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[\[PDF \(3612K\)\]](#) [\[References\]](#)**Effects of high-dose major components in oral disinfectants on the cell cycle and apoptosis in primary human gingival fibroblasts *in vitro***[Yuji NOMURA](#)¹⁾, [Ujjal Kumar BHAWAL](#)²⁾, [Ryo NISHIKIORI](#)¹⁾, [Masahiko SAWAJIRI](#)³⁾, [Takeshi MAEDA](#)⁴⁾ and [Masayuki OKAZAKI](#)¹⁾

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Abstract:

We evaluated the effects of high-dose major components in oral disinfectants on oral cells from the standpoints of the cell cycle and apoptosis. We examined the viability and cell cycle of human gingival fibroblasts (HGFs) treated with the components of dental disinfectants, benzethonium chloride (BEC), benzalkonium chloride (BAC), and povidone iodine (PVD-I) using a cell counting kit and flow cytometry. The IC₅₀ inhibitory concentration value in HGF cultures at 24 hours was 1.3×10^{-2} mM BEC, 6.0×10^{-3} mM BAC, and 2.6×10^{-1} mM PVD-I. In the cell cycle analysis, propidium iodide-stained HGFs were arrested in G₀/G₁ of the cell cycle by all three disinfectants, and in the apoptosis assay, annexin V-FITC/PI-stained HGFs that became apoptotic at 5.0×10^{-2} and 1.0×10^{-1} mM BEC and 5.0×10^{-2} and 1.0×10^{-1} mM BAC, but not in PVD-I at concentrations as high as 5.0×10^{-1} mM. Our findings describe the effects of high-dose oral disinfectants, rather than clinical concentrations. Nevertheless, appreciating the effects of high-dose disinfectants

absorbed into the human body is important, where they may accumulate in specific tissues and cells.

Key words:

[Cell cycle and apoptosis](#), [Human gingival fibroblasts](#), [Oral disinfectants](#)

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