Effect of *Manihot esculenta* Aqueous Extract In Accelerating the Wound Healing Process *In Vitro*

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Abstract

Chronic wound is a wound which does not heal in an orderly phase of wound healing (hemostasis, inflammatory, proliferative and remodelling phase) and venous leg ulcers, diabetic foot ulcers, and pressure ulcers are some of the examples of chronic wound disease. Various treatments such as antibiotic and antibacterial uses, irrigation and debridement are used to enhance the healing of these chronic wounds. However, there is no scientific report so far regarding on the usage of *Manihot esculenta* leaves extract to accelerate wound healing process in *in vitro*. The aim of this study is to investigate the wound healing process by *Manihot esculenta* leaves extract. Firstly, cells were seeded into 6-well plate with seeding density at 4 × 105 cells/ml and after 24 hours, scratched were made and then treated with the remedial treatments. Then, images were captured and analysed at time intervals (0, 2, 4, 6, 8, 10 and 24 hours) by using image J software. The result showed that by *Manihot esculenta* leaves extract at the concentration of 200 µg/mL shown a significantly higher wound closure at interval of 10 h ($** p < 0.01$) than concentration of 100 µg/mL and 300 µg/mL at 90.81 % with the proliferation rate at 5.01 x105 cells/ml. The finding of this study revealed that *Manihot esculenta* leaves extract has potential in accelerating the wound healing process in in vitro. In future, *Manihot esculenta* extract can be tested in *in vivo* model.

Image

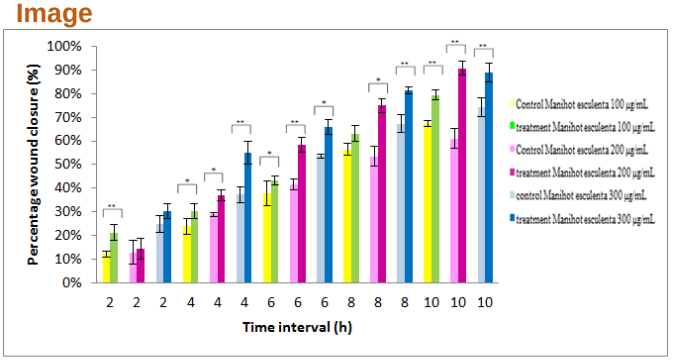


Figure 1 Percentage of wound closure after treated with the *Manihot esculenta* aqueous extract with a specific time interval (0, 2, 4, 6, 8 and 10 h). Error bars represent standard deviation. The percentage represents triplicate calculation (n = 3) and the normal data were analysed via independent *t*-test ($* p < 0.05$, $** p < 0.01$).

Recent Publications

1. Demidova-Rice, T. N., Hamblin, M. R., & Herman, I. M. (2012). Acute and Impaired Wound Healing: Pthophysiology and Current Methods for Drug Delivery, Part 1: Normal and Chronis Wounds: Biology, Causes, and Approaches to Care. Adv Skin Wound Care, 25(7), 304–314.
2. Hussein R. (2007). Chronic Venous Ulcers An End Of Long Term Suffering. The Internet Journal of Plastic Surgery. 5 (1).
3. Meilawaty, Z. (2013). Potensi Ekstrak Daun Singkong (Manihot utilissima) dalam Memodulasi Ekspresi COX-2 pada Monosit yang Dipapar LPS. Jember University.
4. Nicks, B. A, Ayello, E. A, Woo, K., Nitzki-George, D., & Sibbald, R. G. (2010). Acute wound management: revisiting the approach to assessment, irrigation, and closure considerations. International Journal of Emergency Medicine, 3(4), 399–407.
5. Nisa, V. M., Meilawaty, Z., Astuti, P. (2013). Efek Pemberian Ekstrak Daun Singkong (Manihot esculenta) Terhadap Proses Penyembuhan Luka Gingiva Tikus (The Effect of Cassava Leaves Extract (Manihot esculenta) on Gingival Wound Healing Rats (Rattus norvegicus). Jember University.



Biography

Ulfah Anwar Siali has her expertise in medicine and passion in improving the traditional and complimentary health. She has study this research after years of experience in her master in UTM, Malaysia.

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Notes/Comments: