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Poster 54

Cytotoxic effects of cannabidiol on human metastatic melanoma cells: a potential therapeutic strategy?

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Abstract

Background: Melanoma is the most aggressive form of skin cancer, responsible for the majority of skin cancer-related deaths due to its high metastatic potential and resistance to treatment [1]. The limited efficacy of systemic therapies in treating this disease underscores the need to explore novel therapeutic strategies. Cannabidiol (CBD), a bioactive compound from *Cannabis sativa*, has shown anticancer properties in various cancer models [2,3]. However, its effects on melanoma cells and its potential selectivity remain under investigation. **Objective:** This study evaluates the cytotoxic effects of CBD on human metastatic melanoma cells. **Methods:** Two melanoma cell lines (A375 and MeWo) and a normal human keratinocyte cell line (HaCaT) were treated with CBD (0.05-100 µM) for 24 and 48 hours. Cell viability was assessed by the MTT assay, and morphological changes were analyzed by inverted light microscopy. **Results:** CBD reduced cell viability in a concentration-dependent manner in all cell lines. HaCaT cells were the most sensitive with IC_{50} values at 24 h of 4.1 µM, followed by A375 (IC_{50} 5.1 µM) and MeWo (IC_{50} 5.8 µM) cells. Similar values were observed at 48 h ($p > 0.05$), indicating no significant time-dependent effect. Morphological changes were observed in all cell lines, becoming more pronounced with increasing CBD concentration and exposure time. **Conclusions:** CBD is a promising candidate for melanoma management. However, its non-selective cytotoxicity toward melanoma cells remains a major challenge for safe clinical application. Ongoing research aims to elucidate the molecular mechanisms underlying CBD-induced cytotoxicity and to explore strategies for improving selectivity, potentially enhancing its clinical applicability in melanoma treatment.

Keywords: cannabinoid; anticancer; skin cancer; therapy

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