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A New Ternary Cu(I) Coordination Polymer with Good Photocatalytic Activity Promotes Paracrine Function of Human Deciduous Tooth Pulp Stem Cells

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SUMMARY. A new ternary Cu(I) compound, namely $[Cu(L)_{0.5}(CN)]_n$ (1, L = 4-(5-{4-[5-(pyridin-4-yl)-1,3,4-oxadiazol-2-yl]phenyl}-1,3,4-oxadiazol-2-yl)pyridine), was synthesized under solvothermal conditions. The optical band gap of 3.14 eV of 1 reveals its good semiconductor property, displaying excellent photocatalytic activity for the degradation of MB under UV light irradiation. Its application values on the paracrine function of human deciduous tooth pulp stem cells were further evaluated. The ELISA assay was conducted to measure the content of VEGF secreted by the dental pulp stem cells. Then, the levels of the autophagy in the cells were determined with real time RT-PCR.

RESUMEN. Un nuevo compuesto ternario de Cu(I), concretamente $[Cu(L)0,5(CN)]_n$ (**1**, L = 4-(5-{4-[5-(piridin-4-il)-1,3,4 -oxadiazol-2-il]fenil}-1,3,4-oxadiazol-2-il)piridina), se sintetizó en condiciones solvotérmicas. La banda prohibida óptica de 3,14 eV de **1** revela su buena propiedad semiconductora, mostrando una excelente actividad fotocatalítica para la degradación de MB bajo irradiación con luz ultravioleta. Se evaluaron más a fondo sus valores de aplicación sobre la función paracrina de las células madre de la pulpa de los dientes deciduos humanos. El ensayo ELISA se realizó para medir el contenido de VEGF secretado por las células madre de la pulpa dental. Luego, se determinaron los niveles de autofagia en las células mediante RT-PCR en tiempo real.

KEY WORDS: Cu(I) compound, human deciduous tooth pulp stem cells, photocatalysis, solvothermal synthesis.

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