International Workshop
Summaries of Lectures
Presented at the 2004 General Meeting
of the BioBran Study Conference

Regulation of the Defense Mechanism with Food

- Relationship between Tumor Dormant Therapy and Food Function -

Date: March 14, 2004 (Sunday)

Place: Kokuyo Hall

Characteristics and pharmacology of anti-cancer drug resistance in adults

Yuzo Endo

Hamamatsu University School of Medicine

The 21st century in industrialized countries is the age of life-style related disease. When considering solid cancers in adults such as cancers of the stomach, colon, lung, breast, prostate, pancreas, and esophagus, which are rare in children, it is necessary to reconsider the concept of prevention, treatment and care for cancer patients. There are major differences between cancer in adult and in children, although both must be diseases related to DNA. As more than 90% of cancer in adults is represented by solid tumors, it is important to assess anti-cancer drugs in terms of Quality of Life for adult patients. The present talk is to review the carcinogenesis of life-style related cancer and to mention the immunoregulatory function of BioBran.

After the Second World War, a national project of development of anti-cancer drugs started at the National Cancer Institute in USA, and was hoped to be "more efficient than the scalpel or X-ray" in the treatment of cancer, with similar efficacy of antibiotics for bacterial infections. A large budget was expended for more than 30 years on searching for chemicals which suppressed cell division. The principle effect of anti-cancer drugs is direct or indirect interaction with DNA controlling cell division. If the growth of cancer cells was slower than that of bone marrow cells, gastrointestinal epithelial cells, hair cells, or gonad cells, anti-cancer drugs might cause adverse effects without killing cancer cells. Anti-cancer drugs are promisingly effective in the treatment of cancer in children, but they are less effective in the treatment of solid cancer in adults. Only 30% of developed drugs which have been tested are approved to be effective. Anti-cancer drugs, generally speaking, are themselves carcinogenic, and the incidence of cancer in long-term survivors after anti-cancer treatment for primary cancer is higher than that of controls. Therefore the potential for development of anti-cancer drugs for solid cancer in adults is limited.

An ideal treatment will selectively kill only cancer cells, using drugs targeting cancer markers on the surface of cancer cells, but few markers have been recognized for application to clinical practice. Further development of anti-cancer drugs must focus on individual cancer cells in terms of molecular targets. However, unexpected side effect such as interstitial pneumonitis may occur.

In contrast to the delays in the development of anti-cancer drugs, immunotherapy and primary prevention for cancer have recently attracted interest. Life-style related stressors in the environment, food, smoking and alcohol all damage DNA after a so-called incubation time of 10 to 20 years, in terms of various free radicals and oxidant stress, resulting in the formation of dysplastic cells which become overt cancer cells. Once it has occurred, a cancer focus may progress to advanced or end-stage cancer within a few years if not resected. Given a thorough campaign of primary and secondary prevention, it has been estimated that the incidence of cancer could be reduced by approximately one third.

Chronic inflammation is one of the potent promoters of carcinogenesis, so the anti-inflammatory effect of BioBran may play an important role in primary prevention of cancer.

From the histopathological point of view, over more than 30 years I have never discovered dysplastic cells or early cancer cells associated with inflammatory cells indicating natural killer cells. In other words, it is not feasible that each cancer cell can be watched individually by natural killer cells, which can attack cancer cells. However, it is likely that dendritic cells, antigen-presenting macrophages, cytotoxic T cells, NK like T cells and NK cells may infiltrate advanced cancer. It is therefore worth using biological response modifiers to sustain and enhance the

immune response in general, or probiotics for regulating intestinal flora by mucosal immune regulation. By contrast, adoptive transfer of activated lymphocytes would be unlikely to damage cancer cells in advanced malignancy. Except for a small number of medical providers, no one could evaluate whether the adoptive transfer of activated lymphocytes is an effective form of immunotherapy.