THE INFLUENCE OF TUALANG HONEY IN TENSILE STRENGTH AND MICROSCOPIC ASPECT (FIBROBLAST AND EPITHELIZATION) OF LAPARATOMY WOUND HEALING IN MALNOURISHED RABBITS

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ABBREVIATIONS

US Federal Drug Administration	USFDA
Deoxyribonucleic Acid	DNA
Reactive Oxygen Intermediate	ROI
Tumour Necrosis Factor-alpha	TNF-Alpha
Methicillin-Resistant Staphylococcus Aureus	MRSA
Laboratory Animal Research Unit	LARU
Confidence Interval	C I
Extracellular Matrix	ECM
Platelet Derived Growth Factor	PDGF
Matrix Metalloproteinases	MMPs

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ABSTRACT

BACKGROUND: Based on published reports that honey accelerates wound healing, an investigation on its role in laparotomy wound healing in term of tensile strength and microscopic aspect (fibroblast and epithelialization) on malnourished rabbits was carried out.

METHOD: Forty six female New Zealand white rabbits at the age of 6 weeks, weighing about 2 to 3 kg had a 4 centimeter infraumbilical laparatomy wound inflicted on their abdomen. They were divided into three groups which were malnourished group treated with topical and oral used of honey, malnourished and well-nourished group treated with topical and oral used of normal saline. Wound dressing was done every day and any changes over the wound were documented.

RESULTS: The mechanical strength and histopathological examination were more favorable toward the malnourished group treated with topical and oral used of Tualang honey. The malnourished group treated with topical and oral used Tualang honey displayed a better tensile strength result compared to malnourished and well-nourished group treated with topical and oral used of normal saline at day 7 and 14 ($P<0.05$) . For histopathological examination, both parameter epithelial and fibroblast count were also favorable towards the malnourished group treated with topical and oral used Tualang honey. The epithelial and fibroblast count were better in the malnourished group treated with the topical and oral used Tualang honey compared to malnourished and well-nourished group treated with topical and oral used of normal saline at day 7 and day 14 ($P<0.05$). However, there were no significant difference in epithelial count for the malnourished group treated with topical and oral used Tualang honey compared to well-nourished group treated with topical nad oral used normal saline in day 14 ($P>0.05$).

CONCLUSION: Our study suggest that oral and topical Tualang honey dressing

enhances the laparotomy wound healing in malnourished rabbits by increasing the numbers of fibroblast and epithelial cells which lead to increased wound strength.

ABSTRAK

LATAR BELAKANG: Tujuan penyelidikan ini adalah untuk mengkaji keberkesanan madu untuk penyembuhan luka, dengan mengkaji kekuatan tensil dan kesannya pada sel-sel fibroblas dan sel-sel epithelial ke atas luka laparatomi.

METHOD: Kajian ini melibatkan 46 ekor arnab putih New Zealand yang berumur 6 minggu dan berat di dalam lingkungan 2 ke 3 kilogram. Pembedahan laparatomi telah dilakukan ke atas arnab-arnab pada bahagian abdomen. Arnab –arnab tersebut dibahagikan kepada tiga kumpulan iaitu kumpulan malnutrisi yang dirawat dengan madu, kumpulan malnutrisi dan kumpulan tidak malnutrisi. Arnab dari kumpulan malturisi yang dirawat dengan madu Tualang, diberikan rawatan oral dan topikal pada luka laparatomi setiap hari. Pemerhatian terhadap luka laparatomi dilakukan setiap hari dan sebarang perubahan dicatat. Kesemua arnab tersebut dimatikan pada hari ke-7 dan hari ke-14.

KEPUTUSAN: Secara keseluruhannya kekuatan tensil, jumlah sel-sel fibroblast dan sel-sel epithelial bagi kumpulan malnutrisi yang dirawat dengan madu Tualang secara topikal dan oral menunjukkan keputusan yang lebih baik berbanding dengan kumpulan malnutrisi dan kumpulan tidak malnutrisi yang dirawat menggunakan normal saline secara topikal dan oral pada hari ke-7 dan ke-14 ($P<0.05$). Kecuali nilai epithelial pada hari ke-14, dimana tiada perbezaan di antara kumpulan malnutrisi yang dirawat dengan madu Tualang secara topikal dan oral dan kumpulan tidak malnutrisi yang dirawat menggunakan normal saline secara topikal dan oral ($P<0.05$)

KESIMPULAN: Hasil penyelidikkan ini menunjukkan pengambilan madu Tualang secara oral dan aplikasi secara topical meningkatkan pemulihan luka laparatomi pada arnab malnutrisi. Ia berlaku dengan cara meningkatkan bilangan sel-sel fibroblast dan sel-sel epithelial . Secara tidak langsung, ia menambahkan kekuatan tensil dengan peningkatan bilangan sel-sel tersebut.