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Cytotoxic Activity of 5-Benzoylimidazole and Related Compounds against Human Oral Tumor Cell Lines

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A total of 24 benzoylimidazoles and structurally-related compounds were investigated for their cytotoxic activity against oral tumor cells and normal gingival fibroblast. Compound 23 (5-(2-hydroxybenzoyl)-2-phenylimidazole) showed the highest cytotoxic activity against both human oral tumor cell lines (human squamous cell carcinoma HSC-2, human salivary gland tumor HSG) and normal human gingival fibroblast (HGF). Compounds 7 (2-(2-hydroxybenzoyl) benzimidazo[2,1-*b*]thiazole), 14 (1,3-diethyl-5-(2-hydroxybenzoyl)-4-imidazoline-2-thione) and 18 (5-(2-hydroxy-4-methoxybenzoyl)-3-methyl-2-methylimino-4-thiazoline) showed slightly lower cytotoxic activity, but higher tumor-specific cytotoxic action. The cytotoxic activity of compound 23 was significantly reduced by CuCl₂, but not by CoCl₂, FeCl₃, or by antioxidants (N-acetyl-L-cysteine, sodium ascorbate, catalase). Compound 23 did not show any detectable oxidation potential (determined by NO monitor). Agarose gel electrophoresis demonstrated that compound 23 induced DNA fragmentation in human promyelocytic leukemia cells HL-60, but not in HSG cells. These data suggested that the response to compound 23 might be different from cell to cell.