



***Mentha aquatica* essential oil – influence on in vitro cell migration**

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INTRODUCTION

The skin is the largest organ of the human body. To keep skin integrity, wound healing process involves many mechanisms didactically separated in hemostasis, inflammation, proliferation and remodeling steps. Together with several chemical mediators, keratinocytes are important for maintenance and restoration of epidermis integrity. This study aimed to evaluate the influence of *Mentha aquatica* essential oil on cell migration.

MATERIAL AND METHODS

M. aquatica L. aerial parts were collected in March 2015, in the CPQBA/Unicamp experimental field, (22° 47' 52.3" S 47° 06' 48.4" W). The voucher (CPMA 404) was deposited in the Collection of Medicinal and Aromatic Plants at CPQBA/UNICAMP. The project was registered at SisGen (# A996E05). Obtained by steam distillation, the essential oil (MaEO) was characterized by GC-MS technique (Braga et al. 2022). The scratch assay was performed using HaCaT (human immortalized keratinocytes, 3 x 10⁵ cel/well) inoculated into 24-well plates. After 24-h incubation (37 °C, 5% CO₂ humidified atmosphere), one scratch was created in the central portion lengthwise of each well using a sterile 200 µL-micropipette tip. After medium removal and PBS washing, cells were treated with MaEO (0.25; 2.5 and 25 µg/mL). Cells treated with medium supplemented with 5% and 0.2% fetal bovine serum (FBS) were, respectively, positive and negative control. Cell migration was assessed at 0, 9, 18, and 24 h using a

inverted microscope equipped with digital camera Optikam B3. After image analysis using ImageJ software, the wound reduction (WR, %) was calculated by $WR = (100 \times Tx \text{ area}/T0 \text{ area}) - 100$, where Tx = wound area at 9, 18, or 24 h after sample application and T0 = wound area at time 0 (Liang et al., 2007).

RESULTS

The main components of MaEO were identified as carvone (62.34%), limonene (19.5%) and 1,8-cineole (3.9%) (Braga et al. 2022). In comparison to negative control (cells in RPMI 1640 medium plus 0.2% FBS), increasing FBS amount in medium (5%) induced a time-dependent wound closure reaching almost 94% of wound healing after 24 h. At the higher concentration (25 µg/mL), MaEO promoted a significant wound closure (45.6 ± 7.3%) after 24h-exposure.

CONCLUSIONS

MaEO could be considered for the development of an herbal medicine to promote wound healing. Further studies will be done to establish which monoterpenes were involved with this effect.

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