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Combination of anticancer drugs with quercetin in human lung cancer cells

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Recently, a combination of phytochemicals and anticancer drugs has been suggested as a potential strategy against cancer. The combined treatment may synergistically inhibit the growth of cancer cells and reduce the toxicity of chemotherapy due to the lower dose of each compound. Quercetin, a flavonoid, is ubiquitously found in various vegetarian foods. It is converted to its conjugated metabolites quickly after intake. Studies suggest that quercetin may enhance the antitumor effect of some chemotherapy drugs and decrease their adverse side effects. Our *in vitro* and *in vivo* study first showed that quercetin significantly increased the growth arrest and apoptosis induced by TSA through the p53-dependent pathway in human lung cancer A549 cells. Quercetin administrated intraperitoneally also enhanced the anti-tumor effect of TSA in tumor-bearing nude mice. Furthermore, we found that oral quercetin at high doses (1% quercetin containing diet) rather than low doses also significantly enhanced the antitumor effect of TSA in tumor-bearing nude mice. However, oral quercetin at all doses used decreased lymphocyte DNA damage and plasma lipid peroxidation induced by TSA in tumor bearing nude mice. Oral quercetin also had the potential to increase body weight, epididymal adipose and muscle in tumor bearing mice exposed to TSA. The effects were similar to that of quercetin given intraperitoneally. In addition, similar effects of quercetin administrated orally and intraperitoneally were observed in tumor bearing mice exposed to cisplatin. In conclusion, these studies demonstrate the potential of quercetin to enhance the antitumor effect of antitumor drugs and to decrease their side effects.

Biography

Shu-Lan Yeh has obtained her PhD in Food Science and Biotechnology from National Chung Hsing University, Taiwan, in 2002. She became Assistant Professor in 2002 and became Professor in 2010 at Chung Shan Medical University, Taiwan. She has published more than 30 papers in reputed journals.

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