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New Perspectives on Dietary-derived Treatments and Food Safety—Antinomy in a New Era

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Despite the advances in science and technology and wide use of chemical drugs, dietary intervention (or food therapy) remains useful in preventing or treating many human diseases. A huge body of evidence shows that the dietary pattern or habit is also an important contributing factor to the development of chronic diseases such as hypertension, type 2 diabetes, hyperlipidemia, and cancers. In recent years, over-the-counter health foods, nutraceuticals, and plant-derived medicinal products have been gaining popularity all over the world, particularly in developed countries. Unfortunately, owing to the contamination with various harmful substances in foods and the presence of toxic food components, food-borne diseases have also become increasingly problematic. Incidents of food poisonings or tainted food have been increasing worldwide, particularly in China and other developing countries. Therefore, the government should put in a greater effort in enforcing food safety by improving the surveillance mechanism and exerting highest standards of quality control for foods.

Keywords Functional food, food therapy, food supplement, food-borne illnesses, food safety, antinomy

INTRODUCTION

Antinomy, a special feature embodied in the philosophy of Immanuel Kant (1724–1804), means a contradiction between two principles or conclusions that seem to be equally necessary and reasonable (Wikipedia, 2014a). Food that encompasses both abiotic and biotic materials is any substance that can provide nutritional support for the body. Food/dietary therapy or diet-based therapy refers to non-pharmacological intervention by either using natural foods or guiding people to good health through making good choices with food. It has been shown that a higher fish intake may help to reduce bone loss in elderly Chinese men (Chan et al., 2011). Blood biomarkers were significantly improved in patients suffering from metabolic syndrome after following "dietary Guidelines for Chinese Residents" for 1 year (Zhang et al., 2011). The Spanish Ketogenic Mediterranean Diet (SKMD) may be an effective and safe way to cure patients with metabolic syndrome and epileptic seizures (Prez-Guisado and Muoz-Serrano, 2011; Veggiotti et al., 2011).

Our daily food is composed of plant-, animal-, and microbe-originated essential nutrients, which include carbohydrates, fats, proteins, vitamins, and minerals. Apparently we depend on our daily diet to survive, but we may also die of food-borne diseases, with the latter being a serious public health concern nowadays. In industrialized countries, the percentage of the population suffering from food-borne diseases each year has been increased up to 30%. It has been estimated that, in the United States, there were 76 million food-borne illnesses, with resultant 325,000 hospitalizations and 5,000 deaths at a cost of US$ 10–83 billion per year (Nyachuba, 2010; Koluman and Dikici, 2013). In the UK and United States, 15–20% of the

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Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/bfsn population show a greater susceptibility than the general population to food-borne diseases (Lund and OBrien, 2011). The center for Disease Control and Prevention in the United States has estimated that food-borne diseases will reach 1 billion cases with death of 1.8 million worldwide (Zhan et al., 2008). In fact, scientists believe that people can live up to 120 years old according to the structural and functional design of the human body (Jacobs and Shoemaker, 2007). If experimental results can be extrapolated to humans, a 30% or 50% reduction in calorie intake would produce an average lifespan of 98 or 114 years, respectively (Carey, 2003; Ruiz-Torres and Beier, 2005; Gemma et al., 2007). This implies that human lifespan can be prolonged by a low-calorie intake. As discussed in our previous review, complementary and alternative medicines therapy (CAMT), which has been gaining popularity over the world, was classified into herb-based CAMT and nonherb-based CAMT (Pan et al., 2012). Food therapy, which belongs to one major type of CAMT, is a category between herb-based CAMT and nonherb-based CAMT.

Mother Nature has supplied not only a plentiful foods for human survival, but also an array of herbal remedies for fighting against diseases. However, due to the unhealthy eating habits and intake of foods contaminated with harmful substances, food-borne illnesses have become a serious concern in public health all over the world. At present, more than 200 known diseases are related to or transmitted by foods. Seemingly, the interactions between people and food, food and herbal remedy, as well as food and disease have maintained an ecological balance on planet earth or a harmony in Mother Nature.

DIETARY THERAPY

Hippocrates, father of modern medicine, stated "Let your food be your medicine." Food therapy or food-assisted therapy (FAT), which uses naturally occurring foods and adopts a specific dietary pattern, has become more and more widely known (Tapsell et al., 2006; Pelchat, 2009). In FAT, as is the case for conventional medication, the risk-to-benefit ratio varies, depending on food nature, food safety, food processing, and/or the amount of intake as well as the conditions of the body. Figure 1 gives us a panoramic view of food therapy.

Natural Food Therapy

Natural food therapy (NFT) uses whole-food therapy rather than food component or dietary supplement ingredient for the treatment of diseases.

