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Synthesis, spectroscopic, physicochemical and structural characterization of tetrandrine-based macrocycles functionalized with acridine and anthracene groups: DNA binding and anti-proliferative activity

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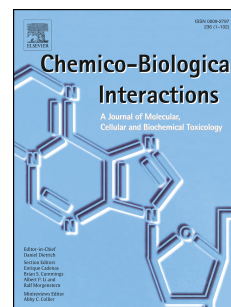
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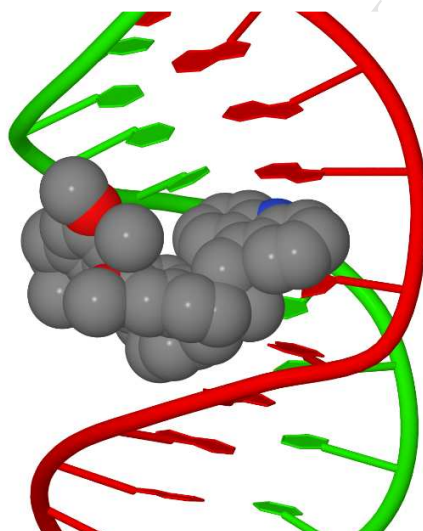


Graphical abstract

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In this work we report on the synthesis and characterization of two new tetrandrine-based receptors and their binding properties towards a series of nucleotides and ds-DNA, in aqueous at pH = 7.2, by UV-Vis and fluorescence spectroscopy. Both receptors exhibit high affinity ($K \sim 10^5 \text{ M}^{-1}$) and sequence selectivity for ds-DNA, in an intercalation binding mode. These studies were accompanied with single-crystal X-ray diffraction analysis and molecular modeling. Additionally, the anti-proliferative studies of the derivatives on different cancer cell lines reveal promising activities of the compounds.

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