

ABSTRAK

GAMBARAN KESEMBUHAN LUKA SAYATAN KULIT PASCA OPERASI FRAKTUR FEMUR DENGAN APLIKASI TOPIKAL KRIM EKSTRAK MEDIA PENUMBUH SEL PUNCA MESENKIMAL (EMPSPM) 10%

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Luka sayatan pasca operasi merupakan tipe kesembuhan luka *primary intention*. Kesembuhan luka memerlukan keterlibatan faktor trofik seperti sitokin. Ekstrak Media Penumbuh Sel Punca Mesenkimal (EMPSPM) mengandung sekret sel punca yang diduga mengandung faktor trofik untuk regenerasi jaringan kulit yang rusak. Penelitian ini bertujuan untuk mengetahui potensi EMPSPM secara topikal terhadap proses kesembuhan luka sayatan kulit pasca operasi fraktur femur tikus ditinjau secara histologi dengan menggunakan pewarnaan *Hematoxylin Eosin* (HE) dan *Mallory Aniline Blue* (MAB).

Studi *in-vivo* dilakukan menggunakan 14 ekor tikus Wistar jantan berusia 3-4 bulan terbagi dalam 2 kelompok, kelompok kontrol yang diberi *base cream* dan kelompok perlakuan yang diberi krim EMPSPM 10%. *Base cream* dan krim EMPSPM 10% diaplikasikan secara topikal setiap pagi pada luka sayatan di femur kanan yang merupakan rangkaian operasi fraktur femur. Sampel kulit pada area yang telah ditandai dikoleksi masing-masing kelompok pada hari ke-1, 2, 3, 7, 14, 21 dan 28 pasca operasi. Sampel kulit diproses dengan metode parafin dan diwarnai dengan dua metode pewarnaan yaitu, HE dan MAB. Analisis dilakukan secara kualitatif pada pewarnaan HE, kuantitatif dengan menghitung jumlah sel radang dan ketebalan epidermis pada pewarnaan HE dan analisis kuantitatif dengan menghitung kepadatan kolagen pada pewarnaan MAB.

Hasil penelitian ini menunjukkan pemberian krim EMPSPM 10% mampu meningkatkan jumlah sel radang pada hari ke-2 dibandingkan kontrol. Epidermis kelompok perlakuan lebih tebal dibandingkan kelompok kontrol pada hari ke-7, 14, 21 dan 28 pasca operasi dan mengalami penutupan total luka pada hari ke-14 dibandingkan kelompok kontrol pada hari ke-21. Kolagen kelompok perlakuan memiliki kepadatan yang lebih padat dibandingkan kontrol pada hari ke-7, 14, 21, 28 pasca operasi. Krim EMPSPM 10% dapat mempercepat kesembuhan luka sayatan pasca operasi fraktur dengan; 1). Mempercepat penutupan luka, 2). Meningkatkan jumlah sel radang, 3). Meningkatkan ketebalan epidermis, 4). Meningkatkan kepadatan kolagen.

Kata Kunci: Epidermis, Kolagen, Krim EMPSPM 10%, Kulit, Luka Sayatan pasca operasi, Sel Radang.

ABSTRACT

HISTOLOGY OF SKIN WOUND HEALING ON POST FRACTURE FEMUR OPERATION WITH TOPICAL APPLICATION OF CREAM MESENCHYMAL STEM CELL CONDITIONED MEDIUM

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Post surgery wound is a type of wound healing primary intention. Wound healing requires the involvement of trophic factors such as cytokines. Mesenchymal Stem Cell Conditioned Medium (EMPSPM) indicated contain trophic factors for the regeneration of damaged skin tissue. This study evaluated histologically the effect of EMPSPM cream on the rat femur surgical wound healing process by *Hematoxylin Eosin* (HE) and *Mallory Aniline Blue* (MAB) staining.

In-vivo study was performed using 14 male *Rattus norvegicus* mice aged 3-4 months (n = 14). They were divided into 2 groups, one being the control group was treated with base cream and another act as the experimental group, was treated with 10% EMPSPM cream (1 ml EMPSPM with 10 grams of base cream) topically. Both medication was given topically every morning to the incision wound in the right femur caused by a series of femoral fracture operations. Skin samples, which was marked, were collected from each of the groups on days 1, 2, 3, 7, 14, 21 and 28 after surgery. The skin samples were treated by paraffin method and were stained with two staining solution, HE and MAB. Qualitative analysis was conducted on skin samples treated with HE staining. Quantitative analysis was also done by counting the number of inflammatory cells and the thickness of the epidermis of skin which were treated with HE staining and also by calculating the density of collagen in skins treated with MAB staining.

The results of this study showed that 10% EMPSPM cream was able to increase the number of inflammatory cells on day two when compared to control group. The epidermis isolated from the experimental group was thicker than the control group on day 7, 14, 21 and 28 post operation and experienced total closure of the wound on day 14 as compared to the control group on day 21. Collagen from the experimental group had denser density than the control group at days 7, 14, 21, 28 post operation. 10% EMPSPM cream can accelerate wound healing post-operative fracture incision with; 1). Accelerate wound closure, 2). Increase total number of inflammatory cells, 3). Increase the thickness of the epidermis, 4). Increases collagen density.

Keywords: Collagen, Epidermis, Inflammatory Cells, Skin, Surgical Wound, 10% MSC-CM