The Dual Function of Natural Food

Today, the fundamental concept of food function has changed from merely keeping the normal functioning of the human body to reducing the risk of a disease or health-related condition. Human foodstuffs provide not only nutritional support for the body, but also a variety of biologically active ingredients that can affect specific biochemical processes. In other words, foods provide health benefits beyond their role in basic nutrition. For example, experimental studies showed that diet containing 20% finger millet seed coat matter has a role in lowering blood glucose and cholesterol as well as nephroprotective and anticataractogenic properties, suggesting its utility as a functional ingredient in diets for diabetics or other related disorders (Shobana et al., 2010). It has long been recognized that soy food intake can alleviate menopausal symptoms, reduce the risk of cancer and coronary heart disease as well as lower blood cholesterol levels (Kim and Khil, 2007; Messina, 2010; Budhathoki et al., 2011). Frequent and high intake of soy foods, such as tofu, natto, soy milk, and bean sprouts, was associated with a decreased risk of chronic obstructive pulmonary disease and breathlessness (Hirayama et al., 2009).

Healthy diets have been substantiated by scientific evidence to enhance the quality of life in patients with chronic diseases and even prolong the healthy lifespan in elderly people. Epidemiological studies indicated that a reduced risk of cancer was associated with high consumption of vegetables and fruits (Gullett et al., 2010). Nutritional intervention by increasing dietary intake of plant foods was associated with reduced incidence of many common forms of cancer and risk of heart diseases, as well as prevention or even reversal of age-related chronic diseases. For example, consuming watercress rich in iron and vitamin C would seem to be an ideal way to combat iron-deficiency anemia as vitamin C can improve the body's absorption of iron (Teucher et al., 2004). Night blindness, beriberi, scurvy, rickets, and pellagra caused by the deficiency of substances present in food can be prevented and cured by taking relevant foods.

Greater health benefits may be obtained from raw rather than cooked vegetables. Refining of foods removes polyphenols, and fresh or freshly cooked fruits, vegetables, whole grains, and legumes can provide us with more polyphenols (Delaney et al., 2008). In addition, food-derived heterocyclic amines were found to possess mutagenic potency (Felton et al., 2007), and the carcinogenic effects of deep-fried and preserved foods have been shown (Felton et al., 2007; Phillip, 2013). Although cooking and heat treatment enhance the functional properties of foods, thermal processing can produce toxic compounds such as acrylamide, furan, or acrolein (van Boekel et al., 2010).

The Diversity of Natural Food

According to the "Old Testament Genesis," the God said "Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in which is the fruit of a tree yielding seed; to you it shall be for meat." The composition of a general diet includes the following: five

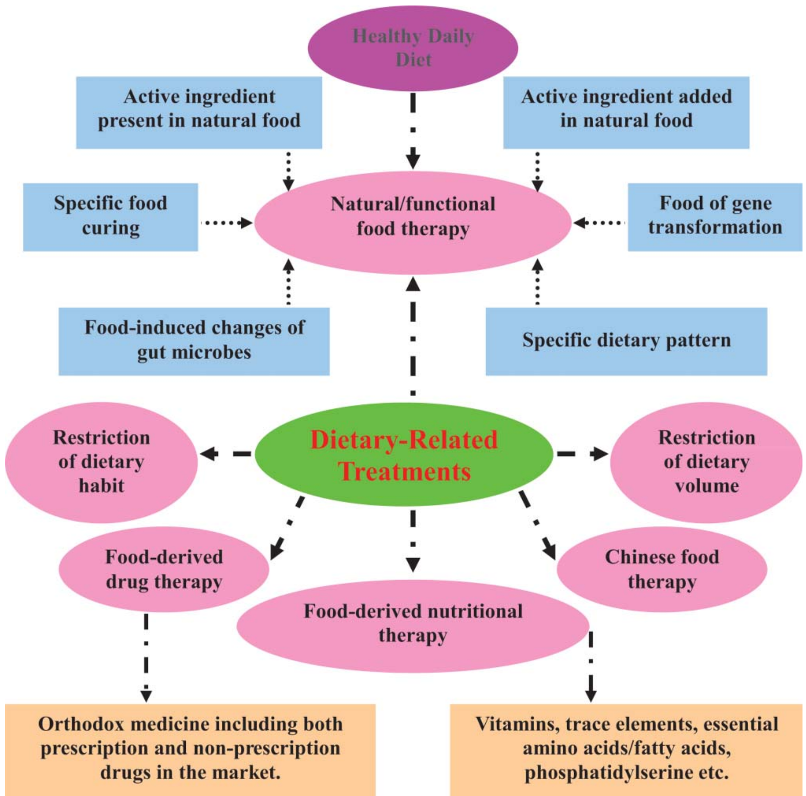

Figure 1. Overview of dietary therapy.

grains (rice, wheat, corn, millet, and beans) provide nourishment; five fruits (jujube, plum, apricot, chestnut, and peach) provide nutrient support; five livestocks (cattle, dogs, sheep, pigs, and chickens) provide functional enrichment, and five vegetables (certain, leek, scallion, leaves of pulse plants, and onion) provide the sense of filling. This dietary rule was recorded in Yellow Emperor (Huang-Di-Nei-Jing in Chinese), an ancient Chinese medical text, published 2400 years ago in China.

