

Uji Sitotoksitas Ekstrak Aseton Akar dan Fraksi E (Semipolar) Akar *Acalypha indica* terhadap Sel Kanker MCF-7 = Cytotoxicity Test of Acetone Extract and Semipolar Fraction of *Acalypha Indica* Roots on MCF-7 Cancer Cell

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Abstrak

Latar Belakang Kanker payudara memiliki prevalensi dan mortalitas yang tinggi di Indonesia dan dunia, karena sering terdiagnosis pada stadium lanjut. Salah satu kemoterapi yang banyak digunakan adalah doxorubicin, namun mempunyai efek samping kardiotoxik. Penelitian sebelumnya menunjukkan potensi sitotoksitas ekstrak *Acalypha indica* (AI) terhadap sel kanker payudara MCF-7. Tujuan penelitian ini adalah untuk menguji efek penghambatan ekstrak aseton dan fraksi E (semipolar) dari *Acalypha indica* (AI) terhadap pertumbuhan sel kanker (sitotoksitas) MCF-7 dan menentukan konsentrasi half maximal inhibitory concentration (IC₅₀). Metode Penelitian ini merupakan studi in vitro pada sel MCF-7 yang diberi ekstrak aseton dan fraksi E AI pada berbagai konsentrasi. Viabilitas sel MCF-7 diperiksa dengan MTT Assay. Absorbansi dari kultur sel yang diberi perlakuan ekstrak AI diukur dengan spektrofotometri. Hasil absorbansi digunakan untuk menghitung nilai IC₅₀ sebagai indikator potensi sitotoksitas senyawa tersebut terhadap sel MCF-7. Hasil Ekstrak aseton AI menunjukkan aktivitas sitotoksik yang moderat, dan lemah untuk fraksi E AI. Adapun nilai IC₅₀ ekstrak aseton AI adalah 177,852 ppm, dan 213,149 ppm untuk fraksi E (semipolar) AI. Kesimpulan Pemberian ekstrak aseton maupun fraksi E (semipolar) akar AI mampu menghambat pertumbuhan sel MCF-7 dengan tingkat sitotoksitas yang sedang dan lemah.

.....Introduction Breast cancer is highly prevalent and has a high mortality rate in Indonesia and worldwide, often due to late-stage diagnosis. Doxorubicin is a commonly used chemotherapy drug for breast cancer, but it has cardiotoxic effects. Previous research has shown that *Acalypha indica* (AI) extract has potential cytotoxic effects against MCF-7 breast cancer cells. The aim of this study is to analyze the growth inhibitory effect of the acetone extract and fraction E (semipolar) of AI on MCF-7 cells by evaluating their metabolic activity and determining the IC₅₀ value. Method This in vitro study used MCF-7 breast cancer cells. The cells were treated with various concentrations of the acetone extract and fraction E (semipolar) of AI, and their viability was measured using the MTT Assay. The absorbances were measured using spectrophotometry. The IC₅₀ value, indicating the cytotoxicity effect against MCF-7 cells, was calculated based on the absorbance results. Results The acetone extract of AI showed moderate cytotoxic activity, while the E fraction showed weak cytotoxic activity. The IC₅₀ value for the acetone extract of AI was 177,852 ppm, and for the E (semipolar) fraction of AI, it was 213,149 ppm. Conclusion The administration of the acetone extract and fraction E (semipolar) of *Acalypha indica* roots both showed a growth inhibitory effect against MCF-7 cells, with moderate and weak cytotoxicity effects, respectively.