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## Editorial

# Humans and cancer: An ongoing fight

Cancer is one of the leading causes of death worldwide. Findings from laboratory and clinical researches conducted during the last few decades have made a substantial contribution to the development of more effective diagnostic and surgical techniques, pharmacological regimens, and therapeutic protocols. In this issue of *BioMedicine*, we display several review articles, a clinical study, and a clinical spotlight that focuses on carcinogenesis.

Hepatitis C, a chronic disease caused by infection with the hepatitis C virus (HCV), is endemic in many Asian countries. Epidemiological investigations have shown that chronic HCV infection is associated with the development of liver cancer and that it is highly associated with the degree of morbidity in patients with hepatocellular carcinoma. One of the studies in this issue focuses on seromarkers that are highly predictive of various HCV-related diseases. Lee et al conducted a 15-year follow-up study of the outcomes of 1095 patients who were seropositive for anti-HCV antibodies. The researchers found that, besides reflecting the risk of inducing hepatocellular carcinoma, anti-HCV seropositivity and elevated serum levels of HCV RNA also increased the risk of mortality due to extra-hepatic diseases such as cerebrovascular disease and renal disease. The authors conclude that both anti-HCV seropositivity and HCV RNA levels are crucial factors for the deterioration of renal and brain functions in infected hosts.

The results from numerous experiments indicate that cancer stem cells as well as the up-regulation of integrin, matrix metalloproteinases, endothelial growth factor, fibronectin, transforming growth factor- $\beta$ 1, and intercellular adhesion molecule-1 expression in tumors favor cancer cell migration and invasion. Thus, targeting cancer stem cells, associated molecules, and their related pathways may enhance the possibility of mitigating the development or progression of cancer. These findings also imply that monitoring the variation of certain biomarkers can help in the evaluation of cancer progression.

Traditional Chinese Medicine is widely used as an alternative to conventional cancer therapies because the majority of the regimens demonstrate low levels of toxicity, have very few side effects, and are less expensive to administer than chemotherapy and radiation therapy. Anthraquinone and its derivatives, namely aloe-emodin, danthron, emodin, chrysophanol, physcion, and rhein, have been shown to have potential anticancer properties. Aloe-emodin in particular has attracted much attention because it has been shown to inhibit angiogenesis, invasion, migration, chemical-induced carcinogen-DNA adduct formation, and the expression of HER2/neu, CKII kinase, and p34cdc2 kinase in human cancer cells. In addition, carotenoids have been shown to have anticancer effects by interrupting various stages of carcinogenesis such as initiation, promotion, progression, and metastasis. Therefore, dietary or supplemental intake of carotenoids or foods rich in these compounds may prevent the development of cancers.

Although much progress in the fight against cancer has been made during the past few years, the disease is still far from being conquered. More efforts from multiple directions are required to update our understanding regarding the pathological characteristics and mechanisms of cancer development.

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