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Synthesis of a new potentially octadentate macroacyclic N_8 ligand containing two pyridine groups and its corresponding Cu (II) complex and investigation of its biological property

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In this work, A new potentially octadentate macroacyclic N_8 ligand containing two pyridine groups (L) was prepared from the direct reaction of a previously known dialdehyde **(**N'-bis(5-formylpyrrol-2-ylmethyl) (A) with 2-(aminomethyl)pyridine (Fig. 1). The reaction of this ligand with Cu(II) metal ion resulted in the formation of a macroacyclic Schiff base complex. The compounds were characterized by FT-IR, elemental analysis, ^{1}H and ^{13}C-NMR. The IR results showed a considerable shift in C=N band of L from 1637 cm^{-1} to 1614 cm^{-1} upon complexation. Moreover, the splitting of the bands attributed to the ClO_4 counter ion confirmed the complex formation. Also, the antibacterial properties of this compound indicated that the Cu(II) complex have high antibacterial activity against Bacillus cereus bacteria in a way that its growth inhibition is much more than that of the reference antibiotics.

Keywords: Schiff base complex, macroacycle, piperazine, antibacterial property, pyridine

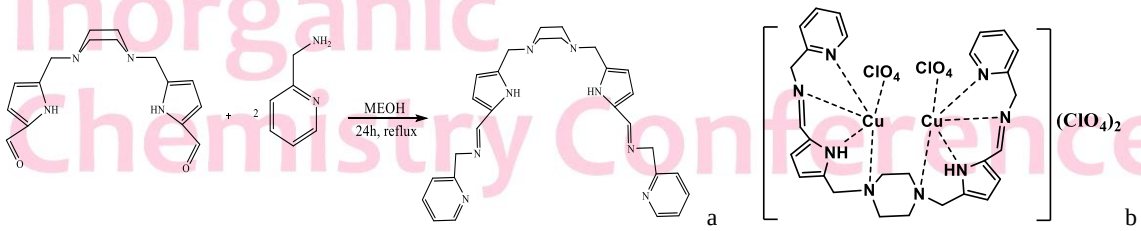


Fig.1. a) The synthesis process of L, b) The proposed structure for the Cu(II) complex.

References

[1] Rezaeivala, M., & Keypour, H. Coordination Chemistry Reviews, 2014, 280, 203-253.

[2] Abdollahi-Moghadam, M., Keypour, H., Azadbakht, R., & Koolivand, M. *Journal of Molecular Structure*, 2023, *1273*, 134289.