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Enhancing burn wound healing with *Plectranthus amboinicus* extract loaded foam dressings

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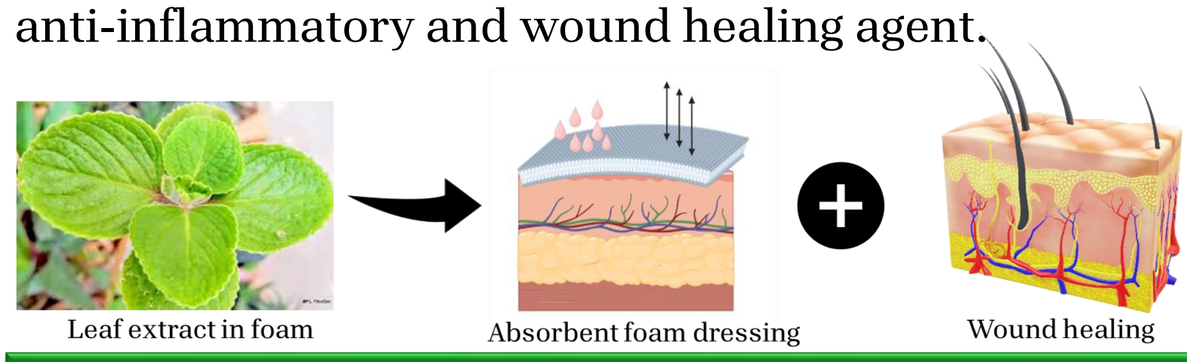
INTRODUCTION & AIM

Foam dressings are applicable in a wide range of clinical settings. They have been effective in treating pressure injuries/ulcers, diabetic foot ulcers, and venous ulcers, among other chronic wounds.

Even though the currently available polyurethane foams are absorbent in nature, there is a need for development of foams which are highly hydrophilic in nature.

Plectranthus amboinicus is traditionally used as an anti-inflammatory and wound healing agent.



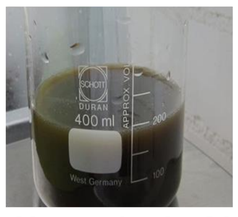
Leaf extract in foam | Absorbent foam dressing | Wound healing

METHOD

FORMULATION

Fresh leaves of *Plectranthus amboinicus*

Dried- 3 days



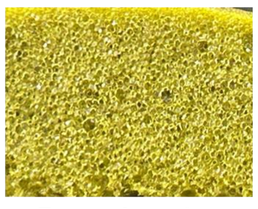
Maceration for 24 hours

Filtered

Evaporated

Leaf extract

Toluene diisocyanate
Polyols
Catalysts
Chain extenders
Hydrophilic polymers

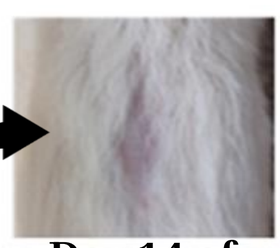


Foam dressing

EVALUATION

- **Microstructure- SEM**
- **Moisture Vapor Transmission Rate**
- **Porosity**
- **Absorption rate**
- **Surface roughness**
- **Mechanical strength**
- ***In vivo* dermal irritation**
- ***In vivo* burn wound healing**

Day 3 of treatment

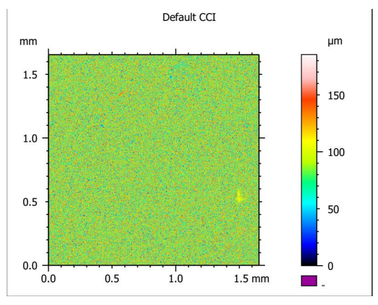


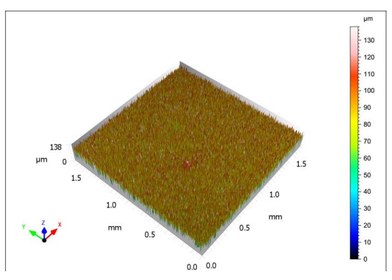
Day 14 of treatment

RESULTS & DISCUSSION

- SEM- revealed a porous surface

- MVTR of the dressings - ranged between 1900.06 ±0.59 to 2050.00 ± 0.25 g/m^2/day
- Absorption rate - ranged between 1.27 ± 0.01, 1.31 ± 0.00 and 1.30 ± 0.02 g/cm^2 and was found to be highest with dressings containing polyacrylate as hydrophilic polymer
- Tensile strength measurement - flexible enough to withstand regular handling during dressing changes
- Optical profilometry: Ra<1.00 µm (smooth surface)





- Acute dermal irritation - showed no irritation, erythema, eschar and oedema

- *In vivo burn* wound healing - showed better healing in comparison to a commercial formulation

CONCLUSION

The hydrophilic foam dressing developed using *Plectranthus amboinicus* leaf extract demonstrated promising efficacy in burn wound healing, suggesting its potential as an effective natural remedy for burn wound management.

FUTURE WORK / REFERENCES

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