

## INTISARI

Ilmu Akupunktur telah lama dikembangkan sebagai terapi alternatif terhadap gangguan fungsi organ tubuh. Diagnosis terhadap gangguan organ tertentu dapat dilakukan melalui pemeriksaan biofisik titik-titik tertentu pula. Tujuan penelitian ini adalah untuk mengetahui pengaruh pemberian zat aloksan monohidrat dengan dosis bertingkat terhadap derajat kerusakan sel  $\beta$  pankreas dan perubahan beda tegangan listrik titik akupunktur Su-belakang pankreas, serta mengamati hubungan kerusakan pankreas dengan perubahan beda tegangan listrik titik akupunktur.

Subjek penelitian ini 12 ekor tikus (*Rattus norvegicus*) jantan, dibagi menjadi 4 kelompok secara random sederhana, yaitu kelompok I (kontrol) mendapat suntikan aquabidestilata (intraperitoneal); kelompok II (perlakuan 1) mendapat suntikan aloksan 70 mg/kg BB (intraperitoneal); kelompok III (perlakuan 2) mendapat suntikan aloksan 140 mg/kg BB (intraperitoneal) dan kelompok IV (perlakuan 3) mendapat suntikan aloksan 210 mg/kg BB (intraperitoneal). Masing-masing kelompok terdiri atas 3 ekor tikus. Tikus dipelihara, dan pada hari ke 7, dilakukan perekaman beda tegangan listrik titik akupunktur Su-belakang pankreas, dengan menggunakan alat akupunkturmeter. Setelah perekaman selesai, tikus dimatikan, kemudian diambil pankreasnya dan dibuat sediaan histologis dengan pemulasan *Victoria blue*, yang dapat mewarnai granula insulin pada sel  $\beta$ . Data yang diperoleh dianalisis dengan ANAVA satu jalan, Uji-t, dan regresi linier.

Hasil-hasil penelitian menunjukkan bahwa, pemberian aloksan monohidrat menyebabkan kerusakan sel  $\beta$  pankreas, sehingga rasio sel  $\beta$  per jumlah sel di satu pulau Langerhans pada kelompok perlakuan ( $0,310 \pm 0,073$ ) lebih kecil ( $p < 0,05$ ) dari pada rasio pada kelompok kontrol ( $0,571 \pm 0,133$ ). Perubahan beda tegangan listrik titik akupunktur pada kelompok perlakuan ( $33,084 \pm 7,344$ ) lebih besar ( $p < 0,05$ ) dari perubahan beda tegangan listrik pada kelompok kontrol ( $13,653 \pm 5,628$ ). Hubungan kerusakan pankreas dengan perubahan beda tegangan listrik dianalisis dengan regresi linier menunjukkan hasil bermakna ( $p < 0,05$ ) pada kelompok perlakuan 2 (diberi aloksan dosis 140 mg/kg BB). Dengan demikian dapat disimpulkan bahwa, pemberian aloksan dengan dosis bervariasi berpengaruh terhadap derajat kerusakan pankreas. Pemberian aloksan berpengaruh terhadap perubahan beda tegangan listrik titik Su-belakang pankreas. Ada hubungan antara kerusakan pankreas dengan perubahan beda tegangan listrik pada titik Su-belakang pankreas (pada dosis 140 mg/kgBB).

Kata kunci : aloksan, sel  $\beta$  pankreas, beda tegangan listrik, titik akupunktur.

## ABSTRACT

Acupuncture has been developed for a long time ago as an alternative therapy to cure many disturbances of the body. Diagnostic effort of organ disorder can also be done through the biophysical study of the acupuncture point. The aim of this study is to reveal the effect of alloxan monohydrate treated gradually on pancreatic damage and electrical voltage changes of acupuncture point (Pi Shu), to observe the effect of organ damage on electrical voltage changes of the related-acupoint.

The subjects, 12 male rats, were randomly divided into four groups, i.e. group I (control) was treated by aquabidestilata; group II (treatment 1) was treated by alloxan 70 mg/kg BW; group III (treatment 2) was treated by alloxan 140 mg/kg BW and group IV (treatment 3) was treated by alloxan 210 mg/kg BW. All these treatments were done intraperitoneally. Each group consisted of 3 rats. By the 7<sup>th</sup> day of treatment, electrical voltage changes were observed. Recording was taken through the acupuncture points of the pancreas in the back (Pi Shu) by Acupuncturemeter. After the recording were accomplished, the rats were killed, followed by taking out their pancreas and then were processed by Victoria blue staining for microscopic features preparations of  $\beta$  cells in islets of Langerhans. The data collected then were analysed with one way ANOVA, t-Test and Linear Regression.

The results of this study showed that gradually treatment of alloxan monohydrate caused pancreas  $\beta$  cell damages, so the ratio of  $\beta$  cell per cell number in one islet of treatment group is  $(0,310 \pm 0,073)$  less significantly ( $p < 0,05$ ) than the ratio of control group  $(0,571 \pm 0,133)$ . The electrical voltage changes in treatment group is  $(33,084 \pm 7,344)$  higher significantly ( $p < 0,05$ ) than the changes in control group  $(13,653 \pm 5,628)$ . The effect of pancreatic damage on the skin electrical voltage changes of acupuncture point has been statistically analyzed by *Linear Regression*, showed a significant difference in group III (group which were treated by alloxan 140 mg/kg BW). These results indicate that gradual treatment of alloxan monohydrate treated gradually cause pancreatic damage and electrical voltage changes of acupuncture point (Pi Shu). There is a significant difference in  $\beta$  cell ratio per number of entire islet cells, one group differs from another. So does in electrical voltage changes. It is suggested that there is a relationship between organ damage and electrical voltage changes of the related-acupoints.

Key words: alloxan, pancreatic  $\beta$  cell, electrical voltage, acupuncture point.