

Investigation the effect of oleuropein on gastric cancer cell lines (AGS, MKN-45, and KATO III)

Abstract

Background: Gastric cancer is one of the most common malignancies worldwide, and its frequency is significantly higher in Asian countries than in other regions. Several studies have investigated the anticancer properties of oleuropein in various malignancies.

Aim: During the current research, we have also investigated the anticancer effects of exposure to oleuropein in human cancer cell lines.

Materials and Methods: Three cell lines AGS, KATO III, and MKN-45, were used in this study. The cells were treated at different concentrations for 24, 48, and 72 hours. The amount of cell apoptosis using the MTT test, the dose of IC50 in 24, 48, and 72 hours, the quantity of cell migration and metastasis using the wound healing technique, and finally, the expression level of BCL2, Caspase3, E-cadherin, MMP-13, P53, VCAM-1 and Vimentin were analyzed in all three cell lines studied.

Results: The tests showed a significant increase in apoptosis in all three cell lines following treatment with oleuropein compared to the control group. After the wound healing test, the decrease in cell migration after exposure to oleuropein was also evident. With increasing incubation time, the minimum concentration to halve the cell growth in all three cell lines decreased. RT-PCR results showed increased expression of Cas-3, E-cadherin, and P53 and reduced expression of BCL2 and MMP-13 in all three cell lines.

Conclusion: The results of this study showed the positive effects of oleuropein in suppressing cancer cells, inducing apoptosis, inhibiting cell migration, and finally, having a significant impact on the expression of various oncogenes. Therefore, this combination can be used as a practical option for further examinations at the bedside.

Keywords: Oleuropein, Gastric cancer, AGS, KATO III, MKN-45