

UNIVERSITI TEKNOLOGI MARA

**THE EFFICACY OF
SUPER-OXIDISED HYDROGEL AND
SOLUTION COMPARED TO
POTASSIUM PERMANGANATE
DRESSING FOR THE
MANAGEMENT OF CELLULITIS**

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of the requirements for the degree of
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I certify that a Panel of Examiners has met on 30th October 2017 to conduct the final examination of Dr. Sabrina binti Ab Wahab in her Masters in Internal Medicine thesis entitled “The Efficacy of Super-Oxidised Hydrogel and Solution Compared to Potassium Permanganate Dressing for the Management of Cellulitis” in accordance with Universiti Teknologi MARA Act 1976 (Akta 173). The Panel of Examiner recommends that the student be awarded the relevant degree. The Panel of Examiners was as follows:

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I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Background and Aims. Cellulitis causes local residual inflammation which delays the resolution of signs and symptoms and may require prolonged hospitalization. Studies have shown that super-oxidised hydrogel and solution improves healing and acts as antimicrobial in skin and soft tissue infection. Potassium permanganate dressing has been widely used as a reliable antiseptic. Thus, this study is aimed to evaluate the reduction of erythema and oedema; measured as percentage of reduction of total surface area erythema ; and oedema reduction by reduction in limb circumference, at end-of-treatment (day 3 and/or day 7). Secondary endpoints include reduction of cellulitis severity score which measures erythema, warmth, tenderness, oedema, ulceration, drainage and fluctuance; at end-of-treatment (day 3 and/or day 7).

Methodology. This is a multicentre, prospective, open-label, comparative clinical study involving adults ≥ 18 years old, efficacy comparison between two methods of dressing; super-oxidised hydrogel and solution dressing compared to potassium permanganate dressing, in the same patient in Eron Class 1 and 2 limb cellulitis in assessing the reduction of local inflammation. Thirty patients with 2 different sites of cellulitis area in the same patient were enrolled after fulfilling inclusion criteria. All patients received the super-oxidised hydrogel (Dermacyn[®] WoundCare Hydrogel) combined with solution dressing (Dermacyn[®] WoundCare Solution) and potassium permanganate (KMnO₄) dilution 1:10000 wet wrap at different areas of the same or different leg for 15 minutes.

Results. Study showed that super-oxidised hydrogel and solution dressing was more effective in reducing erythema compared to potassium permanganate dressing alone, with statistically significant difference in percentage of erythema reduction at Day 3 (50.05% vs 30.98%; $p=0.001$) and at Day 7 (71.10% vs 59.05 %; $p=0.045$). Super-oxidised hydrogel and solution was also more effective in reducing oedema compared to potassium permanganate dressing alone which was statistically significant, with median reduction in limb circumference at Day 3 (1.90 cm vs 0.80 cm; $p=0.001$) and Day 7 (3.00 cm vs 1.80 cm; $p=0.021$), respectively. There was no difference in both dressing in the reduction of cellulitis severity score (maximum total score of 21), with median reduction of score at Day 3 (6.0 vs 5.5; $p=0.123$) and Day 7 (12.0 vs 11.0; $p=0.567$) albeit erythema scores alone showed significant difference ($p=0.029$). Diabetes mellitus, bullous type cellulitis, and disease recurrence were significant associated factors. Duration of fever, pain and swelling had positive correlation with the percentage of reduction of erythema at Day 3.

Conclusion. Super-oxidised hydrogel and solution is more effective in improving local erythema and oedema, as compared to potassium permanganate dressing, in patients with cellulitis albeit no difference in the reduction of total cellulitis severity score. There was improvement of the overall local inflammation with intervention by both methods of dressing in this study.

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