

## A New Pb(II)-Based Coordination Complex: Clinical Care After the Treatment of Rheumatism Caused by Biological Agents

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**SUMMARY.** In our work, with the application of 1,1'-(1,5-pentanediyil)bis-1H-benzimidazole (pbbm), a flexible nitrogen-donor ligand, a new coordination complex involving Pb(II) ions as nodes with the chemical formula of  $[PbI_2(pbbm)]_2$  has been successfully prepared via reaction of  $PbI_2$  with the pbbm ligand under a slow evaporation conditions. For the treatment adverse reactions caused by biological agents during rheumatism therapy, the inhibitory activity of the new compound on the IL-6 and IL-18 content released into plasma was assessed with the ELISA detection kit. Additionally, the NF- $\kappa$ B activation levels were detected via exploiting the real time RT-PCR after indicated compound treatment. Molecular docking simulations demonstrated that the Pb complex only exhibited limited activities to the given target protein, since all the polar atoms were either binding with the Pb metal ion or binding with alkyl linkers.

**RESUMEN.** En nuestro trabajo, con la aplicación de 1,1'-(1,5-pentano-diil)bis-1H-bencimidazol (pbbm), un ligando donante de nitrógeno flexible, un nuevo complejo de coordinación que involucra iones Pb (II) como nodos con el La fórmula química de  $[PbI_2(pbbm)]_2$  se ha preparado con éxito mediante la reacción de  $PbI_2$  con el ligando pbbm en condiciones de evaporación lenta. Para las reacciones adversas del tratamiento causadas por agentes biológicos durante la terapia del reumatismo, se evaluó la actividad inhibitoria del nuevo compuesto sobre el contenido de IL-6 e IL-18 liberado en el plasma con el kit de detección ELISA. Además, los niveles de activación de NF- $\kappa$ B se detectaron aprovechando la RT-PCR en tiempo real después del tratamiento con el compuesto indicado. Las simulaciones de acoplamiento molecular demostraron que el complejo de Pb solo exhibía actividades limitadas para la proteína diana dada, ya que todos los átomos polares se unían con el ion metálico Pb o se unían con enlazadores alquilo.

**KEY WORDS:** Coordination complex, rheumatism, Molecular docking

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