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SYNTHESIS, CHARACTERIZATION, AND ANTITUMORAL ACTIVITY OF THE Ru^{3+}-CURCUMIN COMPLEX

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Since the 1940s, inorganic compounds have been used to treat neoplasms. The discovery of cisplatin by Rosenberg in 1965 sparked interest in developing new drugs containing transition metals. Despite the established antitumor activity of cisplatin, both it and its clinical similarities (carboplatin and oxaliplatin), present high toxicity, resulting in serious side effects such as nephrotoxicity, severe nausea, and hepatoxicity, often debilitating patients. Ruthenium complexes stand out for their antineoplastic potential by inhibiting cell duplication and preventing metastasis while exhibiting lower toxicity than platinum-based drugs. Its mechanism of action involves mimicking iron to be selectively transported to the tumor through transferrin, minimizing the side effects on healthy cells. This work presents a ruthenium complex, using curcumin as a ligand, as a potential chemotherapeutic agent for cancer treatment. The compound was synthesized, and its molecular structure was elucidated by techniques such as FTIR, NMR ^{1}H and ^{13}C, electronic absorption spectroscopy (UV/VIS), cyclic voltammetry, and thermogravimetry. The results presented in the biological tests for acute toxicity with a dose of 300 mg kg^{-1} classified the compound analyzed in category 4, according to protocol 423 OECD. Assessments of tumor masses (Ehrlich Carcinoma) demonstrate a better percentage of inhibition for the 40 mg kg^{-1} dose followed by the lowest dose (15 mg kg^{-1}), 66.18 and 56.95% respectively. These data corroborate the antitumor activities of both curcumin and ruthenium-containing complexes.

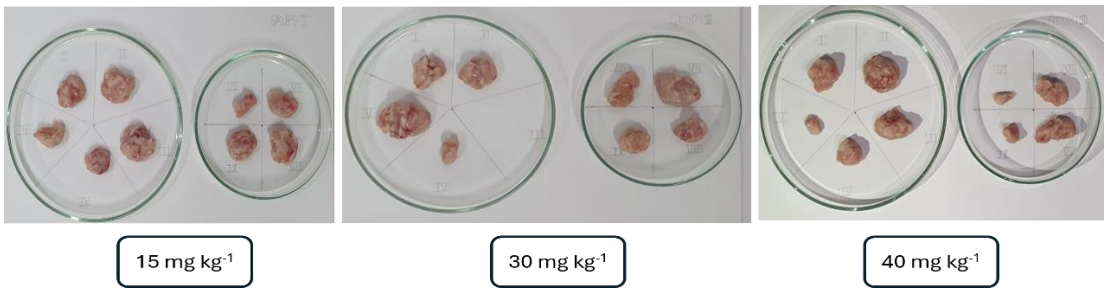

Figure 1. *Ehrlich* carcinoma aspects after treatment with respective doses of the ruthenium complex.

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