

## ***Review***

Chinese herbal medicines as adjuvant treatment during chemo- or radio-therapy for cancer

Fanghua Qi<sup>1,2</sup>, Anyuan Li<sup>1,\*</sup>, Yoshinori Inagaki<sup>2</sup>, Jianjun Gao<sup>2</sup>, Jijun Li<sup>1</sup>, Norihiro Kokudo<sup>2</sup>, Xiao-Kang Li<sup>3</sup>, Wei Tang<sup>2,\*</sup>

1. Department of Traditional Chinese Medicine, Shandong Provincial Hospital affiliated with Shandong University, Jinan, China;
2. Hepato-Biliary-Pancreatic Surgery Division, Department of Surgery, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan;
3. Division of Radiation Safety and Immune Tolerance, National Research Institute for Child Health and Development, Tokyo, Japan.

### **Abbreviated Names:**

Qi FH, Li AY, Inagaki Y, Gao JJ, Li JJ, Kokudo N, Li XK, Tang W

### **Corresponding authors:**

Prof. Anyuan Li, Department of Traditional Chinese Medicine, Shandong Provincial Hospital, Shandong University, No 324, Jingwuweiqi Road, Ji'nan 250021, Shandong, China. E-mail: xxxxxx

Dr. Wei Tang, Hepato-Biliary-Pancreatic Surgery Division, Department of Surgery, Graduate School of Medicine, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan.

E-mail: xxxxxx; Tel: xxxxxx; Fax: xxxxxx

### **Conflict of Interest:**

**Abstract**

Traditional Chinese medicines and herbal medicines in particular have been used in the treatment of cancer for thousands of years in China, Japan, and other Asian countries and have recently.....

**Keywords:** Chinese herbal medicine, adjuvant treatment, chemotherapy, radiotherapy

## **1. Introduction**

Cancer has emerged as a major global public health problem (1). Its incidence and mortality rates continue to rise. A report released by the World Health Organization (WHO) shows that in 2008 an estimated 12.7 million people were diagnosed with cancer and 7.6 million people died from cancer .....

Over the past few years, use of complementary and alternative medicine (CAM) has become increasingly popular among cancer patients in Western countries with a prevalence as high as 80% (5,6). Traditional Chinese medicine (TCM) .....

Therefore, an understanding of Chinese herbal medicines is needed by physicians and other health care providers. This review provides evidence for use of.....

## **2. Chinese herbal medicines commonly used as adjuvant treatment in cancer therapy**

Chinese herbal medicines have been used in the treatment of a variety of diseases in China, Japan, South Korea, and other Asian countries for thousands of years (10). The biological ingredients of herbal medicines are mainly .....

### *2.1. Single herbs*

Several single herbs have been found to have a potentially beneficial effect at treating cancer. A brief outline on the oncologic pharmacology of the most commonly used ingredients is presented below (Table 1).

Radix Astragali (*Astragalus propinquus*, huangqi) has been used in China for thousands of years. It is traditionally considered to .....

## 2.2. *Traditional herbal formulations*

Traditional herbal formulations (or Kampo in Japanese) are compound formulations that mostly come from Shang Han Lun and Jin Gui Yao Lue, two classics of traditional medicine edited .....

.....

## **3. Clinical trials of Chinese herbal medicines as adjuvant treatment in cancer therapy**

In conventional Western medicine, chemotherapy and radiotherapy are major conventional cancer therapies. These therapies are directed at killing or eradicating cancer cells. Unfortunately, distinguishing .....

### 3.1. *Fatigue*

Fatigue is regarded as a highly prevalent and unavoidable side effect experienced during the course of cancer and chemo- or radio-treatment. Many studies .....

### 3.2. *Pain*

Pain is a common symptom of cancer and the causes of pain can be disease or treatment-related (*e.g.* surgery, chemotherapy, or radiotherapy). The prevalence of pain in patients with cancer has been reported to be between .....

.....

#### **4. Conclusion**

In conclusion, Chinese herbal medicines substantially influence cancer therapy as adjuvant treatment. In cancer treatment, Chinese herbal medicines in combination with chemo- or radio-therapy are capable of .....

#### **Acknowledgements**

This project was supported by Grants-in-Aid from the Ministry of Education, Science, Sports, and Culture of Japan.

## Reference

1. Valentinis B, Baserga R. IGF-I receptor signalling in transformation and differentiation. *Mol Pathol*. 2001; 54:133-137. (As a sample of journal reference)
2. Darby S, Hill D, Auvinen A, *et al*. Radon in homes and risk of lung cancer: Collaborative analysis of individual data from 13 European case-control studies. *BMJ*. 2005; 330:223. (As a sample of journal reference with more than 15 authors)
3. Shalev AY. Post-traumatic stress disorder: diagnosis, history and life course. In: *Post-traumatic Stress Disorder, Diagnosis, Management and Treatment* (Nutt DJ, Davidson JR, Zohar J, eds.). Martin Dunitz, London, UK, 2000; pp. 1-15. (As a sample of book reference)
4. Ministry of Health, Labour and Welfare of Japan. Dietary reference intakes for Japanese. <http://www.mhlw.go.jp/houdou/2004/11/h1122-2a.html> (accessed June 14, 2010). (As a sample of web reference)

.....

**Table 1. Single herbs commonly used in cancer treatment**

Common name	Other names	Latin name	Major active ingredients	Ref.
Radix astragali	Huang qi; Milk vetch	<i>Astragalus membranaceus</i>	Polysaccharides, saponins, and flavonoids	15-17
Turmeric	Jianghuang	<i>Curcuma longa</i>	Curcumin, demethoxycurcumin, and bisdemethoxycurcumin	18-21
Ginseng	Rensen; Panax	<i>Panax Ginseng</i>	Triterpene glycosides and ginsenosides	22-25
Garlic	Dasuan	<i>Allium sativum</i>	Allicin and alliin	26-28
Mylabris	Banmao	<i>Mylabris phalerata</i>	Cantharidin	29,30
Toad venom	Chansu	<i>Bufo bufo gargarizans</i> Cantor	Bufadienolides	12,31-33

## **Figure Legends**

**Figure 1. Growth-inhibiting effects of cinobutacini on .....**

**Figure 2. The mitochondria-mediated apoptosis pathway induced by cinobutacini.**

Cinobutacini up-regulates Bax expression and down-regulates Bcl-2 expression.....