

Therapeutic Effect of a New Heterocycles Compound on Renal Fibrosis by Regulating TGF Level

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SUMMARY. The new heterocycles compound methyl 1-(4-methoxyphenyl)-7-oxo-6-(4-(2-oxopiperidin-1-yl)phenyl)-4,5,6,7-tetrahydro-1H-pyrazolo[3,4-c]pyridine-3-carboxylate (**1**), designed using 3-morpholino-1-(4-(2-oxopiperidin-1-yl)phenyl)-5,6-dihydropyridin-2(1H)-one (**2**) as start material, was successfully obtained via multiple synthesis route and finally characterized by IR, ¹H NMR, and single crystal X-ray crystallography. Furthermore, the treatment activity of the new compound on renal fibrosis was evaluated and the related mechanism was explored at the same time. Firstly, the ELISA assay was conducted and the content of TGF-β and CTGF in the plasma was measured. Then, the real time RT-PCR was carried out and the activation of the Smad signaling pathway was determined.

RESUMEN. El nuevo compuesto de heterociclos metil-1-(4-metoxifenil)-7-oxo-6-(4-(2-oxopiperidin-1-il)fenil)-4,5,6,7-tetrahidro-1H-pirazolo [3,4-c]piridin-3-carboxilato (**1**), diseñado usando 3-morfolino-1-(4-(2-oxopiperidin-1-il)fenil)-5,6-dihidropiridin-2(1H)-ona (**2**) como material de partida, se obtuvo con éxito a través de múltiples rutas de síntesis y finalmente se caracterizó por IR, ¹H NMR y cristalografía de rayos X de cristal único. Además, se evaluó la actividad de tratamiento del nuevo compuesto sobre la fibrosis renal y al mismo tiempo se exploró el mecanismo relacionado. En primer lugar, se realizó el ensayo ELISA y se midió el contenido de TGF-β y CTGF en el plasma; luego, se realizó la RT-PCR en tiempo real y se determinó la activación de la vía de señalización de Smad.

KEY WORDS: ELISA, heterocycles compound, renal fibrosis, RT-PCR.

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