Pyrazine-2-carbohydrazone of Pyridoxal 5'-Phosphate: Synthesis, Stability, Formation Kinetics, and Interaction with DNA

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Abstract—(5-Hydroxy-6-methyl-4-{(*E*)-[2-oxo-2-(pyrazin-2-yl)ethyl]hydrazinylidenemethyl}pyridin-3-yl)-methyl phosphate has been synthesized via the interaction of pyridoxal-5-phosphate and pyrazin-2-carbohydrazide. Its stability constants in an aqueous solution at pH = 1.9, 6.6, 7.0, and 7.4 have been determined. The kinetics of formation and hydrolysis of the hydrazone has been studied, and rate constants of the direct and reverse reactions have been calculated from the electronic absorption spectroscopy data. The interaction of the obtained hydrazone and its Cu(II) complex with calf thymus DNA has been investigated.

Keywords: hydrazone, stability constant, rate constant, pyridoxal-5-phosphate, DNA

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