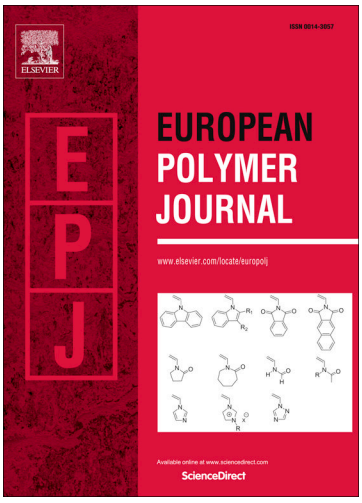

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Acid-responsive metallo-supramolecular micelles for synergistic chemo-photodynamic therapy

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Abstract

Due to the molecular complexity of many diseases, combination therapy is becoming increasingly important for a better long-term prognosis and to decrease side effects. In this presented work, a kind of AB_2 Y-shape supramolecular micelles based on the metal-coordinated interaction between histidine and iron-tetraphenylporphyrins (Fe-TPP) had been successfully prepared which exhibited excellent acid-responsivity in acidic aqueous solution (pH < 6, similar to tumor micro-environment). To verify the application for drug delivery, doxorubicin was loaded at neutral. Then the anticancer efficiency was evaluated *in vivo* towards HeLa and MCF-7 cells. The obtained date indicated that the loaded drug released at tumor acid condition because the micelles disassembled. Importantly, the existence of Fe-TPP being as photosensitizer obviously improved the anticancer efficiency, confirming that synergistic chemo-photodynamic therapy could effectively enhance cellular proliferation inhibition.

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Keywords: porphyrins; metal-coordinated interaction; acid-responsivity; synergistic chemo-photodynamic therapy; cancer therapy.