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Characterization of Berberine on Human Cancer Cells in Culture

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 [Keywords](#)

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**Abstract:** Berberine originates from a Chinese herbal medicine and possesses a wide variety of anti-cancer activities. In this study, the killing effect of berberine on nasopharyngeal carcinoma cells (NPC/HK1) was investigated. The trypan blue exclusion assay was used to assess the cytotoxic effect of berberine in this cell line. Berberine, at 5-200  $\mu$ M, induced cell death in a dose-dependent manner. Treatment of cells with 200  $\mu$ M berberine for 5 h yielded a lethal dose of 50% (LD50). The Comet Assay was employed to evaluate the extent of DNA damage and repair after berberine treatment (0 -100  $\mu$ M). DNA damage was evident within 30 min and was more pronounced after 1.5 h. The damaged cells were not able to be repaired, as indicated by the increase in tail DNA content. However, the repair of H<sub>2</sub>O<sub>2</sub> mediated DNA damage on this cell line occurred within 1.5 h, indicating that DNA repair inhibition may have contributed to the high efficacy of cell killing by berberine.

**Key Words:** Cytotoxicity, DNA damage, repair, cellular localization, berberine

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