Synthesis, structural, thermal and vibrational characterization of copper (II) complex with 1,10-phenanthroline and L-proline for antitumor application

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Recent reports showed that copper (II) complexed with amino acids and polypyridine ligands have efficient DNA cleavage in tumor cells by oxidative and hydrolytic pathways. In particular, the cyclic structure of L-proline gives an exceptional conformational rigidity compared to other amino acids. This work aimed to synthesize the copper (II) crystalline complex with 1,10-phenanthroline and L-proline by the method of slow solvent evaporation and to characterize its structural, vibrational and thermal properties by X-ray diffraction (XRD), Fourier-transform infrared spectroscopy (FTIR) and differential scanning calorimetry (DSC). The XRD at room temperature showed that the material crystallizes in a monoclinic system with P 2_1 space group. The FTIR spectrum reveals Cu (II) complexation with the organic molecules. The DSC measures show that the crystal has thermal stability up to 46 °C, being higher than the temperature of the human body, suggesting that the material has potential application in antitumor drugs.

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References:

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