ABSTRAK

Latar belakang: Sebanyak 930.000 kematian kanker kolorektal sering disebabkan oleh terlambatnya diagnosis. Akibatnya, pilihan terapi terbatas, resistensi dan rekurensi meningkat. Sel punca kanker kolorektal (SP-KKR) berkontribusi dalam kemoresistensi yang ditandai oleh CD133 dan CD44, sehingga diperlukan pendekatan terapi alami seperti *Phylantus niruri linn* (PNL) sebagai imunomodulator dalam mengeradikasi SP-KKR yang dapat dianalisis melalui jalur perantara TLR, NF-κB, dan CTL.

Metode: Penelitian *true experimental* dengan *posttest only control group design* ini menggunakan tikus *Sprague-Dawley* jantan yang terbagi menjadi lima kelompok yaitu kontrol normal (Kn), kontrol negatif (K-), kelompok perlakuan *capecitabine* (K+), PNL (X1), dan kombinasi PNL dan *capecitabine* (X2). PNL adalah variabel bebas, variabel terikat adalah CD133 dan CD44, dan variabel perantara adalah TLR, NF-κB, dan CTL pada kolon. Data dianalisis menggunakan SPSS v22.

Hasil: Rasio berat kolon sekum dan berat tikus memiliki perbedaan signifikan (p<0,001); K- dan X2 memiliki rasio lebih rendah dibanding Kn. Uji *Kruskal Wallis* menunjukan ekspresi CD133 (p=0,008), CD44 (p=0,004), CTL (p= 0,01), TLR (p=0,212) dan NF-κB (p=0,361). Ekspresi CD133 terendah pada X2. CD44 lebih rendah pada X1 dan X2. CTL lebih tinggi pada X1 dan X2.

Simpulan: Ekstrak PNL baik tunggal maupun kombinasi secara sinergis terbukti lebih efektif mengeradikasi SP-KKR dibanding *capecitabine* tunggal.

Kata Kunci: kanker kolorektal, sel punca kanker, CD133, CD44, TLR, NF-κB, CTL, *phyllantus niruri linn*, *capecitabine.*

ABSTRACT

Background: Up to 930,000 colorectal cancer deaths are caused by a late diagnosis, which limits therapeutic options and increases resistance and recurrence. CD133 and CD44-associated chemoresistance is facilitated by colorectal cancer stem cells (CRC-SCs). Phylantus niruri linn (PNL), a natural therapeutic approach, is an immunomodulator that can be analyzed through TLR, NF-κB, and CTL pathways, potentially eradicating CRC-SCs.

Method: The study was used a true experimental method with a posttest only control group design. Male Sprague-Dawley mice were separated into five groups normal control (Kn),negative control (K-), capecitabine treatment group (K+), PNL (X1), and a combination of PNL and capecitabine (X2). PNL was an independent variable, whereas CD133 and CD44 were dependent variables. The intermediate variables included in this study were TLR, NF-κB, and CTL, which were specifically related to the colon. The data was analyzed using SPSS version 22

Results: A significant difference ($p<0.001$) in colon cecum weight and mouse weight ratio; K- and X2 were have a lower ratio than Kn.The Kruskal-Wallis test was revealed significant expression of CD133 ($p=0.008$), CD44 ($p=0.004$), CTL ($p=0.01$), TLR ($p=0.212$), and NF-κB ($p=0.361$). CD133 expression was lowest in X2. CD44 was lower in X1 and X2. CTL was higher in X1 and X2.

Conclusion: PNL extract, in a synergistic combination or on its own, is more effective than capecitabine in eliminating CRC-SCs.

Keywords: colorectal cancer, cancer stem cells, CD133, CD44, TLR, NF-κB, CTL, Phyllantus niruri Linn, capecitabine.