Chinese Food and Cancer Healing

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Abstract: In cancer treatment, apart from studying the effectiveness of chemo or radiotherapy in killing cancer cells, studies should examine ways of reducing drug side effects on patients and ways of enhancing the bodies' immune system at the same time. Our defence system not only includes immune response, there are also detoxifying enzymes, anti-oxidant mechanisms, the ability for DNA damage repair and regulation of the hormone metabolism. Harmful environmental oestrogens that enter the human body can cause an increase of 16-α-hydroxyestrone as a harmful estradiol metabolite, the ratio between 16-α-hydroxyestrone and 2-hydroxyestrone relates to the risk of breast cancer. It is suggested that choosing nutritional products (that decrease the amount of 16-α-hydroxyestrone to regulate the hormone metabolism) can help with prevention of breast cancer. Increasing the ratio of monounsaturated fatty acid omega-3 (Ω-3) benefits health. Unsaturated fatty acid omega-6 (Ω-6) appears to be easily oxidised which can lead to DNA damage and increase the occurrence of cancer. The most important aspect to this approach is to reduce the ratio between saturated fatty acid and polyunsaturated fatty acid Ω-6, which is harmful to health. Olive oil has a high content of Ω-3 that benefits health. Ω-3 fatty acid can also be obtained from some fish, green vegetables and nuts. Linoleic acid is the most important source of Ω-6 fatty acid. Linolenic acid is the most important source of Ω-3 fatty acid. Natural foods e.g., purslane, is rich in Ω-3; the mustard family vegetables can increase the activity of detoxifying enzymes. Chinese Kiwi fruit drink reduces the side effects of the chemotherapy drug cyclophosphamide, which is also a DNA damaging agent. Soybean, job's tears, garlic, mushroom varieties and tea have anti-cancer effects. Properly used nutritional products may assist treatment and recovery. Good balanced nutrition is essential for cancer healing.

Keywords: Chinese food, Cancer, Chinese kiwi fruit, Omega-3, Hydroxyestrone and Healing.

The Human Body has a Defence Mechanism Against Cancer

A person's struggle with disease can be compared to the universality of contradiction that is when using the spear, studying the shield is necessary. In cancer treatment, apart from studying the effectiveness of chemo or radiotherapy in killing cancer cells, studies based on reducing the side effects of drugs affecting patients and enhancing the bodies' immune ability should be undertaken at the same time. In 1995 Dr. Andrew Weil wrote the book *Spontaneous Healing*. It was a bestseller in 1996, which was an indicator of people's interest and demand for non-drug healing therapies. If cancer healing without treatment is suggested some patients may not receive chemotherapy, however the author's intention was that attention should be given to the self-healing abilities of the human body. It is a theory based on the fact that the human body does have a defensive system and a defensive ability against cancers. The known defensive system does not only include immune responses, there are also detoxifying enzymes, anti-oxidant mechanisms, a DNA damage repairing ability and regulation of the hormone metabolism. The cancer theory of mutations considers that the mutation of somatic cells caused by chemical mutagens may be repaired but if it cannot be recovered cancer cells may be induced. However, the cancer cell can easily grow to become a cancer when the immune ability is low or the endocrine system is disordered. Carcinogenesis and anti-carcinogenesis are the two sides of the struggle.

Devra Lee Davis (The environmental medicine consultant of former U.S. President Clinton) and endocrine expert Professor Bradlow H. Leon studied the relationship between women's endocrinal change and breast cancer. They found that harmful environmental estrogens that enter into human body can cause an increase of 16-α-hydroxyestrone as a harmful estradiol metabolite, suggesting that the ratio between 16-α-hydroxyestrone and 2-hydroxyestrone is related to the risk of breast cancer. It is also suggested that by choosing nutritional products to regulate the hormone metabolism, thus increasing the amount of 2-hydroxyestrogen, can achieve preventive effects. Increasing the function or ability of the human bodies' defensive system can promote recovery in cancer patients.

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Choice of Nutritional Products

The World Cancer Research foundation invited 16 well-known experts to compile the *Food Nutrition and Cancer Prevention* report. This report indicated that about 40% of cancers are caused by dietary factors, thus the scientific basis and appropriate choice of nutritional products is an important aspect in cancer patients' recovery.

