



## Inhibitory Effect of Parthenolide on Human Breast Cancer MDA-MB-231 Cells *in Vitro* and the Underlying Mechanism

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**SUMMARY.** The present study was designed to investigate the inhibitory effect of parthenolide on human breast cancer MDA-MB-231 cells *in vitro* and the underlying mechanism. MDA-MB-231 cells were divided into control, 1.25, 2.5, 5, and 10  $\mu\text{mol/L}$  parthenolide groups, which were treated with 0, 1.25, 2.5, 5, and 10  $\mu\text{mol/L}$  parthenolide, respectively. The cell proliferation, apoptosis, migration and invasion of cells were determined, and the expressions of apoptosis, migration and invasion related proteins in cells were detected. Results indicated that, parthenolide with appropriate concentration can inhibit the proliferation, migration and invasion of MDA-MB-231 cells, and promote their apoptosis. The mechanism may be that, parthenolide up-regulates the B-cell lymphoma-2 associated X and cysteinyl aspartate specific proteinase-3 expressions and down-regulates the B-cell lymphoma-2, matrix metalloproteinase-2, and matrix metalloproteinase-9 expressions.

**RESUMEN.** El presente estudio fue diseñado para investigar el efecto inhibitorio de partenolida en las células MDA-MB-231 de cáncer de mama humano *in vitro* y el mecanismo subyacente. Las células MDA-MB-231 se dividieron en grupos control, 1.25, 2.5, 5 y 10  $\mu\text{mol/L}$  de partenolida, que fueron tratados con 0, 1.25, 2.5, 5 y 10  $\mu\text{mol/L}$  de partenolida, respectivamente. Se determinó la proliferación celular, la apoptosis, la migración y la invasión de las células y se detectaron las expresiones de apoptosis, migración y proteínas relacionadas con la invasión en las células. Los resultados indicaron que la partenolida con la concentración adecuada puede inhibir la proliferación, migración e invasión de las células MDA-MB-231 y promover su apoptosis. El mecanismo puede ser que partenolida regula las expresiones X asociadas al linfoma 2 de células B y las expresiones específicas de la proteasa 3 del aspartato de cisteinilo y regula a la baja las expresiones del linfoma 2 de las células B, la metaloproteína de matriz 2 y las metaloproteinasas de matriz 9.

**KEY WORDS:** human breast cancer, inhibitory, *in vitro*, MDA-MB-231, parthenolide

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