

봉독이 TNF- α /Act-D으로 유도된 간세포 apoptosis에 미치는 영향

대구가톨릭대학교 : 박지현, 김경현, 김수정, 이우람, 박관규*

농촌진흥청: 한상미

Effects of Bee Venom in TNF- α /Act D-induced Hepatocyte Apoptosis

Department of pathology, College of Medicine, Catholic University of Daegu

Ji-Hyun Park, Kyung-Hyun Kim, Soo-Jung Kim, Woo-Ram Lee,

and Kwan-Kyu Park*

Department of Agricultural Biology, National Institute of Agricultural Science and

Technology

Sang-Mi Han

Objectives

As a traditional alternative medicine approach, BV therapy has been to relieve pain and to treat inflammatory diseases since ancient times, including rheumatoid arthritis and multiple sclerosis and in experimental animals. However, the molecular mechanisms of a major component of BV have yet to be determined in apoptosis of hepatocytes. In the present study, we investigated the anti-apoptotic effect of BV on tumor necrosis factor (TNF)- α with actinomycin (Act) D induces apoptosis in hepatocytes.

Materials and Methods

A mouse hepatocyte cell line, AML12 was purchased from ATCC. Bee venom were treated with 1, 10 and 100 ng/ml in TNF- α /Act-D induced cells. Cells of each group were harvested, cell cytotoxicity, morphological analysis and activities of Bcl-2 family and Caspase family were measured.

Results

TNF- α /Act D induces apoptosis in hepatocytes which were exposed to different low concentration (1, 10 and 100 ng/ml) of BV. Our results showed statistically significant inhibit in DNA damage caused by BV treatment compared to corresponding TNF- α /Act D-induced cells. 10 ng/ml of BV suppressed TNF- α /Act D-induced activation of Bcl-2 family and Caspase family, which resulted in inhibition of Cytochrome c release and PARP cleavage. These results demonstrate that low concentration BV possesses a potent anti-apoptotic effect in TNF- α /Act D-induced cells. Therefore, these compounds may contribute substantial therapeutic potential for the treatment of liver diseases.

주저자 연락처 (Corresponding author) : 박관규 E-mail : kkpark@cu.ac.kr Tel :053-650-4149

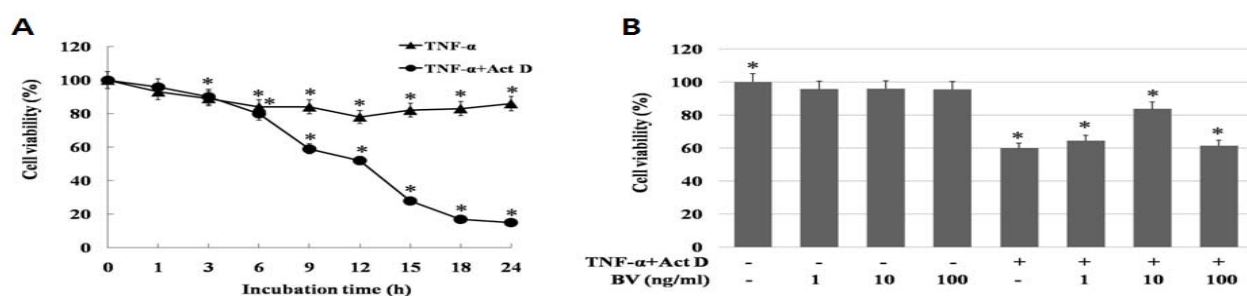


Fig. 1. Effects of the different concentration of bee venom on the cellular viability of hepatocytes estimated by MTT reduction. A: The percentage of cell survival was defined as the relative number of surviving untreated cells. B: Cells were treated with TNF- α (10 ng/ml) + Act D (200 ng/ml) for indicated times. *Represents $p < 0.05$ compared to the normal control.

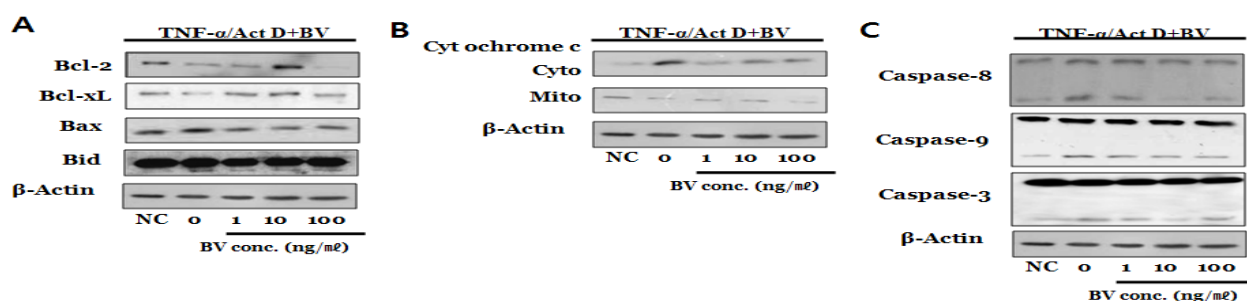


Fig. 2. BV inhibits mitochondrial translocation of apoptotic protein. A: Western blot of mitochondrial fractions of Bcl-2, Bcl-xL, Bax and Bid were examined. B: Mitochondrial and cytosol fractions of cytochrome c were examined. C: Mitochondrial fractions of caspase-8, 9 and 3 examined.

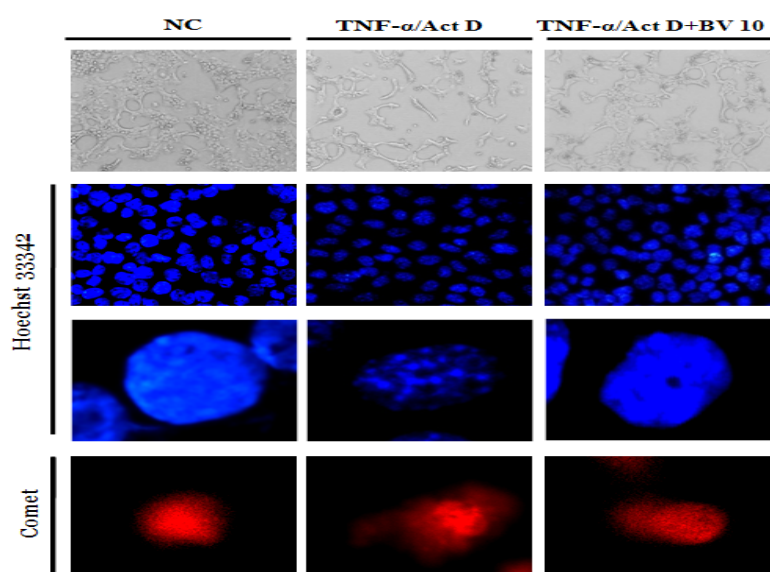


Fig. 3. Morphology of hepatocytes. Cells were incubated with or without BV in TNF- α /Act D treatment. BV 10 ng/ml inhibits TNF- α +Act-D induced apoptosis.