Síntesis y caracterización de una nueva metaloporfirina de Mg^{2+} derivada de la 5, 10, 15, 20- tetrakis(4-etilfenil) porfirina

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RESUMEN

Introducción. Los compuestos de porfirina y metaloporfirina desempeñan un papel destacado en muchos procesos naturales. Además, actualmente hay una tendencia al crecimiento de su estudio, principalmente en el campo de la ciencia de materiales, óptica cuantitativa, producción de paneles solares y sensores. Además, en la química de las moléculas biológicamente activas el estudio de esta familia de compuestos tiene un lugar privilegiado por la variedad de actividades biológicas como agentes antiparasitarios, antibacterianos, antifúngicos y antitumorales. **Objetivo**. Sintetizar y caracterizar una nueva metaloporfirina de Mg^{2+} derivada de la 5, 10, 15, 20- tetrakis(4-etilfenil) porfirina. **Metodología**. La síntesis de la nueva metaloporfirina de Mg^{2+} (TEtPP-Mg) derivada de la 5,10, 15, 20-tetrakis(4-etilfenil) porfirina (TETPP), se realizó mezclando 0.3 mmol de TEtPP y 1.2 mmol de $MgCl_2$ en 50 mL de dimetilformamida (DMF) a reflujo por 6 horas, la reacción fue seguida por cromatografía en capa fina, y al finalizar reacción el producto fue recuperado adicionando 80 mL de agua desionizada (x5) y filtrando por gravedad usando papel filtro Whatman No. 1. Finalizada está etapa y verificado la pureza de la nueva metaloporfirina se realizó su caracterización por UV-Vis y FTIR-ATR. **Resultados**. Se obtuvo un producto de color púrpura brillante con rendimiento del 63.0 %; punto de fusión > 300 _C; UV-Vis

(acetato de etilo)_(nm): 426, 566, 607; FTIR-ATR (cm^{-1}): Csp3-H (2964.05), C=C (1661.37), C=N (1328.71), C-N (992.19). **Conclusión**. Se preparó la metaloporfirina TEtPP-Mg con un rendimiento de reacción del 63.0 %. Al mismo tiempo, la caracterización de esta metaloporfirina fue efectiva usando técnicas analíticas avanzadas UV-Vis y FTIR-ATR.

PALABRAS CLAVES: Metaloporfirina, Porfirinas, UV-Vis, FTIR-ATR, Síntesis, Caracterización.

ABSTRACT

Introduction. Porphyrin and metalloporphyrin compounds play a prominent role in many natural processes. On the other hand, there is currently a growing trend in their study, mainly in the field of materials science, quantitative optics, solar panel production and sensors. Moreover, in the chemistry of biologically active molecules the study of this family of compounds has a privileged place due to the variety of biological activities as antiparasitic, antibacterial, antifungal and antitumor agents. **Objective**. To synthesize and characterize a new Mg^{2+} metalloporphyrin derived from 5,10,15,20- tetrakis(4-ethylphenyl) porphyrin. **Methodology**. The synthesis of the new Mg^{2+} metalloporphyrin (TEtPP-Mg) derived from 5,10, 15, 20-tetrakis(4-ethylphenyl) porphyrin (TETPP), was carried out by mixing 0.3 mmol of TEtPP and 1.2 mmol of $MgCl_2$ in 50 mL of dimethylformamide (DMF) at reflux for 6 hours, the reaction was followed by thin layer chromatography, and at the end of the reaction the product was recovered by adding 80 mL of deionized water (x5) and filtering by gravity using Whatman No. 1 filter paper. Once this stage was completed and the purity of the new metalloporphyrin was verified, it was characterized by UV-Vis and FTIR-ATR. **Results**. A bright purple product was obtained with 63.0 % yield; melting point > 300 _C; UV-Vis (ethyl acetate)_(nm): 426, 566, 607; FTIR-ATR (cm-1): Csp3-H (2964.05), C=C (1661.37), C=N (1328.71), C-N (992.19). **Conclusion**. TEtPP-Mg metalloporphyrin was prepared with a reaction yield of 63.0 %. At the same time, the characterization of this metalloporphyrin was effective using advanced analytical techniques UV-Vis and FTIR-ATR.

Keywords: Metalloporphyrin, Porphyrins, UV-Vis, FTIR, ATR, Synthesis, Characterization.

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