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## Characterization and biological activities of some colored food additive complexes

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This study aims at improving the safety profile and hazardous effects of colored food additive ligation due to chemical interaction with heavy metal ions, and predicting the hazard. The study based in mixing of 0.01 M of each ligand and the same weights of metal chlorides ( $\text{Cr}^{+++}$ ,  $\text{Mn}^{++}$ ,  $\text{Fe}^{+++}$ ,  $\text{Co}^{++}$ ,  $\text{Ni}^{++}$ ,  $\text{Cu}^{++}$ ,  $\text{Zn}^{++}$  and  $\text{Cd}^{++}$ ). The structures elucidations and thermal stability of the prepared complexes were done by IR, ESR and UV-visible, and thermal analysis. The IR spectra of ligands and their complexes showed a shift for uOH, uC-H, uC=C, uC-C, uN=N, uC-N, uS-O and dN=N due to contribution of azo group and OH group in complexation(1-2). ESR for copper complexes showed that the structure of the complexes are octahedral structure and an isotropic symmetrical structure. The UV-Visible spectra showed that the structure of the prepared complexes are Oh with high spin nature, and the selective azo compound acts as weak ligands. The thermal stability and thermal decomposition of ligands and they complexes were obtained from thermal analysis (TG and DTA )<sup>(3)</sup>. In this study, 4 microorganisms representing different microbial categories, two Gram-positive (*Streptococcus pyogenes* and *Staphylococcus Epidermidis*), two Gram negative (*Escherichia Coli* and *Klebsiella pneumoniae*) bacteria were used. Three different broadly antibiotics (Levofloxacin, Vancomycin and Amikacin) are used in this study as references. The study included 24 compounds, four ligands Sunset yellow, Red 2G, Tartrazine yellow and Newcoccine red, and 20 complexes of different metal ions. All ligands and their complexes showed no activity with Gram negative bacteria but they have different activities to Gram positive bacteria<sup>(4-5)</sup>.

**Keywords:** Newcoccine red, Red 2G, Sunset yellow, Tartrazine yellow, thermal analysis and transition metals

### Biography

Ragab Youssef Sharaf is a chemist at the Ministry of Health Laboratory, Damanhour, Beheira Governorate since 2012. He runs a private medical analysis laboratory. Formerly he was a medical analysis specialist at the Egyptian Red Crescent Blood Bank, and Medical representative at Nile Pharmaceutical Company. He earned his Master of Science in Analytical Chemistry, Faculty of Science, Damanhour University in 2017, Diploma in Analytical Biochemistry, Faculty of Science, Menofia University in 2007, and a Diploma in Analytical chemistry, Faculty of Science, Damanhour University in 2012. He is currently enrolled for his PhD in analytical chemistry at Faculty of Science, Damanhour University. He participated in numerous training courses including waste water treatment, air pollutants control, milk and its products analysis and fish and meats pollutants. He is a board member of the Egyptian Syndicate of Scientific Professions since 2012, and attended and organized numerous national conference of water.

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