Nowadays, we believe that a well-balanced diet need to contain only a suitable amount of carbohydrates, proteins, fats, vitamins, inorganic salts (constant and trace elements), and water. Among different foodstuffs, vegetables are the major source of biologically active or useful substances, including vitamins, dietary fiber, antioxidants, and cholesterol-lowering compounds. In theory, foods have the potential to interact if they are taken in sufficient amount. It is likely that potential benefits from diet are due to a combination of food constituents rather than a single component/ingredient. Whether a daily diet is optimal depends on the dietary diversity and balance among food items. Every day, we at least eat 20 species of foods in order to ensure the nutritional balance or avoid the lack of certain nutrients that may not be present in all food items. Under healthy conditions, dietary intake should include 40% grains, 30–40% vegetables, 10–15% meat, and the rest for nuts and fruits (Chinese food therapy, 2010b). Everyone should eat at least 400 g of various vegetables and fruits per day for good health, particularly pregnant women (Femenias, 2005).

Dietary components such as grains, vegetables, and meat are foodstuffs for supporting normal physiological function rather than for FAT. In developing countries, about 60% of all deaths occurring among children aged less than five years have been attributed to malnutrition, and nearly 50.6 million under-five children are malnourished (Faruque et al., 2008). What they need is grains, vegetables, and meat rather than functional food. FAT is different from food-assisted maternal care–the latter usually targets underweight children younger than five years of age to ensure their health and nutrition rather than for the prevention and treatment of diseases (Ruel et al., 2008; Loechl et al., 2009).

Organic Natural Food

Organic crops contain higher levels of antioxidants and lower levels of pesticide residues, nitrate, and heavy metal contaminants than crops grown nonorganically (Gyrn et al., 2006). It is considered that organic crops are generally more nutritious and safe. The organic strawberries had higher antioxidant activity and concentrations of ascorbic acid and phenolic compounds, compared with conventional ones (Reganold et al., 2010). Color appearances indicate that plant foods are excellent sources of polyphenols. Red, green, and white-green foods contain lycopene, glucosinolates, and allyl sulphides, respectively. These ingredients can maintain prostate health as well as decrease the risk of cardiovascular diseases and cancers (Heber, 2004). Besides, unpolished grains and unheated vegetables contain more nutrients or active ingredients compared with the polished and cooked ones. With the advent in modern pharmaceutical technology, plant-derived antioxidants, bioactive peptides, and other active ingredients found in foodstuffs can be developed into therapeutical and nutraceutical products (Guang and Phillips, 2009).

Functional Food Therapy

Functional food therapy (FFT) is defined as the use of food with function beyond the basic function of supplying nutrients and energy for the treatment of body disorders.

Functional foods were first used in Japan in the 1980s (Functional food, 2014). Functional foods (or nutraceuticals), health-enhancing foods (including functional beverages) and bioactive substances-enriched products are considered to have a positive and specific influence on health (Williamson, 2009). They are suitable for specific populations. Functional foods are usually used for well defined purpose in addition to the provision of basic nutrition and energy for the body. The global market of functional food is estimated to be 33–61 billion US, with the United States being the largest market segment, followed by Europe and Japan (Sir et al., 2008). In these countries, the introduction of functional food aims to keep the aging population healthy and thus cut down healthcare costs. It is well known that unlike chemical drugs, functional foods and ingredients that are safe and efficacious have a health-promoting or disease-preventing/delaying property. In our view, functional foods are different from natural foods which are not cultivated and processed under specific conditions. The naturally occurring functions and features of natural foods are not significantly changed in both quantity and quality. Functional foods enhance the medicinal function of a diet and accordingly, the regulation of functional foods should be different from that of natural or ordinary foods.

Functional foods are categorized as follows.