An appropriately balanced diet benefits health

Most currently eaten foods contain excessive calories due to their high fat content. Reducing fat intake and thus lowering calorie intake can reduce the amount of low-density lipoprotein cholesterol in the liver and can assist in recovery from cardiovascular disease. The most important aspect is to reduce the ratio between saturated fatty acid and polyunsaturated fatty acid omega-6 (Ω-6) which is harmful to health. Increasing the ratio of monounsaturated fatty acid omega-3 (Ω-3) can benefit health as it has been proven that unsaturated fatty acid Ω-6 is easily oxidized can lead to DNA damage and aggravate the occurrence of cancer. Commonly used vegetable oils, e.g., corn oil, red flower (safflower) oil result in an over consumption of Ω-6. However olive oil, has a high content of Ω-3 that benefits health. Ω-3 fatty acid can be obtained from fish (sardines, tuna, etc.), green vegetables and nuts (walnuts). Linoleic acid (LA) is the major source of Ω-6 fatty acid. In terms of Ω-3 fatty acid - Linolenic acid (LNA) is the most important, Table 1 lists the sources of the two fatty acids.

Anti-carcinogenesis effects of Ω-3 fatty acid:

1. Linoleic acid (LA) is nutritional material needed by cancer cells, however Ω-3 fatty acid can reduce the availability of LA;
2. Competes with Ω-6 for the enzyme that is required in cancer metabolism;
3. Allows cancer cell membrane un-saturation which can easily be damaged;
4. Allows cancer cells to be attached to the gene that can prevent the apoptosis of cancer cells, and slows down the growth of cancer cells;
5. Prevents cancer cells from sticking on the basement membrane and the production of collagenase enzyme, preventing the proliferation of cancer cells.

Dr. Artemis P. Simopoulos, an expert who has played an important role in American nutritional policy has researched and promoted Ω diet for many years, advocates that the ratio between Ω-6 and Ω-3 fatty acid should be below four. This may reduce the occurrence of cancer and assist in reducing the risk of cancer cells transferring. She presented at the 1st China human body essential fatty acid seminar in Shanghai April 2002 stating that Chinese wild tea oil was discovered to have an appropriate ratio between Ω-3 and Ω-6. In choosing nutritional products which are rich in Ω-3, apart from the above mentioned fish–sardines and tuna, experts have turned their attention to green vegetables. Another aspect in improving diet structure is to eat less fat and protein while eating more fruit and vegetables. The daily meat, which is high in protein, should be limited to less than 90g. Research on wild vegetables, which are rich in Ω-3, could be of scientific value.

Purslane contains rich Ω-3

The occurrences of some major diseases, i.e., cancer, cardiovascular diseases and diabetes that damage human health have been continually increasing. Simopoulos and Robinson, (2002) in their book *The Omega Diet* indicated that this is

Table 1. Sources of Ω-3 and Ω-6 fatty acid (Simopoulos & Robinson, 2002).

Ω-3 fatty acid	**Ω-6 fatty acid**
Linolenic acid (LNA) commonly in green vegetable, linseed oil, nuts (walnut)	Linoleic acid (LA) Commonly in vegetable oil, seeds
Eicosapentaenoic acid(EPA) exists in fish oil	r–Linoleic acid exists in cherry grass oil
Docosahoxaenoic acid(DHA) exists in fish oil	Arachidonic acid Contained in meats
Ω-3 eicosanoids	Ω-6 eicosanoids

related to people's modern unhealthy lifestyle, especially the typical western diet, in which the content of Ω-6 fatty acids is about 14–20 times higher than Ω-3 fatty acids, compared to the Asian diet that had a very low ratio. The comparative typical diet is the traditional Greek Crete island diet, in which the Ω-3 content is very high, Ω-6/ Ω-3 < 4. The cancer mortality in this area is half that of America, coronary heart disease mortality rate is 1/20 compared to U.S.A. In Greece and Asia wild vegetables including purslane (Portulaca pilosa) are commonly eaten, and according to Dr. Norman Salem, Jr's laboratory analysis, every 100g purslane contains up to 400g LNA (a kind of Ω-3 fatty acid). This is a high dose, and is 15 times higher than commonly used lettuce. Free-roaming chickens like to choose this wild vegetable; their eggs contain 20 times higher Ω-3 fatty acid than caged chickens. From this ratio of fatty acid, then what is called, the "civilized disease" may be related to the broken ancient diet balance. From gene analysis, Ω-3 fatty acid has the effect of inhibiting the inducement of cancer gene ras P21, clinical observation showed the Ω-3 fatty acid can promote recovery in post-operative cancer patients' and enhance the effect of chemo and radiotherapy. Purslane has been listed as both a herb and food in traditional Chinese medicine (TCM), during years of food-shortages Chinese people used to dig wild vegetables and eat them, now we can still buy these products from herbal shops conveniently. The above-mentioned scientific information about Ω-3 and purslane has provided an important insight. Has our modern diet continued to carry on the traditional ways or not? Accompanied by the voice of returning to nature, people are not supposed to simply return to the ancients, but use current modern scientific ways to search for nutritional products from nature, which can assist in the prevention, treatment and recovery from cancer.

