

Co(II) Coordination Polymers: Crystal Structures and Treatment Activity on Myocardial Infarction

Yi-Wei LI¹ & Hui CHANG^{2*}

¹ Department of Geriatrics, Yan'an Hospital of Kunming City, Kunming, Yunnan, China

² Department of Cardiovascular Medicine, Affiliated Hospital of Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, China

SUMMARY. In the present study, two new Co(II)-containing coordination polymers (CPs) with the chemical formulae of $\{[\text{Co}_2(\text{L})(\text{bpyBr})_2(\text{H}_2\text{O})^2]\cdot\text{H}_2\text{O}\}_n$ (**1**) and $\{[\text{Co}(\text{H}_2\text{L})(\text{bipy})(\text{H}_2\text{O})]\cdot\text{H}_2\text{O}\}_n$ (**2**) ($\text{H}_4\text{L} = 5,5'$ -(pentane-1,4-diylbis(oxy))diisophthalic acid, $\text{bpyBr} = 4,4'$ -dibromo-2,2'-bipyridyl, $\text{bipy} = 4,4'$ -bipyridine) have been successfully prepared under the similar reaction conditions by using different N-donor co-ligands. Their applications on the myocardial infarction were evaluated and the related mechanism was explored at the same time. First of all, the real time reverse transcription-polymerase chain reaction (RT-PCR) was conducted to evaluate the relative expression of the NCX and Ry R2 receptor. In addition to this, the inflammatory cytokines released into the plasma was also determined with enzyme linked immunosorbent assay (ELISA) detection kit.

RESUMEN. En el presente estudio, dos nuevos polímeros de coordinación (CP) que contienen Co (II) con las fórmulas químicas de $\{[\text{Co}_2(\text{L})(\text{bpyBr})_2(\text{H}_2\text{O})^2]\cdot\text{H}_2\text{O}\}_n$ (**1**) y $\{[\text{Co}(\text{H}_2\text{L})(\text{bipy})(\text{H}_2\text{O})]\cdot\text{H}_2\text{O}\}_n$ (**2**) ($\text{H}_4\text{L} = 5,5'$ -(pentano-1,4-diilbis (oxi)) ácido diisoftálico, $\text{bpyBr} = 4,4'$ -dibromo-2, 2'-bipiridilo, $\text{bipy} = 4,4'$ -bipiridina) se han preparado con éxito en condiciones de reacción similares utilizando diferentes co-ligandos de donantes de N. Se evaluaron sus aplicaciones en el infarto de miocardio y al mismo tiempo se exploró el mecanismo relacionado. En primer lugar, se llevó a cabo la reacción en cadena de la polimerasa con transcripción inversa en tiempo real (RT-PCR) para evaluar la expresión relativa de los receptores NCX y Ry R2. Además de esto, las citocinas inflamatorias liberadas en el plasma también se determinaron con un kit de detección de ensayo inmunoabsorbente ligado a enzimas (ELISA).

KEY WORDS: coordination polymers, inflammatory cytokines, myocardial infarction.

* Author to whom correspondence should be addressed. E-mail: changhui_197308@163.com