

## A NEW EUROPIUM COMPLEX – PROMISING CHEMICAL NUCLEASE

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The hydrolytic cleavage of DNA is particularly challenging due to the stability of its phosphate ester bond. There has been much interest in the development of lanthanide complexes as nucleic acid cleavage agents. This reflects the absence of redox chemistry, the high Lewis acidity associated with Ln(III) ions and rapid ligand exchange kinetics. In this context, the goal of this work is to develop a new lanthanide complex able to catalyze the hydrolysis reaction of the phosphate diester 2,4-bis(dinitrophenyl)-phosphate (BDNPP) and DNA cleavage under physiologic conditions. Here we report the structure (X-ray analysis) of a new mononuclear europium(III) complex (**1**) which showed to be a efficient catalyst for the hydrolysis of BDNPP. The complete kinetic studies by stopped-flow technique were performed at pH 7 and 25 °C, giving a first-order rate constant  $k = 33 \text{ s}^{-1}$  (**200 billion** faster than spontaneous hydrolysis) and the association constant  $K = 72 \text{ M}^{-1}$ . Encouraged by the results obtained in the hydrolysis of BDNPP, kinetic studies of the DNA cleavage by **1** is under investigation, indicating its potential as a chemical nuclease. This work was supported by grants from CNPq. Keywords: Eu(III) complex, hydrolytic cleavage, nuclease.