



## Antitumor and Apoptosis Induction Effects of Hederagenin on Hepatocarcinoma (H<sub>22</sub>) Tumor-bearing Mice

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**SUMMARY.** Hederagenin (HD), a derivative of oleanolic acid extracted from the leaves of ivy (*Hedera helix* L.), exhibited a variety of biological activities, including potent antitumor properties both *in vitro* and *in vivo*. In our study, effects of the antitumor and apoptosis of HD on H<sub>22</sub> hepatoma bearing mice were conducted by immunofluorescence, RT-PCR and Western blot. The results showed that the tumor weights were reduced in treated groups compared with that of control group. The fluorescence intensity of the expression of Fas gene was increased in treated groups compared with that of the control group. Fluorescence intensity of the expression of FasL, Caspase-3 and Caspase-8 gene were increased by HD and cyclophosphamide (CTX) treatments. The expression of Fas, FasL, Caspase-3 and Caspase-8 mRNA were increased compared with that of the control group. Protein expression of FasL was increased markedly, whereas protein expression of Fas was rarely changed in the HD and CTX groups. Protein expression of Caspase-3 and Caspase-8 were increased in the HD groups. All the results showed that HD would play an important role in anti-tumor.

**RESUMEN.** Hederagenina (HD), un derivado del ácido oleanólico extraído de las hojas de hiedra (*Hedera helix* L.), presenta una variedad de actividades biológicas, incluidas potentes propiedades antitumorales tanto *in vitro* como *in vivo*. En nuestro estudio, la apoptosis y la citotoxicidad del HD en ratones portadores de hepatoma H<sub>22</sub> se llevaron a cabo mediante inmunofluorescencia, RT-PCR y Western blot. Los resultados mostraron que los pesos de los tumores se redujeron en los grupos tratados en comparación con el grupo control. La intensidad de fluorescencia de la expresión del gen Fas se aumentó en los grupos tratados en comparación con el grupo control. La intensidad de fluorescencia de la expresión de genes de FasL, caspasa-3 y caspasa-8 se incrementaron en los grupos HD y Ciclofosfamida (CTX). La expresión de Fas, FasL, caspasa-3 y caspasa-8 mRNA se aumentó en comparación con el grupo control. La expresión de la proteína de FasL aumentó notablemente, mientras que la expresión de proteínas de Fas rara vez cambió en los grupos HD y CTX. La expresión de la proteína de la caspasa-3 y caspasa-8 se incrementaron en los grupos HD. Todos los resultados mostraron que HD juegan un papel importante como anti-tumorales.

**KEY WORDS:** Apoptosis, Hederagenin, H<sub>22</sub> hepatoma, Tumor-bearing Mice

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