

ABTS scavenging property of OpdH₂ and Opd-M(II) complexes

To further confirm the synthesized OpdH₂ and Opd-M(II) complex anti-radical potential, we examined the ABTS assay in this study. The assay measures radical scavenging by electron donation. The outcome of OpdH₂ and Opd-M(II) activities on ABTS* radical are presented in Table 5 and displayed in Figure 3. At 734 nm, the absorbance of active ABTS* solution [55] obviously declined upon the addition of different concentrations of OpdH₂ and Opd-M(II) complex, same trend was also observed for the standard drugs: butylated hydroxytoluene (BHT) and rutin hydrate as displayed by the percentage inhibition. The effectiveness of the test samples in quenching ATBS* in the system was observed to be high at the lowest concentration of 100 µg/ml with both the ligand and the metal complexes exhibiting higher ABTS (%) inhibition than the standards. However, copper complex showed significantly higher ABTS scavenging activity with an IC₅₀ value of 1.92±1.11 µM while complexes of cobalt, nickel and zinc gave an IC₅₀ value of 2.47±0.86, 2.80±1.31, 3.59±1.90 µM respectively. The same scavenging activity pattern for the metal complexes was observed with both ABTS and DPPH radicals: [Opd-Cu > Opd-Co > Opd-Ni > Opd-Zn]. Categorically, the anti-radical studies showed that the synthesised compounds may be useful in developing therapeutic agent for averting cell oxidative damage, as various free radicals generated in the system often lead to cancer, aging and cardiovascular diseases [56].

CONCLUSION

Metal ions to ligand binding were confirmed by spectral analyses. Opd-Co complex was observed to possess tetrahedral geometry, square planar geometry assigned for Opd-Ni and Opd-Cu complexes. Mycological studies showed that the metal complexes displayed higher antimicrobial activities when compared to the free ligand. The compounds were also evaluated for their free radical scavenging property and observed varying antioxidant activities as compared to the standards; Opd-Zn, Opd-Cu, Opd-Ni, and Opd-Co showed higher DPPH and ABTS scavenging potentials than the free ligand. The multi-potential activities of the synthesised compounds support its usage for the development of chemotherapeutic agents useful for pathological radicals' related diseases treatment.

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