【P-73】

Preventive Effect of the Chaga Mushroom on the Inhibition of Gap Junctional Intercellular Communication by TPA

Jung-Ran Park, Joon-Suk Park, Eun-Hye Jo, Jae-Woong Hwang, Sun-Jung Kim, Seong-Hun Lee, Yong-Soon Lee and Kyung-Sun Kang

Department of Veterinary Public Health, College of Veterinary Medicine, Seoul National University, Seoul 151-742, Korea

An estimated 75% of polypore fungi that have been tested shows strong antimicrobial activity, and these may constitute a good source for developing new antibiotics. Numerous compounds from these fungi also display antiviral, cytotoxic, and/or antineoplastic activities. Chaga mushroom (Inonotus obliquus) is claimed to have beneficial properties for human health, such as anti-bacterial, anti-allergic, anti-inflammatory and antioxidant activities. In this study, the anticarcinogenic effect of Chaga mushroom was investigated using a model system of gap junctional intercellular communication (GJIC) in WB-F344 rat liver epithelial cells (WB cells). 12-O-tetradecanoylphorbol-13-acetate (TPA) known as cancer promoter, inhibited GJIC in the cells as determined by the scrape loading/dye transfer assay. The inhibition of GJIC by TPA was prevented with treatment of Chaga mushroom. The Cells were pre-incubated with chaga mushroom (5, 10, 20 μg/㎖) for 24 h and this was followed by co-treatment with chaga mushroom and TPA (10 ng/㎖) for 1 h. Chaga mushroom prevented the inhibition of GJIC and blocked the hyperphosphorylation of connexin 43 by TPA. Moreover, TPA activated p38 MAP kinase, extracellular signal-regulated protein kinases (ERK)1/2 in the cells. The present study indicates that Chaga mushroom is able to inactivate ERK1/2 and p38 MAP kinase. These results suggest that Chaga mushroom may act as a natural anticancer product by preventing the inhibition of GJIC through the inactivation of ERK1/2 and p38 MAP kinase. [This work was supported by Korea Research Foundation Grant. (KRF-005-E00076)]

Keyword: Chaga mushroom, gap junctional intercellular communication, 12-O-tetradecanoylphorbol-13-acetate, WB-F344 rat liver epithelial cells