Molecular mechanism underlying natural taurine protection against hepatic fibrosis

April 20 2010

A research team from China investigated the global protein expression changes in hepatic stellate cells affected by taurine using ultra-performance liquid chromatography-electrospray ionization-tandem mass spectrometry platform. Their results showed that natural taurine can promote HSC apoptosis so as to inhibit hepatic fibrosis.

Hepatic fibrosis (HF) occurs in most types of chronic liver diseases and approximately 25%-40% of HF cases may ultimately progress to hepatic cirrhosis. Hepatic stellate cells (HSCs) contribute significantly to the occurrence of HF and the activation of HSC is the key issue in the pathogenesis of HF. Taurine is a kind of important anti-injury substance in the body. Taurine has a protective effect on various types of liver injury. It has been clear that the antifibrotic mechanism of taurine may involve its inhibition of the activation and proliferation of HSCs. However, the molecular mechanism of taurine-mediated antifibrotic activity is largely unknown.

A research article to be published on April 21, 2010 in the World Journal of Gastroenterology addresses this question. A research team led by Professor Jian Liang analyzed the differential expression of proteins between taurine-treated HSCs and controls by comparative proteomics technologies.

Nineteen differentially expressed proteins (11 up-regulated and 8 down-regulated) were identified by two-dimensional electrophoresis/mass spectrometry, and the expression profiles of GLO1 and ANXA1 were

validated by Western blotting. GO analysis found that these differentially expressed proteins were enriched within biological processes such as "cellular apoptosis", "oxidation reaction" and "metabolic process" in clusters. Flow cytometric analysis showed that taurine-treated HSCs had a significantly increased apoptosis rate when compared with the control group.

Their results are very helpful to understand better the molecular mechanism underlying taurine's protection against HF and thereby provide new targets for the management of HF and drug development.

More information: Deng X, Liang J, Lin ZX, Wu FS, Zhang YP, Zhang ZW. Natural taurine promotes apoptosis of human hepatic stellate cells in proteomics analysis. World J Gastroenterol 2010;16(15): 1916-1923 www.wjgnet.com/1007-9327/full/v16/i15/1916.htm

Provided by World Journal of Gastroenterology