

## INTISARI

### PENGARUH APLIKASI ASAM HIALURONAT, LENDIR BEKICOT, DAN ASAM ASKORBAT TERHADAP EKSPRESI INTERLEUKIN-6 PADA PROSESPENYEMBUHAN LUKA INSISI KULIT TIKUS ALBINO GALUR WISTAR (*Rattus norvegicus*)

Paundra Utama<sup>1</sup>, Ishandono<sup>1</sup>, Dewajani<sup>2</sup>

<sup>1</sup>Departmen Bedah, Rumah Sakit Dr. Sardjito, Fakultas Kedokteran, Kesehatan Masyarakat, dan Keperawatan, Universitas Gadjah Mada, Yogyakarta, Indonesia

<sup>3</sup>Department Histologi, Fakultas Kedokteran, Kesehatan Masyarakat, dan Keperawatan, Universitas Gadjah Mada, Yogyakarta, Indonesia

**Latar Belakang:**Penyembuhan luka yang maksimal terutama di fase inflamasi ditandai dengan peningkatan biomarker IL-6. Asam askorbat, asam hialuronat, dan lendir bekicot diduga dapat mempengaruhi fase inflamasi dalam mempercepat proses penyembuhan luka.

**Tujuan:** Mengetahui pengaruh pemberian asam hyaluronat, asam askorbat dan gel lendir bekicot terhadap ekspresi IL-6 pada luka insisi kulit tikus rattus novegicus.

**Metode:**Luka insisi dilakukan pada 40 ekor tikus. Masing masing 10 tikus dibagi menjadi 4 kelompok yaitu kelompok I hingga IV. Setiap hari masing masing kelompok diberi perlakuan berbeda yaitu kelompok I: asam askorbat 10%, kelompok II: asam hyaluronat 0.2%, kelompok III: gel lendir bekicot 20% dan kelompok IV normal salin 0.9% (NS 0.9%). Dekapotasi dilakukan terhadap 5 tikus dihari ke-1 dan ke-4 pada masing masing kelompok. Pemeriksaan imunohistokimia digunakan untuk mengetahui ekspresi berupa prosentase hasil positif dan intensitas IL-6 pada jaringan

**Hasil:**Pada pengamatan ekspresi IL-6 hari pertama tidak terdapat perbedaan bermakna pemberian asam askorbat ( $141.62 \pm 42.70$ ), asam hyaluronat ( $105.21 \pm 38.30$ ), dan gel lendir bekicot ( $105.60 \pm 35.49$ ) dibandingkan dengan kontrol NaCl 0.9% ( $94.49 \pm 33.49$ ) ( $P=0.522$ ). Pemberian asam askorbat pada hari ke empat menunjukkan nilai yang lebih tinggi secara signifikan dibanding kontrol ( $121.49 \pm 27.67$  vs  $94.00 \pm 35.40$ ,  $P=0.049$ ). Pemberian asam hyaluronat ( $79.40 \pm 29.65$ ) dan gel lendir bekicot ( $86.35 \pm 44.10$ ) tidak menunjukkan perbedaan bermakna dibanding kontrol pada hari ke empat

**Kesimpulan:**Pada hari pertama ekspresi IL-6 lebih tinggi jika dibandingkan dengan kontrol walaupun tidak bermakna secara statistik. Ekspresi IL-6 pada kelompok asam askorbat hari ke-4 yang secara signifikan lebih tinggi dibanding kontrol menunjukkan asam efek asam terhadap fase inflamasi dan proliferasi penyembuhan luka.

**Kata kunci:**penyembuhan luka, asam askorbat, asam hyaluronat, gel lendir bekicot, interleukin-6

## ABSTRACT

### THE EFFECT OF APPLICATION FROM HYALURONIC ACID, BEKICOT MUCOUS GEL, AND ASCORBATE ACID WITH WOUND HEALING PROCESS ON INTERLEUKIN-6 EXPRESSION IN WISTAR RATS (*Rattus norvegicus*)

Paundra Utama<sup>1</sup>, Ishandono<sup>1</sup>, Dewajani<sup>2</sup>

<sup>1</sup>Department of Surgery, Dr. Sardjito Hospital, Faculty of Medicine, Public Health and Nursing,  
Universitas Gadjah Mada, Yogyakarta, Indonesia

<sup>2</sup>Department of histology, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta,  
Indonesia

**Background:** Maximum wound healing especially in the inflammatory phase is characterized by an increase in IL-6 biomarkers. Ascorbic acid, hyaluronic acid, and snail mucus are thought to influence the inflammatory phase in accelerating the wound healing process.

**Aim:** To determine the effect of administration of hyaluronic acid, ascorbic acid and snail mucous gel to IL-6 expression in *rattus novegicus* skin incision wounds.

**Method:** Incision wounds were performed on 40 rats. Each of the 10 rats was divided into 4 groups. Every day each group was given a different treatment, group I: 10% ascorbic acid, group II: 0.2% hyaluronic acid, group III: 20% snail mucus gel and group IV normal saline 0.9% (NS 0.9%). Decapitation was carried out on 5 rats on the 1st and 4th days in each group. Immunohistochemical examination is used to determine the expression in the form of a percentage of positive results and the intensity of IL-6 in tissues

**Results:** From the observation of IL-6 expression the first day there was no significant difference in the administration of ascorbic acid ( $141.62 \pm 42.70$ ), hyaluronic acid ( $105.21 \pm 38.30$ ), and snail mucus gel ( $105.60 \pm 35.49$ ) compared to 0.9% NaCl control ( $94.49 \pm 33.49$ ) ( $P = 0.522$ ). Administration of ascorbic acid on day four showed a significantly higher value than controls ( $121.49 \pm 27.67$  vs  $94.00 \pm 35.40$ ,  $P = 0.049$ ). Hyaluronic acid ( $79.40 \pm 29.65$ ) and snail mucus gel ( $86.35 \pm 44.10$ ) showed no significant difference compared to controls on the fourth day

**Conclusion:** On the first day the expression of IL-6 was higher compared to the control level although it was not statistically significant. The expression of IL-6 in the ascorbic acid group on day 4 which was significantly higher than the control showed the effect of ascorbic acid on the inflammatory phase and the proliferation of wound healing

**Keywords:** wound healing, ascorbic acid, hyaluronic acid, bekicot mucous gel, interleukin-6