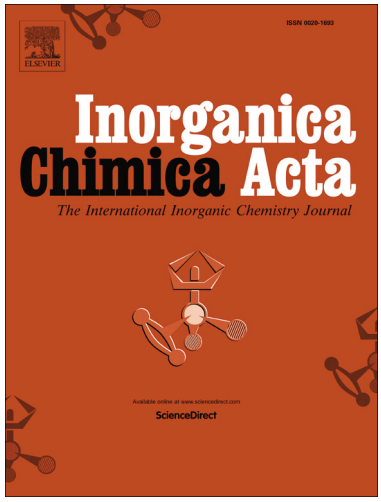

Research paper

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PII: S0020-1693(16)30988-4
DOI: http://dx.doi.org/10.1016/j.ica.2017.04.026
Reference: ICA 17531

To appear in: *Inorganica Chimica Acta*

Received Date: 9 January 2017
Revised Date: 6 April 2017
Accepted Date: 14 April 2017

Please cite this article as: M. Gemili, H. Sari, M. Ulger, E. Sahin, Y. Nural, Pt(II) and Ni(II) complexes of octahydropyrrolo[3,4-c]pyrrole *N*-benzoylthiourea derivatives: Synthesis, characterization, physical parameters and biological activity, *Inorganica Chimica Acta* (2017), doi: http://dx.doi.org/10.1016/j.ica.2017.04.026

Pt(II) and Ni(II) complexes of octahydropyrrolo[3,4-c]pyrrole *N*-benzoylthiourea derivatives: Synthesis, characterization, physical parameters and biological activity

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Abstract

In this study, four novel Pt(II) and Ni(II) complexes of octahydropyrrolo[3,4-c]pyrrole, consisting of pyrrolidine fused to pyrrolidine-2,5-dione, *N*-benzoylthiourea derivatives were synthesized and their structural characterization was performed by NMR, FT-IR, MS, HRMS and elemental analysis techniques and single crystal X-ray diffraction studies. The octahydropyrrolo[3,4-c]pyrrole *N*-benzoylthiourea compound **3c** crystallizes triclinic, with space group P-1. Pt(II) and Ni(II) ions created *cis*-complexes Pt(II) **4c** and Ni(II) **5a** forming distorted square-planar structures in orthorhombic space groups Pnma and Pbca, respectively. Furthermore, the ligands behave as bidentate and bind to the metal atom *via* the S and O atoms. Acid dissociation constants of the ligands were determined by potentiometric titration method in 25% (v/v) acetonitrile-water hydroorganic solvent at 25 ± 0.1 °C, at an ionic background of 0.1 mol / L of NaCl using the HYPERQUAD computer program and at least three acid dissociation constants were determined for each ligand. Stability constants of Pt(II) and Ni(II) complexes of the ligands were determined by potentiometric titration under the same conditions as stated above. Determination of the stability constant studies show that the ligands tend to form with Pt(II) ion in acidic medium as 1:1 (M:L) and in basic medium as 1:2 (M:L), but the ligands tend to form with Ni(II) ion in both acidic