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Treatment Activity of Co(II)-related Coordination Polymers on Atherosclerosis by Inhibiting the Levels of VCAM-1

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SUMMARY. In this report, two newly Co(II)-based coordination polymers (CPs) $[Co(L_1)_2 \cdot 2H_2O]$ (1) [HL_1 = 4-(3-(pyridin-3-yl)-1H-1,2,4-triazol-5-yl)benzoic acid, L_1^- is the deprotonation ligands of the HL_1] and $[CoL_2(bpe) \cdot H_2O]$ (**2**), [H_2L_2 = naphthalene-1,2-dicarboxylic acid, L^{2-} is the deprotonation of the H_2L; bpe = 1,2-di(pyridin-4-yl)ethane] have been solvothermally synthesized by using the transition metal Co(II) ions and different ligand systems. The whole structures of **1** and **2** was systemically studied via single crystal XRD, FT-IR spectroscopy and elemental detection. Their application towards the atherosclerosis were examined, together with corresponding mechanism analyzed. The ELISA assay was firstly conducted and the content of VCAM-1 flow inside plasma was detected. Then, the real time RT-PCR was performed and the AMPK signaling pathway activity in arterial plaque tissue was determined.

RESUMEN. En este informe, dos nuevos polímeros de coordinación (CP) basados en Co(II) $[Co(L_1)_2\ 2H_2O]$ (**1**) [HL_1 = 4-(3-(piridin-3-il)-1H-1,2 ácido ,4-triazol-5-il)benzoico, L_1- son los ligandos de desprotonación de HL_1] y $[CoL_2(bpe) \bullet H_2O]$ (**2**), [H_2L_2 = ácido naftaleno-1,2-dicarboxílico, L2- es la desprotonación del H_2L; bpe = 1,2-di(piridin-4-il) etano] se han sintetizado solvotérmicamente mediante el uso de iones Co(II) de metales de transición y diferentes sistemas de ligandos. Las estructuras completas de **1** y **2** se estudiaron sistemáticamente mediante XRD de cristal único, espectroscopía FT-IR y detección elemental. Se examinó su aplicación en la aterosclerosis, junto con el mecanismo correspondiente analizado. Primero se realizó el ensayo ELISA y se detectó el contenido de flujo de VCAM-1 dentro del plasma. Luego se realizó la RT-PCR en tiempo real y se determinó la actividad de la vía de señalización de AMPK en el tejido de la placa arterial.

KEY WORDS: atherosclerosis, Co(II) complexes, coordination polymers, ELISA assay.

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