

BIOACTIVITY STUDIES ON SYNTHESISED AMINO-ACIDS-MOLYBDENUM COMPLEXES

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Introduction & Objectives: The amino acids have a wide range of applications in biology and exhibit remarkable activity. Metal-coordinated complexes of ligands containing nitrogen and oxygen atoms, on the other hand, are more important than those free ligands [1]. In our research we have synthesized two complexes of amino acids-molybdenum using glycine and cysteine to investigate their antioxidant and antibacterial activities, which we then compared to the ligands.

Methodology (Material and methods): In this work a direct reaction between amino-acids (glycine and cysteine) and Molybdenum were put together to synthesis two different complexes, the contained powders was characterized by examination of their elemental analysis and spectral studies (Infra-red, NMR, UV-Vis and thermal (TGA)). The complexes have been tested with DPPH essays and antimicrobial by disk diffusion, in order to assess its antioxidant and antibacterial activities respectively the studies appear promising results.

Results and Discussion: Spectral studies were performed on the acquired powders, allowing us to substract essenriell informations, the infrared spectra of the complexes compared to the ligands shows new bonds correspond to the complexation of the organic molecule to the metal [2]. The UV-Visible results could confirm this by the appearance of the LMCT bands. The elemental analysis allowed us to propose, after calculating the theoretical value and comparing it to the experimental one, a general formula for our complexes. These results support the TGA and NMR findings. After the characterization, a DPPH essay was applied to the complexes for the antioxidant activity study. The results showed an improvement in the value of the IC₅₀

IC_{50Gly-Mo}=7.72(mM) < IC_{50Gly}=22.15(mM) and
IC_{50Cys-MO}=9.65(mM) < IC_{50Cys}=13.83(mM)

The antimicrobial activity by disk was calculated for the two complexes and the ligands by using solutions under concentration of 5ppm

The diameters of inhibitions were noted and expose as the following

	<i>E-coli</i>	<i>Staph</i>	<i>Bacillus Enterro</i>	
Gly-Mo(D _{inb})	6mm	10mm	10mm	/
Gly D _{inb})	6mm	6mm	6mm	/
Cys-Mo(D _{inb})	/	16mm	12mm	20mm
Cys (D _{inb})	/	8mm	6mm	8mm

Conclusion: The coordination complexes of Mo with two amino acids glycine and cystiene were synthesized and characterized. The ligands coordinated the metal ions through N and O. A formula was proposed based on the result of the various analyses. A comparativestudy of the zones of inhibition and DPPH essay indicated that complexation may increase the antimicrobial and antioxydant activity of biological ligands such as amino acids.

Keywords: Amino acids, Molybdenum complex, antioxydant, antimicrobial.

References

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