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A Ho(III) Complex: Inhibiting the Expression Levels of the *Porphyromonas gingivalis* Survival Genes and Treatment Activity on the Chronic Periodontitis

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***SUMMARY*. By employment of the 8-hydroxyquinoline-2-carboxaldehyde-(aminourea)hydrochloride tetradentate ligand (HL), a new dinuclear Ho(III) coordination complex $[Ho_2Cl_4(L^1)_2(CH_3OH)_2]\cdot 4C_5H_5N$ has been successfully prepared and structurally charactered via the single crystal X-ray diffraction and the elemental analysis. For the treatment of the chronic periodontitis, the levels of the inflammatory cytokines after indicated compound treatment was measured with ELISA detection kit. Besides, after the compound treatment, the real time RT-PCR was conducted and the relative expression levels of the survival genes in *Porphyromonas gingivalis* was assessed at the same time. Molecular docking study shows that only the nitrogen atoms on the Ho metal cluster could interact with the protein, neither oxygens nor the chloride atoms have the ability to interact with the protein.**

RESUMEN. Mediante el empleo del ligando tetradentado de hidrocloruro de 8-hidroxiquinolina-2-carboxaldehído (aminourea) (HL), se ha preparado con éxito y estructuralmente un nuevo complejo de coordinación dinuclear Ho(III) $[Ho_2Cl_4(L^1)_2(CH_3OH)_2]\cdot 4C_5H_5N$ caracterizado a través de la difracción de rayos X monocristalino y análisis elemental. Para el tratamiento de la periodontitis crónica se midieron los niveles de las citocinas inflamatorias después del tratamiento con el compuesto indicado con el kit de detección ELISA. Además, después del tratamiento con el compuesto, se realizó la RT-PCR en tiempo real y se evaluaron al mismo tiempo los niveles de expresión relativa de los genes de supervivencia en *Porphyromonas gingivalis*. El estudio de acoplamiento molecular muestra que sólo los átomos de nitrógeno en el grupo de metales Ho podrían interactuar con la proteína, ya que ni los átomos de oxígenos ni los de cloruro tienen la capacidad de interactuar con la proteína.

KEY WORDS: chronic periodontitis, coordination complex, molecular docking, *Porphyromonas gingivalis*.

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