

Two Zn(II) and Co(II) Coordination Polymers: Treatment Activity and Nursing Values on Postoperative Bleeding by Increasing the Prothrombin Activity

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SUMMARY. In our present experiment, two novel transition metal coordination polymers (CPs) were generated under the hydrothermal conditions based on the asymmetric tetracarboxylic acids with various auxiliary N-donor ligands, and their chemical formulae respectively are $[\text{Co}_4(\alpha\text{-bptc})(4,4'\text{-bipy})_2(\text{OH})_4\cdot 4\text{H}_2\text{O}]\cdot 13\text{H}_2\text{O}$ (**2**) (where bpee = 1,2-bis(4-pyridyl)ethylene, 4,4'-bipy = 4,4'-bipyridine and $\alpha\text{-H}_4\text{bptc}$ = 2,3,3',4'-biphenyl tetracarboxylic acid) and $[\text{Zn}_4(\alpha\text{-bptc})_2(\text{bpee})_3\cdot 2\text{H}_2\text{O}]\cdot 2\text{H}_2\text{O}$ (**1**). The assessment of their treatment effect against the postoperative bleeding disease was conducted and the associated mechanism was also discussed. The vascular hemorrhage model was established and CPs **1** and **2** were employed for the specific treatment. For the animal model, the prothrombin time (PT) together with fibrinogen (FIB) was identified firstly. Through the real time RT-PCR, the prothrombin activation existing in the plasma after the CPs' treatment was measured.

RESUMEN. En nuestro experimento actual, se generaron dos nuevos polímeros de coordinación (CP) de metales de transición en condiciones hidrotermales basados en los ácidos tetracarboxílicos asimétricos con varios ligandos donantes de N auxiliares, y sus fórmulas químicas, respectivamente, son $[\text{Co}_4(\alpha\text{-bptc})(4,4'\text{-bipy})_2(\text{OH})_4\cdot 4\text{H}_2\text{O}]\cdot 13\text{H}_2\text{O}$ (**2**) (donde bpee = 1,2-bis(4-piridil)etileno, 4,4'-bipy = 4,4'-bipiridina y $\alpha\text{-H}_4\text{bptc}$ = ácido 2,3,3',4'-bifenil-tetracarboxílico) y $[\text{Zn}_4(\alpha\text{-bptc})_2(\text{bpee})_3\cdot 2\text{H}_2\text{O}]\cdot 2\text{H}_2\text{O}$ (**1**). Se realizó la evaluación del efecto de su tratamiento contra la enfermedad hemorrágica postoperatoria y también se discutió el mecanismo asociado. Se estableció el modelo de hemorragia vascular y se emplearon los CP **1** y **2** para el tratamiento específico. Para el modelo animal, en primer lugar se identificó el tiempo de protrombina (PT) junto con el fibrinógeno (FIB). Mediante la RT-PCR en tiempo real se midió la activación de protrombina existente en el plasma tras el tratamiento de las CP.

KEY WORDS: coordination complexes, hydrothermal conditions, postoperative bleeding.

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