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Synthesis of innovative biochemical active mixed ligand metal(II) complexes with thiazole containing Schiff base: In vitro antimicrobial profile(Article)

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Abstract

An unique Schiff base ligand, formed by the condensation reaction of 2-aminobenzothiazole with curcumin and its Cu(II), Ni(II), Co(II) and Zn(II) complexes incorporating 2,2'-bipyridine as coligand were synthesised. They were characterized via analytical and spectroscopic methods. The complexes adopt square planar geometry. Their antimicrobial activity and photocatalytic efficiency on Congo red dye molecule were explored. It is found that all the complexes are antimicrobial active and show higher activity than the ligand. The nuclease activity of the above metal complexes was also assessed by absorption titration, fluorescence, viscosity and gel electrophoresis assay. The complexes bind CT DNA through intercalation mode. The data reveal that the above synthesised metal(II) complexes are found to be effective metallonucleases. The gel electrophoresis results exhibit that the metal complexes cleave pBR322 plasmid DNA in presence of hydrogen peroxide effectively compared to the ligand. The synthesised metallonucleases should lead to a new era for the logical sketch of dominant agents for probing and targeting nucleic acids. This exploration reveals that Cu(II) complex has a valued biological and photochemical profile. Copyright © 2017 John Wiley & Sons, Ltd.

Author keywords

[2,2'-bipyridine](#) [antimicrobial activity](#) [DNA binding and cleavage studies](#) [Schiff bases](#)

Indexed keywords

Engineering controlled terms:

[Azo dyes](#) [Bins](#) [Chelation](#) [Cobalt compounds](#) [Condensation reactions](#) [DNA](#) [Electrophoresis](#) [Geometry](#) [Ligands](#) [Metal complexes](#) [Metals](#) [Microorganisms](#) [Nucleic acids](#) [Spectroscopic analysis](#) [Zinc compounds](#)

Engineering uncontrolled terms

[2,2'-Bipyridine](#) [2-aminobenzothiazoles](#) [Anti-microbial activity](#) [DNA binding and cleavages](#) [Photocatalytic efficiency](#) [Schiff basis](#) [Spectroscopic method](#) [Square planar geometry](#)

Engineering main heading:

[Synthesis \(chemical\)](#)

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