



New Heterometallic Metal-organic Complex: Photocatalytic Property and Therapeutic Effect on Liver Cancer by Regulating the Mir-131 Expression

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SUMMARY. A new heterometallic compound, namely $[\text{CuSr}(\text{Hbtc})_2(\text{H}_2\text{O})_2]_n$ ($\mathbf{1}$, $\text{H}_3\text{btc} = 1,2,4\text{-benzenetricarboxylic acid}$), has been hydrothermally synthesized. It features a 3D framework based on 1D $-\{\text{Cu}(\text{COO})_2\text{-Sr}\}_n$ - chains, and the Hbtc^{2-} ligand in the structure of $\mathbf{1}$ shows a $(\kappa^1)-(\kappa^1:\kappa^1)-(\kappa^1:\kappa^1)-\mu_5$ bridging mode. The investigation of its photocatalytic behavior revealed that $\mathbf{1}$ can be served as a stable photocatalyst for the degradation of MB under UV light irradiation. Its therapeutic effect on liver cancer was evaluated and the related mechanism was explored as well. The inhibitory activity of the new compound on the cancer cell viability was determined with CCK-8 assay. The relative expression of the miR-131 was also determined with real time RT-PCR assay.

RESUMEN. Se ha sintetizado hidrotérmicamente un nuevo compuesto heterometálico, a saber, $[\text{CuSr}(\text{Hbtc})_2(\text{H}_2\text{O})_2]_n$ ($\mathbf{1}$, $\text{H}_3\text{btc} = \text{ácido } 1,2,4\text{-bencenotricarboxílico}$). Presenta un marco 3D basado en cadenas 1D $-\{\text{Cu}(\text{COO})_2\text{-Sr}\}_n$ -, y el ligando Hbtc^{2-} en la estructura de $\mathbf{1}$ muestra un $(\kappa^1)-(\kappa^1:\kappa^1)-(\kappa^1:\kappa^1)-\mu_5$ modo de puente. La investigación de su comportamiento fotocatalítico reveló que $\mathbf{1}$ puede servir como un fotocatalizador estable para la degradación de MB bajo la irradiación de luz ultravioleta. Se evaluó su efecto terapéutico sobre el cáncer de hígado y también se exploró el mecanismo relacionado. La actividad inhibitoria del nuevo compuesto sobre la viabilidad de las células cancerosas se determinó con el ensayo CCK-8. La expresión relativa de miR-131 también se determinó con un ensayo de RT-PCR en tiempo real.

KEY WORDS: 3D framework, heterometallic compound, hydrothermal synthesis, liver cancer, photocatalysis.

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