Cytocompatibility of a conductive PPy/HE/PLLA membrane with primary skin fibroblasts extracted from diabetic patients

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Introduction:

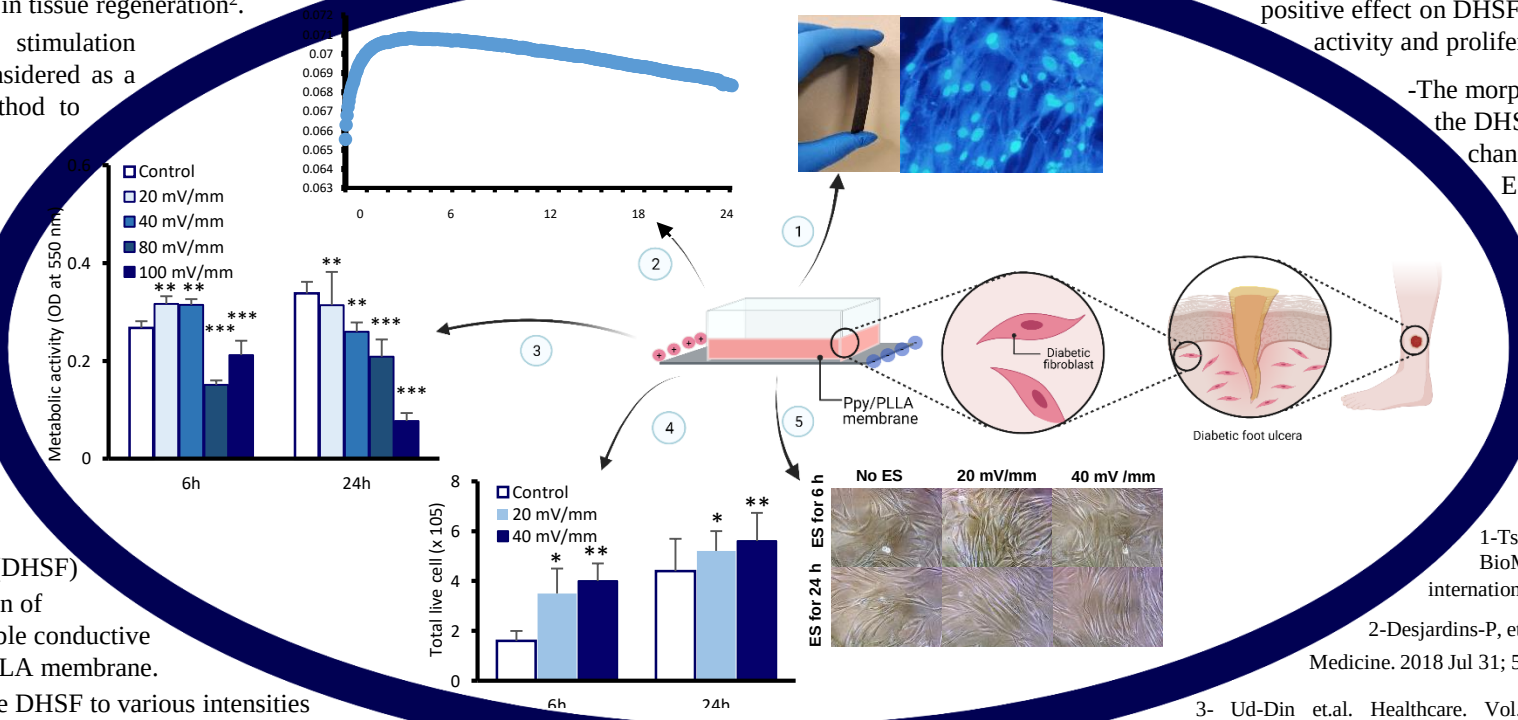
-About 15% of diabetic patent worldwide will be developing diabetic foot ulcer (DFU)[1].

-Following wounds, the fibroblasts play active role in tissue regeneration[2].

-Electrical stimulation (ES) is considered as a posable method to accelerate the wound healing [3].

Materials and Methods:

- Isolation of diabetic human skin fibroblasts (DHSF)
- Preparation of biocompatible conductive PPy/HE/PLLA membrane.
- Expose the DHSF to various intensities of direct current ES (100, 80, 40 and 20 mV-mm). and study the effect of ES on DHSF activity by MTT assay, Trypan Blue and light microscopy



Results and Conclusion:

- The DHSF were successfully isolated and the PPy/HE/PLLA membranes.
- This membrane is biocompatible and conductive (1) (2).
- The low current (40 and 20 mV-mm) have positive effect on DHSF metabolic activity and proliferation (3) (4).
-The morphology of the DHSF did not changed after ES (5).

1-Tsourdi E, et.al. BioMed. research international. 2013 Jan 1

2-Desjardins-P, et. al. Future Medicine. 2018 Jul 31; 5(13): 491-495.

3- Ud-Din et.al. Healthcare. Vol. 2. No. 4. Multidisciplinary Digital Publishing Institute, 2014.

This work was supported by the Canadian Institutes of Health Research (CIHR) Project Grant 148523

References and Acknowledgment: