PROFIL ERITROSIT TIKUS (*Rattus norvegicus* Berkenhout, 1769) GALUR *SPRAGUE-DAWLEY* DENGAN INDUKSI *7,12-DIMETHYLBENZ α ANTHRACENE* DAN PAPARAN MEDAN LISTRIK STATIS

Windah Dwi Nuraini M

15/381913/BI/09552

INTISARI

Kanker merupakan salah satu penyebab utama kematian di dunia. Diperlukan metode yang dapat meminimalisir efek samping terapi kanker. Salah satu pengembangan terapi kanker yaitu dengan alat *Electro-Capacitive Cancer Therapy* (ECCT) yang dikembangkan oleh PT. *Ctech Labs Edwar Technology*. Terapi ini menggunakan medan listrik statis frekuensi menengah dan intensitas rendah. Tikus (*Rattus norvegicus* Berkenhout, 1769) galur S*prague Dawley* sebagai hewan model kanker payudara diinduksi *7,12-Dimethylbenz[α]anthracene* (DMBA). Terapi ini memerlukan pengujian profil eritrosit untuk mengevaluasi kondisi fisiologis tikus kanker payudara yang diterapi menggunakan ECCT. Tujuan dari penelitian ini adalah mempelajari pengaruh paparan medan listrik statis dengan intensitas 18 Vpp dan frekuensi menengah 150 kHz terhadap profil eritrosit tikus (*Rattus norvegicus* Berkenhout, 1769) yang diinduksi DMBA menggunakan alat ECCT. Tikus yang digunakan sebanyak 30 ekor. Tikus dibagi kedalam 5 kelompok masing-masing 6 ekor, yaitu: tanpa perlakuan, noninduksi-nonterapi, noninduksi-terapi, induksi-nonterapi, dan induksi-terapi. Induksi DMBA dilakukan per oral dengan dosis 20 mg/kg bb sebanyak 10 kali dalam waktu 5 pekan. Tikus dipalpasi setiap dua hari sekali, jika nodul berukuran kurang lebih satu cm maka dilakukan terapi selama 21 hari dengan rincian 10 jam perhari. Sampel darah dikoleksi melalui *sinus orbitalis*. Variabel yang dievaluasi adalah *Red Blood Cell (RBC), Hemoglobin (HGB), Hematokrit (HCT), Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), dan Mean Corpuscular Hemoglobin Concentration (MCHC).* Data dianalisis menggunakan Microsoft Excel 2019 dan ditabulasi dalam diagram batang, juga analisis statistik berdasarkan *one-way* ANOVA (α=0,05) menggunakan perangkat lunak IBM-SPSS v.23. Hasil menunjukkan bahwa paparan medan listrik statis frekuensi 150 kHz dan intensitas 18Vpp dari ECCT tidak memperburuk kondisi profil eritrosit tikus bahkan dapat meningkatkan produksi hemoglobin. Dapat disimpulkan bahwa penggunaan ECCT untuk terapi kanker payudara relatif aman terhadap profil eritrosit tikus *Sprague -Dawley* sebagai model hewan kanker payudara.

Kata kunci: Tikus kanker payudara, Terapi Medan Listrik Statis, DMBA, Eritrosit

EYTHROCYTE PROFILE OF *SPRAGUE-DAWLEY* RATS (*Rattus norvegicus* Berkenhout, 1769) INDUCED BY *7,12-DIMETHYLBENZ α ANTHRACENE* AND ELECTRIC STATIC FIELD EXPOSURE

Windah Dwi Nuraini M

15/381913/BI/09552

ABSTRACT

Cancer is one of the leading causes of death in the world. A method is needed that can minimize the side effects of cancer therapy. One of the developments in cancer therapy is the *Electro-Capacitive Cancer Therapy* (ECCT) tool developed by PT. *Ctech Labs Edwar Technology*. This therapy uses medium frequency and low intensity static electric fields. Rats (*Rattus norvegicus* Berkenhout, 1769) *Sprague Dawley* strain as an animal model of 7*,12-Dimethylbenz [α] anthracene* (DMBA) induced breast cancer. This therapy requires erythrocyte profile testing to evaluate the physiological condition of breast cancer rat treated using ECCT. The purpose of this study was to study the effect of exposure to a static electric field with an intensity of 18 Vpp and an intermediate frequency of 150 kHz on the profile of rat erythrocytes (*Rattus norvegicus* Berkenhout, 1769) induced by DMBA using the ECCT tool. There were 30 rats used. Rats were divided into 5 groups of 6 each, namely: no treatment, non-induction-non-therapy, non-induction-therapy, induction-non-therapy, and induction-therapy. DMBA induction was carried out orally at a dose of 20 mg / kg bw 10 times within 5 weeks. The rat were palpated every other day, if the nodule was approximately one cm in size, then the therapy was carried out for 21 days with details of 10 hours per day. Blood sample is collected through the sinus orbital. The variables evaluated were *Red Blood Cell* (RBC), *Hemoglobin* (HGB), *Hematocrit* (HCT), *Mean Corpuscular Volume* (MCV), *Mean Corpuscular Hemoglobin* (MCH), and *Mean Corpuscular Hemoglobin Concentration* (MCHC). Data were analyzed using Microsoft Excel 2019 and tabulated in bar charts, as well as statistical analysis based on one-way ANOVA ($\alpha = 0.05$) using IBM-SPSS v.23 software. The results showed that exposure to a static electric field frequency of 150 kHz and an intensity of 18Vpp of ECCT did not worsen the profile of rat erythrocytes and even increased hemoglobin production. It can be concluded that the use of ECCT for breast cancer therapy is relatively safe against the erythrocyte profile of *Sprague-Dawley* rats as an animal model of breast cancer.

Keywords: Rats of breast cancer, Static Electric Field Therapy, DMBA, Erythrocytes