ABSTRACT

THE DIFFERENCE OF SECOND DEGREE BURNS HEALING ACCELERATION BETWEEN THE TOPICAL ADMINISTRATION OF HUMAN UMBILICAL CORD WHARTON'S JELLY MESENCHYMAL STEM CELLS AND BIOPLACENTON GEL IN *Sprague dawley* WHITE MALE RATS (*Rattus norvegicus*)

By

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Background: Burns is a condition that everyone possibly can go through. Burns sometimes have difficulty to heal without the administration of appropriate therapeutic regimens. Bioplacenton is a gel based medicine that is commonly used to treat burns. Mesenchymal stem cells that come from Wharton's Jelly human umbilical cord have variety of potentials that can help to accelerate burns healing process. The aim of this research is to know the difference of burns healing accelaration of second degree burn between the topical administration of WJSMCs and bioplacenton gel which cover the burn time healing process and burns wound size reduction.
Method: This research was a laboratory experimental study using 27 white rats, induced by second degree burn, and divided into three groups; negative control (K), gel bioplacenton (P1), and WJMSCs (P2). The observation was done for 28 days. Data were analyzed using One way ANOVA and Kruskal wallis.
Result: The average of burns healing time in each group was ; K = 26.78 days, P1 = 25.11 days, and P2 = 19.67 days. The differences of wound size reduction occurred in day 8.12, 16, 20, and 24.
Conclusion: There were significantly differences of burns healing time and burns wound size reduction between the three groups. WJMSc was the group with the fastest healing time and largest wound size reduction.

Keywords: bioplacenton, burns, burns healing process, human umbilical cord *Wharton's Jelly* mesenchymal stem cells.

ABSTRAK

PERBEDAAN KECEPATAN PENYEMBUHAN LUKA BAKAR DERAJAT II ANTARA PEMBERIAN TOPIKAL SEL PUNCA MESENKIMAL *WHARTON'S JELLY* TALI PUSAT MANUSIA DENGAN GEL BIOPLACENTON PADA TIKUS PUTIH JANTAN (*Rattus norvegicus*) GALUR *Sprague dawley*

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Latar Belakang: Luka bakar merupakan suatu keadaan yang dapat dialami setiap manusia. Luka bakar sering sulit sembuh tanpa pemberian regimen terapi yang tepat. Bioplacenton merupakan gel yang sering digunakan untuk mengobati luka bakar. Sel punca mesenkimal yang berasal dari *Wharton's Jelly* tali pusat manusia memiliki berbagai potensi yang dapat membantu proses penyembuhan luka bakar. Penelitian ini bertujuan untuk mengetahui perbedaan kecepatan penyembuhan luka bakar derajat II antara pemberian gel bioplacenton dan WJSMCs meliputi waktu penyembuhan dan penyusutan diameter ukuran luka.

Metode: Penelitian ini merupakan penelitian eksperimental laboratorik menggunakan 27 ekor tikus putih yang diinduksi luka bakar derajat II dan dibagi menjadi tiga kelompok; perlakuan negatif (K), gel bioplacenton (P1), dan WJSMCs (P2). Pengamatan terhadap waktu penyembuhan dan penyusutan diameter luka dilakukan selama 28 hari. Data dianalisis menggunakan uji statistik *One way* ANOVA dan *Kruskal wallis.*

Hasil: Rata-tata waktu penyembuhan luka bakar kelompok K=26,78 hari, P1=25,11 hari, dan P2=19,67 hari. Perbedaan penyusutan ukuran luka terjadi di hari ke-8,12,16,20, dan 24.

Kesimpulan: Terdapat perbedaan waktu penyembuhan dan penyusutan ukuran luka bakar yang antarkelompok perlakuan. WJMSc merupakan kelompok dengan waktu penyembuhan tercepat dan penyusutan diameter luka terbesar.

Kata kunci: gel bioplacenton, luka bakar, sel punca mesenkimal *Wharton's Jelly* tali pusat manusia, proses penyembuhan luka bakar.