What is the Influence of the Central Metal Atom in Platinum-Porphyrin Conjugates on their Phototoxicity?

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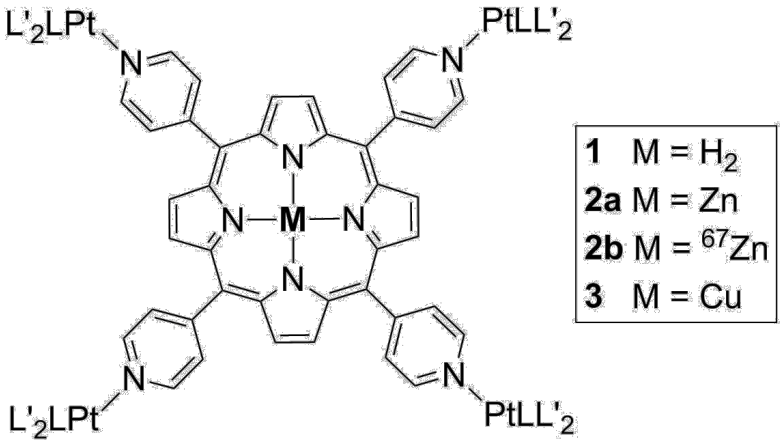
Our group has reported recently about the very promising *in vitro* light-induced anticancer properties of novel tetraplatinated porphyrins **1**.[1] This family of platinum-porphyrin conjugates **1** had only minor dark toxicity, however upon visible light irradiation (420 or 575 nm), IC_{50} values down to 19 ± 4 nM could be observed. These values correspond to an excellent phototoxic index (PI = IC_{50} dark / IC_{50} light) of greater than 5000.



We have now started to study similar systems that contain a metal in the central position of the porphyrin (**2** and **3**). We will discuss the influence of the metal on the singlet oxygen yield, cellular dark and (photo)toxicity as well as cellular localisation. For the latter we employed the isotopically labelled ^{67}Zn complex **2b** in order to determine, by ICP-MS, the cellular distribution of ^{67}Zn and platinum, which in turn allowed us to study the stability of the platinum - pyridine nitrogen bond within the cells. We included the copper(II) **3**, since we previously discovered the first phototoxic copper(II) complex of a porphyrin.[2]

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[2] Antoni, P. M.; Naik, A.; Albert, I.; Rubbiani, R.; Gupta, S.; Ruiz-Sanchez, P.; Munikorn, P.; Mateos, J. M.; Luginbuehl, V.; Thamyongkit, P.; Ziegler, U.; Gasser, G.; Jeschke, G.; Spingler, B. *Chem. Eur. J.* **2015**, *21*, 1179.