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SCREENING OF WOUND HEALING AGENTS - IN VITRO EVALUATION OF 1,8-CINEOLE ON CELL VIABILITY, PROLIFERATION AND MIGRATION

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Wound healing is a complex biological process involving inflammation, cell proliferation, and tissue remodeling. Keratinocytes and fibroblasts play essential roles in skin re-epithelialization and extracellular matrix remodeling, particularly through collagen production. Various natural products, including terpenoids, have been identified as promisor agents for promoting wound healing. Commonly found in several essential oils, the monoterpene 1,8-cineole is known for its anti-inflammatory and antimicrobial properties. This study investigated the effects of 1,8-cineole on the viability and proliferation of both tumor [melanoma (SK-MEL-28), and squamous cell carcinoma of pharynx (FaDu)] and non-tumor [immortalized human keratinocytes (HaCaT), and immortalized murine fibroblasts (3T3 and L-929)] cell lines. Additionally, the effect of 1,8-cineole on cell migration was evaluated in L-929 cells using the scratch assay. All cell lines were cultured in RPMI 1640 medium supplemented with 5% fetal bovine serum (FBS) and maintained at 37 °C in a humidified atmosphere containing 5% CO_2. After 48 h of exposure in 96-well plates, 1,8-cineole exhibited neither cytostatic (GI_{50} > 300 µg/mL) nor cytotoxic (IC_{50} > 300 µg/mL) effects in any of the cell lines tested. For the migration assay, L929 cells were cultured in 24-well plates, and wound closure was monitored at 0, 18, 36, and 48 h after treatment. A significant difference was observed between positive control (RPMI 1640 plus 5% FBS) and negative control (RPMI 1640 plus 0% FBS) at 36 and 48 h. However, the treatment with 1,8-cineole (1.5 to 300 µg/mL) diluted in RPMI 1640 plus 0% FBS had no effect on L-929 cell migration, regardless of exposure time or concentration. After 48-h, all experimental group showed relative cell viability close to 100%. These finding suggest that 1,8-cineole does not affect cell proliferation and migration. Future studies will assess the effect of 1,8-cineole on *in vitro* collagen production to further applications as wound healing agent.

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