

EFFICACY OF BIOTECHNOLOGY CELLULOSE PLANT STEM CELL FOR WOUND BED PREPARATION

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INTRODUCTION

Chronic wounds take a long time to heal. Wound bed preparation was propagated by Gary Sibbald et al 2000 where he looked at debridement, bacterial burden and exudate management. TIME concept was introduced in 2003 and revisited by Kerlyn Carville and David Leaper in 2017. It is still a valid tool for assessment.

The Bio cellulose plant stem cell in a gel format, was produced from Brazil plants engineered in a bio chamber. It extracts stem cells with nano-structured fibers which are 2 nanometers in length, suspended in gel format, mimic an effective Extra Cellular Matrix to be used in wound bed^{1,6}. The polyunsaturated fatty acids and fatty-acid derivatives in the plant stem cell could activate peroxisome-proliferator-activated receptors (PPAR's); these receptors are increased in keratinocytes after skin injury and are considered to be important regulators of re-epithelialization²⁻⁵.

This study was done to look at the efficacy of the bio cellulose plant stem cell (gel format) in improving the wound bed in non healing wounds seen at the Wound Care Clinic in Hospital Kuala Lumpur.

METHOD

- Five patients were chosen by random sampling at the Wound Care Clinic, Hospital Kuala Lumpur. TIME concept was used to assess the patients. Patients wounds were washed with sterile water, then debridement was done where the non viable tissues are removed.
- The Biotechnology Cellulose Plant Stem Cell gel was spread liberally across the base of the whole wound bed (to a depth of 2-3mm), the gel is allowed to be absorbed into the wound bed (wait 2-3 minutes) and cover with a secondary dressing.
- Patients are followed up twice weekly.

RESULT

All 4 cases showed improvement in terms of the wound bed. There was increased epithelialisation in the wound bed during the period of the pilot study in the last 4 weeks.

DISCUSSION

New modalities are required to manage hard to heal wounds especially non healing or stagnated wounds. Stem cells have been studied for years as they are multipotent or pluripotent cells which can differentiate to many cells in the body. The bio cellulose plant stem cell was harvested from the trees in Brazil and was found to be effective in kickstarting healing by improving the wound bed preparation. Therefore, it is important to utilise this modality to manage non healing wounds which cause a lot of morbidity and discomfort to the patients.

CONCLUSION

The bio cellulose plant stem cell can be used for wound bed preparation. Assessment and cleansing with debridement is key as good wound care is still a priority. The limitation of the study is the small number of patients recruited. A more robust study has been planned in 2022 which will be able to show statistical significance.

References

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58 years old Female, hypertension, DM.
Left ray's amputation, right big toe.
Wound duration: 10 days



70 years old Male, Diabetic.
Ray's amputation & wound debridement of right big toe
Wound duration: 28 days



70 years old Male,
Right DFU with DM, Hypertension
Wound duration: 4 months



44 years old Female.
Venous Leg Ulcer, Diabetic.
Wound duration: 14 days

