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Agnieszka Chylewska, Małgorzata Biedulska, Mariusz Makowski



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# Multi-analytical studies about physico-chemical properties of Ni(II)-vitamin B<sub>6</sub> coordination compounds and their CT-DNA interactions

Agnieszka Chylewska<sup>a</sup>, Małgorzata Biedulska<sup>a,\*</sup>, Mariusz Makowski<sup>a,\*</sup>

<sup>a</sup>Faculty of Chemistry, University of Gdansk, Wita Stwosza 63, 80-309 Gdansk, Poland

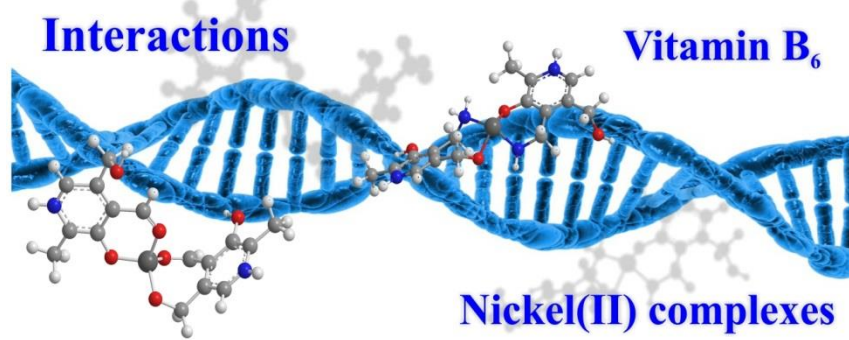
## ABSTRACT

Two coordination compounds and their structural characterization of [Ni(PM)<sub>2</sub>]Cl<sub>2</sub> and [Ni(PL)<sub>2</sub>]Cl<sub>2</sub> have been studied. Pyridoxamine (PM) and pyridoxal (PL) denote individual vitamers of vitamin B<sub>6</sub> and both demonstrated bidentate nature inside the complexes. The acid-base behavior of the mentioned complexes and their possible interactions with biomolecules in solutions have been never reported. Here, UV-spectroscopic, potentiometric, cyclic voltammetric studies have been carried out on the interaction of the Ni(II)-vitamer complexes with protons as well as with *calf thymus*-DNA (CT-DNA) in aqueous medium. The acidity constants values of coordination compounds studied have been determined and compared. The potentiometric and pHmetric-spectrophotometric microtitrations were carried out at the same conditions of temperature and pH range, 25 °C and 1.72-11.68, respectively. The procedural decomposition temperatures of the complexes were given and considered in relation to the structures of the examined compounds to complete the structural description of [Ni(PM)<sub>2</sub>]Cl<sub>2</sub> and [Ni(PL)<sub>2</sub>]Cl<sub>2</sub>. The CT-DNA binding potential of Ni(II) complexes was carried out by absorption spectroscopy and cyclic voltammetry methods. Mechanism investigation have demonstrated that examined compounds could interact to CT-DNA by grooving binding mode, which was stabilized by hydrogen bond and van der Waals forces.

## Keywords

Ni(II) complexes; Pyridoxamine; Pyridoxal; Potentiometry; DNA; UV Spectroscopy; Cyclic voltammetry; Thermogravimetry.

## GRAPHICAL ABSTRACT



\*Corresponding authors. E-mails: mariusz.makowski@ug.edu.pl (M. Makowski); malgorzata.biedulska@phdstud.ug.edu.pl (M. Biedulska)

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