Cytotoxic study of organometallic compounds of palladium(II) in mice peritoneal macrophages

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Organometallic compounds derived from palladium show cytotoxic activity when exposed to some tumoral strains that are resistant to usual chemotherapeutics. It has been shown that these complexes are alkylant agents of DNA, facilitating the selective destruction of tumoral cells. Organometallics show cytotoxic activity, and this characteristic together with the immune response constitutes a defense mechanism against aberrant cells. In this study we analyzed the action of three organometallic compounds derived from palladium (II) with probable antitumoral activity (C1 = [Pd (dmba) SCN (dppp)]; C2 = [Pd (dmba) (dppp) NCO]; C3 = [Pd (dmba) Cl (dppp)]) and two organometallic coordination compounds that activate macrophages (C4 = [Pd (dmba) (μ-NCO)]2 ; C5 = [Pd (dmba) (μ-SCN)]2). Cytotoxicty to macrophage cultures were observed using the technique of cellular viability (MTT); and the IC50 (cytotoxicity index) was also determined. Moreover the liberation of NO and H_2O_2 were evaluated after 24 hours. The cyclepalladated (C1, C2 and C3) and coordination compounds (C4 and C5) showed dose-dependent cytotoxic effects. Compounds 1, 2 and 3 were more toxic, presenting IC50 5.09μM, 9.25μM and 4,97μM, respectively. Compounds 4 and 5 presented average IC50 of 25.68μM and 15.5μM, respectively. Using the IC50 determined for each compound, NO release was measured but NO was not detected indicating that this mediator may not have been produced. Using IC25, we analyzed the concentration of H_2O_2 and observed increased liberation of this mediator.

Subsequent studies will be done to elucidate the antineoplasic activity of compounds including H_2O_2.

Key words: macrophages, nitric oxide, hydrogen peroxide, Pd(II) complexes, cytotoxicity index

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