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A Heterometallic Coordination Polymer: Crystal Structure and Anti-Lung Cancer Activity

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SUMMARY. By employment of the ligand pyridine-2,5-dicarboxylic acid (2,5-H_2pydc) containing both carboxylate and pyridine donor atoms as the organic linker, a heterometallic coordination polymer with the chemical formula of [LaCu(2.5-pydc)2(H_2O)^4]Cl·4H_2O (**1**) has been successfully prepared under the hydrothermal conditions with the presence of NaOH as the pH modulator. Its anti-cancer activity was evaluated *in vitro* and the protentional mechanism was discussed at the same time. Firstly, the Cell Counting Kit-8 was performed to detect the inhibitory effect of complex **1** on the cancer cell viability. Next, the reverse transcription-polymerase chain reaction (RT-PCR) preformation was conducted to determine the relative expression of *miR-16-1* after complex **1** treatment. In addition to this, the western blotting assay was also finished to measure the Bcl-2 expression level after complex **1** treatment.

RESUMEN. Mediante el empleo del ligando ácido piridin-2,5-dicarboxílico (2,5-H_2pydc) que contiene átomos donadores de carboxilato y piridina como enlazador orgánico, se ha preparado con éxito un polímero de coordinación heterometálico con la fórmula química [LaCu(2.5-pydc)2(H_2O)^4]Cl·4H_2O (**1**) en condiciones hidrotermales con NaOH como modulador del pH. Su actividad anticancerígena se evaluó *in vitro* y se discutió al mismo tiempo el mecanismo de protección. En primer lugar, se realizó el Kit de recuento celular 8 para detectar el efecto inhibitorio del complejo **1** sobre la viabilidad de las células cancerosas. A continuación, se realizó la preformación de la reacción en cadena de la polimerasa de transcripción inversa (RT-PCR) para determinar la expresión relativa de *miR-16-1* después del tratamiento con el complejo **1**. Además de esto, el ensayo de transferencia Western también se utilizó para medir el nivel de expresión de Bcl-2 después del tratamiento con el complejo **1**.

KEY WORDS: anticancer activity, coordination polymer, X-ray diffraction.

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