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Degirmenci NS, Akal ZU, Alpsoy L. Cytotoxic and apoptotic effects of caffeic acid and caffeoyl malic acid on brain glioblastoma (U87-MG). *Bull. Pharm. Res.* 2016;6(1):7-13.

Abstract: *Urtica dioica* is a kind of plant which is a member of Urticaceae family. Alternative medicines have attracted much attention as potential therapeutic agents in the prevention of cancer. As a medicinal plant, *Urtica dioica* has been used traditionally as a cancer treatment in place of chemotherapy. Caffeic acid and caffeoyl malic acid are phenolic compounds found in *Urtica dioica*. They have biological protective effects on human health such as diabetes, cancer and inflammation. The present study determines the cytotoxic and apoptotic effects of different concentrations (1, 5, 10, 50 μM) of caffeic acid (CA) and caffeoyl malic acid (CMA) on glioblastoma cell line (U87- MG). Cytotoxic activity studied by using xCELLigence (real-time cell counter) and lactate dehydrogenease (LDH) assay systems against U87- MG. Antiproliferative activity also determined by WST-1 test. And lastly TUNEL assay used to show *apoptosis induced* by CA and CMA on U87- MG. All experiments were run for 48h. Our results show that CA especially in 50 μM concentration has apoptotic and anti-proliferative effects on U87 cell line at 48th hour. 1, 5, 10 μM concentrations of CMA decreased cell number according to the results of xCELLigence and WST-1 at 48th hour. Especially CMA IC50 values of 20 μM also has more apoptotic and anti-proliferative effects on U87 cell line. On the basis of our studies, CMA has anti-proliferative and apoptotic effect on U87 cell lines dependent dose and time manner. As a conclusion we can say that CMA may be used to treat glioblostoma cancer cell types alternatively instead of high toxic chemotherapeutic drugs.

Key words: *Urtica dioica*, Urticaceae, Anticancer, Phenolic compounds, Medicinal plants.

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