

Aree Sakyim 2010: Cytotoxicity of *Coscinium fenestratum* (Gaertn.) Colebr. Extract on Human Keratinocyte Stem Cells. Master of Science (Biology), Major Field: Biology, Department of Zoology. Thesis Advisor: Assistant Professor Kantimane Phanwichian, Ph.D. 77 pages.

Tree turmeric *Coscinium fenestratum* is a woody climbing shrub herb which widely used to treat cancer, diabetes mellitus, hypertension and others. The aim of this research was to test the cytotoxic activities of *C. fenestratum* water extract on keratinocyte stem cells. The cells were cultured in DMEM/F12 supplemented with 10% fetal bovine serum and six concentrations of the extract, 100, 200, 400, 600, 800 and 1,000 µg/ml, were also added. Then, the cells were incubated in the incubator at 37 C° and 5% CO₂ for 24, 48 and 72 hrs. The dead of cells, DNA damage, apoptotic activity and alteration of the cell cycle were determined. By MTT assay, the dead of cells were found in all concentrations in the range 13.30±5.42 - 58.36±3.37 % with significantly higher than that of the control (P<0.05). But by using double staining method, propidium iodide and Hoechst 33342, the percentages of dead cells were observed in the range 34.81±19.34 - 44.99±13.04 % in the concentrations of 600, 800 and 1,000 µg/ml at 48 hrs which showed significantly higher than that of the control (P<0.05). After 72 hrs, the percentages of dead cells were found in the range of 33.50±7.82 - 93.33±11.54 which also showed higher significant than that of the control (P<0.05). For the determination of DNA damage using acridine orange staining method, the damaged cells were observed in the concentrations of 800 and 1000 µg/ml at 24 and 48 hrs. With respective, the percentages of these damaged cells were in the range of 33.12±15.63 - 33.23±7.50 and 53.85±8.23 - 56.85±9.40 which were significantly higher than those of the control (P<0.05). At 72 hrs, the range of DNA damage percentage was 38.50±15.49 - 91.11±15.39 which also significantly higher than that of the control (P<0.05). Using Hoechst 33342 staining method, the apoptotic cells were noticed in two concentrations, 800 and 1000 µg/ml, at 72 hrs with significantly higher percentages than that of the control (P<0.05) which were in the range of 6.63±1.07 - 12.87±4.64. Moreover, all concentrations of the extract significantly arrested the cell cycle progression in G0/G1 phase at 24 and 48 hrs, except at 800 µg/ml, the cell cycle was arrested in G2/M phase. Those results, determined from propidium iodine stained cells detected by Flow cytometry, could be concluded that the water extract of *C. fenestratum* at 100, 200, 400 and 600 µg/ml showed lower cytotoxic activities than those higher concentrations. The long term exposure of the higher concentration of the extract, the higher cytotoxic activities was noticed.

Student's signature

Thesis Advisor's signature