The mustard family vegetables can increase the activity of detoxifying enzymes

In the mustard family mustard green and Chinese cabbage have been proven to improve the activity of GST (glutathione-s-transferase). Additionally, green vegetables can provide the essential fibre and anti-oxidant materials that benefit health and recovery in cancer patients.

A fruit that has a broad anti-mutagenesis effect and improves immune function—Kiwi fruit

Westerners have called it the king of fruit, with a high Vitamin C content. Xu, (2004) in his book *The Progress of Resource, Environment and Health* indicated that: The production of Chinese kiwi fruit (Actinidia chinensis) is several hundred thousand tons per year. Some varieties of kiwi fruit found in China have a strong anti-mutagenesis effect. When somatic cells change into cancer cells they will go through mutation, apoptosis of cells and loss of control of proliferation. Mutagenesis can be examined by gene mutation, chromosome aberration and DNA damage in laboratory experiments. High mutagenic rates can indicate the risk of cancer. There are many mutagens in the environment, e.g., coal, petroleum, tobacco, uncompleted burning of products benzo(a)pyrene etc. Polycyclic Aromatic Hydrocarbons (PAHs); over stir fried meat PhIP; peanuts, corn etc. produce aflatoxin in the damp heat environment polluted by mould; farm chemicals that pollute food like nitrous amine compound (nitrosamine), organic chlorine, toxic algae's toxins, organic pollutions in water e.g., methyl mercury; benzene, formaldehyde which are chemical pollutants in workshops and living room air; as well as overdoses of irradiation of ultra-violet ray and electromagnetic waves. The greater concern for cancer patients is some chemotherapy drugs e.g., cyclophosphamide, radiotherapy's radiation is also a mutagen. To reduce the effects of the mutagen and the side effects of chemotherapy and radiotherapy it is beneficial to use therapeutic fruits, i.e., kiwi fruit and hawthorn fruit, which have broad anti-mutagenesis effects. Moreover, these fruits have the effect of increasing immune function. Of course, use of expansion agents to increase the size of the kiwi fruit can damage the quality of the kiwi fruit. To enhance kiwi fruit's health care effects, withdrawing the effective components, e.g., anti-cancer isoflavones, organic acids, polysaccharide and trace element, by formulation and scientific experiments to produce functional health care products/drink, can enhance the whole anti-cancer defensive system, e.g., Hong En Health Drink is formulised by kiwi and seaweed.

In experiments on the effects of anti-liver cancer treatment utilising the area of transformative focus of the three pathogenic bio-markers enzymes: Glucose-6-Phosphate Dehydrogenase

(G6PD)↑, Gamma (r)-Glutamyl Transpeptidase (GGT)↑, Glucose-6-Phosphatase (G6Pase)↓ as an index, it was observed that the kiwi and seaweed drink groups had significantly different pathogenic integral and transformative focus areas, compared with the control group, the effect of anti-DENA Diethylnitrosamic is better than Na_2SeO_3 which contained Selenium (Se) 4ppm (See, Table 2). Meanwhile this kiwi seaweed drink reduces the side effects of a chemotherapy drug cyclophosphamide which is also a DNA damaging agent and can be used as an assistant nutritional product for chemotherapy (Table 3). Other research demonstrating the preventative and therapeutic effects of kiwi fruit extract includes a study done by Motohashi, et al. (2002) which found kiwi fruit to contain a number of valuable anti-cancer bioactive materials that are prooxidant (at higher concentrations) and antioxidant (at lower concentrations), as well as having tumour selective, cytotoxic and antimicrobial activity.

Soybean, as well as food grains other than wheat and rice, contains anti-cancer components

Soybean (*Glycine max*) can not only provide plant protein which the human body needs but we can also extract 5,7,4'-Trihydroxy-Isoflavanone (Genistein) from it, however the percentage is only one in ten thousand. Yi Yi Ren (Job's tears, Coix lachrymal-jobi) available from grain market's (other grains category) or herbal shops, is usually used for cooking congee/porridge together with rice, glutinous rice or millet, and has the effect of tonifying the spleen, benefiting the stomach, dispelling dampness and clearing heat. Its coixenolide can inhibit cancer cell fission-30g can be taken daily. Dietary fibre can aggravate bowel movement, reduce the contact time of cancer inducing substances with the intestine wall and can benefit cancer prevention. High dietary foods include grains and vegetables. Of course taking too much fibre may cause abdominal bloating, increase the frequency of bowel movements and result in uncomfortable abdominal symptoms. Patients may have different conditions, therefore diet strategy/design should follow the advice of a doctor.

