PENGARUH EKSTRAK ETANOLIK TANAMAN SARANG SEMUT (*Myrmecodia tuberosa*) TERHADAP HAMBATAN PERTUMBUHAN DAN MIGRASI SERTA INDUKSI APOPTOSIS SEL KANKER INVASIF (*In Vitro*)

INTISARI

Sarang semut (*Myrmecodia tuberosa*) merupakan tanaman tradisional yang diketahui mempunyai kandungan senyawa anti kanker yang telah diujikan secara *in vitro* dan *in vivo*. Kandungan senyawa aktif tanaman sarang semut mampu menghambat pertumbuhan sel kanker. Dalam penelitian ini, tanaman sarang semut dibuat ekstrak dengan pelarut etanol menggunakan metode maserasi untuk mengevaluasi aktivitas anti kanker pada sel kanker invasif. Tujuan penelitian adalah menguji pengaruh ekstrak etanolik tanaman sarang semut terhadap hambatan pertumbuhan dan migrasi serta induksi apoptosis sel kanker invasif.

Jenis penelitian yang digunakan adalah eksperimental murni laboratorik dengan rancangan *post-test only control group design*. Uji *methyl tetrazolium test* (MTT *assay*) dilakukan untuk mengetahui hambatan pertumbuhan sel. Uji dengan teknik *scratch wound healing* dilakukan untuk mengetahui migrasi sel. Dan analisis pewarnaan menggunakan *double-staining* dilakukan untuk mengevaluasi induksi apoptosis sel. Analisis statistik dilakukan dengan program SPSS 16.0, dan data dianalisis menggunakan uji *Kruskal-Wallis* dilanjutkan dengan *Mann-Whitney U test* dengan derajat kemaknaan 95%.

Hasil penelitian menunjukkan peningkatan persentase hambatan pertumbuhan sel KB konsentrasi 62,5, 125, 250, 500 dan 1000 μg/ml berturut-turut sebesar 35,5%, 39,5%, 58,3%, 68,5% dan 84,2% dibandingkan dengan kontrol negatif (aquades). Selanjutnya, terdapat peningkatan apoptosis sel KB setelah diinkubasi selama 24 jam. Peningkatan persentase apoptosis sel KB terjadi dari konsentrasi 62,5 μg/ml sampai dengan 1000 μg/ml (88%). Ekstrak tanaman sarang semut efektif menurunkan persentase penutupan sel 4T1 yang berarti menghambat migrasi sel pada pengamatan jam ke 18 dan 24.

Kesimpulan, ekstrak etanolik tanaman sarang semut mempunyai pengaruh menghambat pertumbuhan, induksi apoptosis sel KB dan menghambat migrasi sel 4T1.

Kata kunci: tanaman sarang semut, ekstrak etanol, hambatan pertumbuhan, apoptosis migrasi.

THE EFFECT OF ETHANOLIC EXTRACT OF ANT NEST (*Myrmecodia tuberosa*) ON SUPPRESSION OF CELL GROWTH, MIGRATION AND INDUCTION OF APOPTOSIS IN INVASIF CANCER CELL (*In Vitro*)

ABSTRACT

Ant nest (*Myrmecodia tuberosa*) is a traditional plant that is known to have anticancer compound which has been examined *in vitro* and *in vivo*. Active compound of ant nest is reported to inhibit the growth of human cancer cell types. In the present study, ant nest powder was incubated in ethanol 80% using maceration method for evaluating anti-cancer activity on KB cells. The research objective was to evaluate the effect of ethanolic extracts of ant nest against growth inhibition induction of apoptosis and migration in invasif cancer cell.

Pure experimental laboratory with a post-test only control group design was confirmed in this study. Methyl tetrazolium test (MTT assay) was conducted to determine the growth inhibition of KB cells, and staining analysis with double-staining was performed to evaluate the induction of apoptosis of KB cells. Scratch wound healing technique was carried-out to observe the migration cells. Statistical analysis was done with SPSS 16.0 program, and data were analyzed using the Kruskal-Wallis test followed by Mann-Whitney U test with a significance level of 95%.

The results revealed concentration of 62.5, 125, 250, 500 and 1000 μg/ml was markedly increased the KB cell growth inhibition. The percentage average of growth inhibition was 35.5%, 39.5%, 58.3%, 68.5% and 84.2% respectively, compared to the negative control. Apoptosis of KB cells was significantly induced after incubation of various concentration of ethanolic extract of ant nest for 24 hours. Increased in the percentage of apoptotic KB cells also occurred at concentration 62.5 to 1000 μg/ml. Furthermore, cell migration was markedly increased the inhibitory ability of 4T1 cells treated with various concentration of extract. In conclusion, ethanolic extract of ant nest plant had the inhibition effect on cell growth, induction of apoptosis of KB cells and migration of 4T1 cells.

Keywords: plant ant nest, ethanolic extract, growth inhibition, apoptosis, migration.