PORPHYRIN-FLAVONOL HYBRID MOLECULES FOR EFFICIENT DELIVERY OF CO

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Carbon monoxide (CO) is known to be a toxic gas for mammals, yet it has been recognized as a signaling molecule with anti-inflammatory and cell-protective properties, with possible applications in clinical treatments.[1, 2] Light-activated CO-releasing molecules (photoCORMs) can provide a high spatial and temporal control, allowing the drug to be delivered only into the targeted tissues when required. However, many of well-known photoCORMs show poor water solubility, require short irradiation wavelengths, or suffer of low quantum efficiencies, with evidently limited use under a clinical scenario. Herein, we present a platform that combines the excellent photoproperties of porphyrins, which act as antennas and sensitizers, with the CO releasing abilities of four flavonol-based appendices.[3] CO proved to be released upon irradiation in the range of 440-670 nm in both organic and aqueous solutions with high chemical yield (up to 3.4 equiv) and excellent quantum yield (up to 4%). A facile metal insertion was used to fine-tune the compound photoproperties and allowed for an unprecedented uncaging cross-section ($\Phi_{CO}\varepsilon_{max}$) exceeding 10^4 $M^{-1}cm^{-1}$.

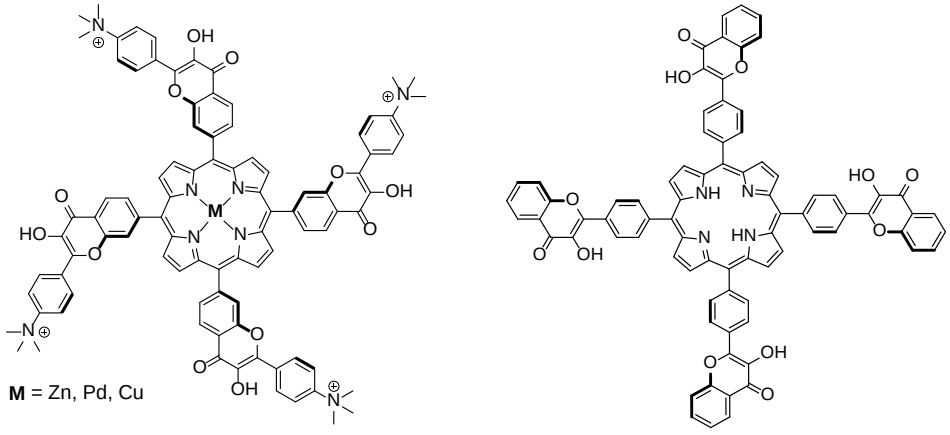

Figure 1. Structure of the porphyrin-flavonol hybrids molecules.

References

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