Nikolskaya, Y. Nikolsky. *Drug. Dis. Today.* 9, (2004), 127-135.
- 265 R. Benigni, I.N. Tatiana, E. Benfenati, C. Bossa, R. Franke, C. Helma, E. Hulzebos, C. Marchant, A. Richard, Y.T. Woo, C. Yang. *J. Environ. Sci. Health.* 25, (2007), 25, 53-97.
- 266 M.T.D. Cronin, J.S. Jaworska, J.D. Walker, M.H.I. Comber, C.D. Watts, A.P. Worth. *Environ. Health. Persp.* 111, (2003), 1391-1401.
- 267 L.A. Saghatforoush, A. Aminkhani, S. Ershad, G. Karimnezhad, S. Ghammamy, R. Kabiri. *Molecules* 13, (2008), 804-811.
- 268 K.R. Surati, B.T. Thaker. *Spectrochim. Acta. A.* 75, (2010), 235-242.
- 269 J.Y. Feng, Z.Q. Liu, J. Agr. *Food. Chem.* 57, (2009), 11041-11046.
- 270 C.V. Rao, S.K. Ojha, K. Radhakrishnan, R. Govindarajan, S. Rastogi, S. Mehrotra, P. Pushpangadan. *J Ethnopharmacol.* 91, (2004), 243-249.
- 271 K. Sairam, C.V. Rao, M.D. Babu, K.V. Kumar, V.K. Agrawal. *J. Ethnopharmacol.* 82, (2002), 1-9.
- 272 M.T. Hussain, A.R. Verma, M. Vijayakumar, A. Sharma, C.S. Mathela, C.V. Rao. *J. Trad. Med.* 4, (2009), 188-197.
- 273 A. Luiz-Ferreira, M. Cola-Miranda, V. Barbastefano, C.A. Hiruma-Lima, W. Vilegas, A.R.M. Souza Brito. *Fitoterapia.* 79, (2008), 207-209.
- 274 J.L. Wallace. *Infl. Dr. Th.* 5, (2006), 133-137.
- 275 K. Sripanidkulchai, S. Teepsawang, B. Sripanidkulchai. *J. Med. Food.* 13, (2010), 1097-1103.
- 276 G.E. Breitwieser, G. Szabo. *J. Gen. Physiol.* 91, (1988), 469.
- 277 Y. Tsukimi, S. Okabe. *Biol. Pharm. Bull.* 24, (2001), 1-9.

- 278 C.L. Cheng, M.W.L. Koo. *Life. Sci.* 67, (2000), 2647-2653.
- 279 P. Tuchinda, V. Reutrakul, P. Claeson, U. Pongprayoon, T. Sematong, T. Santisuk, W.C. Taylor. *Phytochemistry.* 59, (2002), 169-173.
- 280 K. Ganguly, P. Maity, R.J. Reiter, S. Swarnakar. *J. Pineal. Res.* 39, (2005), 307-315.
- 281 A. Meager. *Methods.* 38, (2006), 237-252
- 282 D. Rossi, A. Zlotnik. *Annu. Rev. Immunol.* 18, (2000), 217-242.

Published articles

- Muhammad Saleh Salga, Hapipah Mohd Ali, Mahmood Ameen Abdulla, Siddig Ibrahim Abdelwahab,, Pouya Davish Hussain and A. Hamid A. Hadi. Mechanistic studies of the anti-ulcerogenic activity and acute toxicity evaluation of dichlorido-Copper(II)-4-(2-5-bromobenzylideneamino)ethyl)piperazin-1-iumphenolate complex against ethanol-induced gastric injury in rats. *Molecules.* **2011**, 16, 8654-8669. *ISI-Cited, Scopus.*
- Saleh M. Salga, Hapipah M. Ali, Mahmood A. Abdulla, Siddig I. Abdelwahab, Lam Kok Wai, Michael J. C. Buckle Sri Devi Sukumaran and A. Hamid A. Hadi. Synthesis, Characterizations, Acetylcholinesterase Inhibition, Molecular Modeling and Antioxidant Activities of Some Novel Schiff Bases Derived From 1-(2-Ketoiminoethyl)Piperazines. *Molecules.* **2011**, 16 9316-9330. *ISI-Cited, Scopus.*
- Muhammad Saleh Salga, Hapipah Mohd Ali, Mahmood Ameen Abdulla, Siddig Ibrahim Abdelwahab. Gastroprotective activity and mechanism of novel dichlorido-zinc(II)-4-(2-5-methoxybenzylideneamino)ethyl)piperazin-1-iumphenolate complex on ethanol-induced gastric ulceration. *Chem-Biol-Interact.* **2012**, 195, 144-153. *ISI-Cited, Scopus.*

- Muhammad Saleh Salga, Hapipah Mohd Ali, Mahmood Ameen Abdulla, Siddig Ibrahim Abdelwahab. Acute oral toxicity evaluations of some zinc(II) complexes derived from 1-(2-salicylaldiminoethyl)piperazine Schiff bases in rats. *IJMS*. **2012**, *13*, 1393-1404. *ISI-Cited, Scopus*.