

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 alkylating 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). Cytotoxicity 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 H₂O₂ were evaluated after 24 hours. The cyclopalladated (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 5.09 μ M, 9.25 μ M and 4.97 μ M, respectively. Compounds 4 and 5 presented average IC₅₀ of 25.68 μ M and 15.5 μ M, 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 H₂O₂ and observed increased liberation of this mediator.

Subsequent studies will be done to elucidate the antineoplastic activity of compounds including H₂O₂.

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

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