Nutrient rich—Mushroom

Mushrooms are a nutrient rich food, around the world lots of varieties of mushrooms have an anti-mutagenesis effect: there are more than several decades of experiments that prove this. More research has been done on letnus edodes, the known effective component is letnus edodes polysaccharide (champignon) which can improve the immune function of the body. The efficiency of inhibiting—rats sarcoma 180 can reach 70–100%. Letnus edodes polysaccharide can improve immunity by promoting the production of interleukin 1 (IL-1) and colony stimulating factor (CSF), activating Th and TC cells, an extract of letnus edodes polysaccharide is available in injection liquid for medicinal use (Sullivan,

Table 2. Effect of kiwi fruit drink in altered foci rat tumor induced by diethylnitrosamine (DENA) (Xu, 2004)

Groups	No. of animals	Grade of pathogenic integral	Histochemical markers for altered foci (area of altered foci/slice %)		
			G6PD↑	GGT↑	G6Pase↓
Positive control (DENA 200 mg/kg i.p.)	12	6.00 ± 2.24	25.32 ± 5.04	24.75 ± 5.06	25.27 ± 8.09
Na_2SeO_3 (contains Se 4ppm)+DENA	11	4.16 ± 0.80*	17.48 ± 11.31	16.67 ± 11.18*	21.84 ± 14.63*
Kiwi fruit diluent drink^ (1:4)+DENA	10	2.91 ± 1.96	11.82 ± 2.41*	11.00 ± 2.11	15.71 ± 3.31
Kiwi fruit drink^ (original)+DENA	14	0.72 ± 1.03	8.40 ± 10.71	5.98 ± 10.28	8.99 ± 11.56
Negative control (placebo)	8	0	0	0	0

*Compare with positive control, $p<0.01$, ^ Hong En Health drink (composed kiwi fruit and seaweed) was used, supplied by Hong En Science and Technology Development Co. LTD, Beijing, China.

Table 3. Level of binucleate CB lymphocyte cells with M_N in chemotherapeutic cancer patient after chemotherapy, kiwi fruit drink and Chinese herbs (Xu, 2004).

Group	Number of cases	Rate of binucleate CB cell with M_N (‰)		P
		After chemotherapy course	7 days later after supplement	
Kiwi fruit drink^	39	47.1 ± 19.6	22.3 ± 12.1	< 0.001*
TCM herbal formula raising WBC#	7	37.3 ± 14.0	35.1 ± 10.2	< 0.4

*After taking kiwi fruit drink 40ml daily for 7 days on completion of chemotherapy, the rate of binucleate lymphocyte cells with micronuclei in 39 cases of chemotherapeutic cancer patients after one course chemotherapy decreased from 47.1 ±19.6‰ to 22.3 ±12.1(‰), p<0.001. ^Hong En Health drink (composed kiwi fruit and seaweed) was used, supplied by Hong En Science and Technology Development Co. LTD, Beijing, China., #WBC = white blood cell.

Smith, and Rowan, 2006 and Xu and Xu, 2005). A mushroom banquet can be organised by using many kinds of mushrooms and different varieties can be chosen according to health need. These mushrooms mainly parasitise on the trunk of chestnuts, axehandle and mongolian oak. Many people find mushrooms are tasty so they may improve a patient's appetite as well as benefiting their recovering health.

The traditional Chinese drink—Tea

The tea culture is also a health culture in China. Research literature has proven that polyphenols (Catechin and theaflavins) contained in tea (*Camellia sinensis*) have the effect of inhibiting cancer cells' nucleoside transporting, can increase the effect of cytosine arabinoside of anti-cancer in mice L1210 and P388, and can also increase the effect of mitomycin of inhibiting colon cancer C26 in mice.

The condiment of health food—Garlic

Commonly used garlic (Allium sativum) has an anti-cancer component bialkene-propyl-thiosulfonate, the main ingredient in the volatile oil is allicin,$C_6H_{10}SO_2$, which can cause chromosome retrograde degeneration of cancer cells, resulting in an anti-cancer effect. In anti-cancer formulae the usual dosage of garlic liquid is over 10ml per day in most cases. Garlic has a special strong smell, after processing and combining with other anti-cancer food products, it can not only improve the effect but also remove the strong smell, which is convenient for patients. Japanese scholars thought of making a garlic "vaccine," this has created a new idea, using garlic's medicinal effect. Bharat and Shishir, (2006) provided further recent information on the biochemical mechanisms of action of garlic and other therapeutic foods.

In our diet structure, choosing the necessary nutritional products for cancer recovery from vegetables, fruit, coarse food grains and mushrooms, can not only make our diet healthier but can also assist in cancer treatment. Roasted, smoked and preserved food should be avoided, foods containing benzo(a)pyrene, nitrosamine and other mutagens and a salt intake over 6g per day can increase the risk of suffering hypertension and stomach cancer.

Nutritional products can not replace drugs or medicines. Many cancer patients can not digest herbs or medicine, and limited injection forms of these products are available. Properly used nutritional products may assist in treatment and recovery. Good balanced nutrition is essential for cancer healing.

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