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Analysis of Inhibitory Effects of Kaempferol on Migration and Epithelial–mesenchymal Transition in Human Lung Cancer

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***SUMMARY*. Kaempferol, a natural dietary flavonoid and has been used in the treatment of neurodegenerative disease, atherosclerosis, coronary heart disease and various cancers. In this study, we studied the inhibitory effect of kaempferol on the expressions of migration-related and epithelial-mesenchymal transition (EMT) in human non-small lung cancer cells. Cell viability was determined by MTT assay. The migration and EMT markers were detected and evaluated using real time PCR and western blot. It has been found that kaempferol significantly decreased the expression of migration markers matrix metallopeptidase 9 (MMP-9) and vascular endothelial growth factor (VEGF). TIMP metallopeptidase inhibitor-1 (TIMP-1) and TIMP metallopeptidase inhibitor-2 (TIMP-2) expression increased with kaempferol treatment. It was found that there is an association between kaempferol treatment and the expression of EMT markers. Kaempferol has up-regulated the epithelial marker E-cadherin and downregulated mesenchymal markers N-cadherin. It can be concluded from this study that there is therapeutic significance of kaempferol, which possesses anti-migration activity and induces EMT markers expression in human lungs cancer.**

RESUMEN. Kaempferol, un flavonoide dietético natural, se ha utilizado en el tratamiento de enfermedades neurodegenerativas, aterosclerosis, enfermedad coronaria y varios cánceres. En este estudio, estudiamos el efecto inhibidor del kaempferol sobre las expresiones de la transición epitelial-mesenquimatosa (EMT) relacionada con la migración en células humanas de cáncer de pulmón no pequeñas. La viabilidad celular se determinó mediante ensayo MTT. Los marcadores de migración y EMT se detectaron y evaluaron mediante PCR en tiempo real y Western Blot. Se ha encontrado que el kaempferol disminuyó significativamente la expresión de la metalopeptidasa 9 de la matriz de marcadores de migración (MMP-9) y el factor de crecimiento endotelial vascular (VEGF). La expresión del inhibidor 1 de la metalopeptidasa TIMP (TIMP-1) y del inhibidor 2 de la metalopeptidasa TIMP (TIMP-2) aumentó con el tratamiento con kaempferol. Se encontró que existe una asociación entre el tratamiento con kaempferol y la expresión de marcadores EMT. Kaempferol ha regulado al alza el marcador epitelial E-cadherina y al marcador mesenquimal N-cadherina regulado a la baja. Se puede concluir a partir de este estudio que existe un significado terapéutico del kaempferol, que posee actividad anti-migración e induce la expresión de marcadores EMT en el cáncer de pulmón humano.

KEY WORDS: epithelial-mesenchymal transition (EMT), kaempferol, malignancy.

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