(1) Natural foods are supplemented with excessive amount and extra nutrients/ingredients either extracted from foods/herbal remedies or synthesized compounds. It is also a universal phenomenon that food products for infants and young children are supplemented with a variety of various ingredients as a partial or total replacement for human breast milk. Is industrially prepared infant formula really beneficial for children's growth and development? It is better for parents to use natural food rather than functional foods or industrialized foods to sustain, but not accelerate, children's growth and development. Human development should go naturally. Breastfeeding is the best and most secure way for providing food for infants. As such, woman should try her best to breastfeed baby (Hornbeak et al., 2010). Foods devised by Mother Nature are the most perfect for humans, and they can meet the nutritional needs of our body in both variety and quantity of nutrients. A physiologically complete diet is believed to require not only sufficient proteins, carbohydrates, fats, inorganic salts, vitamins, and water, but also other known and unknown ingredients present in natural foods. More importantly, we need a balance between the various nutrients to maintain a healthy body. Therefore, it is obvious that functional foods easily lead to nutritional imbalance.
(2) Pharmaceutical properties of functional food can be obtained through genetic modification, i.e., genetically engineered food. Development of genetically modified (GM) events is another area where rDNA has become important in global agriculture (Chen et al., 2011; Pilacinski et al., 2011). Future applications of GM food can be therapeutically related–for example, the expression of HBsAg in transgenic banana fruits, tobacco cells, and soybean cells, and GM foods that produce human vaccines against viral hepatitis (Sunil Kumar et al., 2003; Kumar et al., 2005; Ganapathi et al., 2007). While the practicality or feasibility of commercial production has yet to be fully tested, the next decade may see an exponential increase in drug-related GM functional food products.
(3) Functional foods may also be obtained through commercial cultivations or breeding programs. In recent years, functional ingredients (conjugated linolenic acid, vitamin E, n3 fatty acids, and selenium) are added into animal diet to improve the meat quality. And vegetable proteins, dietary fiber, herbs, and spices, and lactic acid bacteria are directly incorporated into meat products during processing to improve their functional value (Zhang et al., 2010). In China and Japan, Chinese herbs are also used as poultry diet additives for improving the quality of their eggs and meat (CCTV, 2008; Beijing Daily, 2010).
(4) Medicinal and nutritional values of foods are also influenced by the manufacturing process that may affect the chemical composition of foods as well as the involvement of functional microorganisms. For example, the antioxidant phenolic acids such as caffeic acid, ferulic acid, syringic acid, and gallic acid were mixed with wheat flour to offer potential health benefits for consumers (Han and Koh, 2011). The benefit of fermented functional food is expressed directly through the interactions of ingested live microorganisms with the host and/or indirectly as the result of the ingestion of microbial metabolites synthesized during fermentation (Di Cagno et al., 2010;

Gobbetti et al., 2010). Total daidzin concentrations of green bean (775 μg/g) and yellow soy (897 μg/g) sprouts increased to more than four times than in seeds (187 μg/g), and soybean sprouts had more total glycitin concentrations than seeds (Lee et al., 2007). The contents of vitamins in sprouted soybean were markedly increased, particularly ascorbic acid (an effective anti-scurvy substance), compared with the dried seeds (Wai et al., 1947). By consuming soybean sprouts, Zheng He, a famous navigator in Ming Dynasty of China (1405–1433), and his crew stayed away from the threat of scurvy (an ancient scourge of mariners) when they were sailing for a long period of time (Erik, 2005). In addition, it has been known that the microbial metabolism of soybean constituents can produce chemopreventive agents during fermentation in the intestinal tract (Arimochi et al., 2009).

(5) The beneficial effects of medicinal food on human body are expressed through gut microbial-mediated changes in ingredients. For instance, nondigestible carbohydrates derived from wheat may constitute functional cereal food products in the management of obesity and related disorders, notably through modulation of gut microbiota (Neyrinck and Delzenne, 2010).

Food-derived Drug Therapy

Foods play two roles in the development of therapeutic agents or orthodox drugs. First, food is an additive or raw material in the pharmaceutical production process. For example, the production of antibiotics from cultured bacteria needs food-enriched medium. For the production of tetracycline alone, China needs more than 10 tons of food yearly. Second, drugs are directly derived from foods by extraction/purification and derivation/synthesis. Vitamins or accessory food substances, which may also be regarded as drugs, were first discovered from foodstuffs (Lanska, 2010). Although chemical components or elements and accessory food substances present in foodstuffs form the basis of both functional food and CFT, the use of synthetics or isolated pure/single ingredient from foodstuff is not included in "FAT." For example, tomato and its constituent lycopene have same antioxidant properties, but recent research findings have raised a question as to whether lycopene or lycopene-containing extract can produce any in vivo antioxidant action (Agarwal and Rao, 2000; Erdman et al., 2009). One may say that intake of tomato is a kind of FAT, but the intake of lycopene is a drug therapy.

Folic Acid. Folic acid is a water-soluble B vitamin found mostly in leafy green vegetables (kale and spinach), fruits (citrus fruits and juices), and dried beans/peas. Folic acid is indispensable for many physiological functions such as cell division and fetal growth during pregnancy. In 1996, the US Preventive Services Task Force recommended that all women planning or capable of pregnancy should take a daily supplement containing 0.4 to 0.8 mg of folic acid (Calonge et al., 2009). Folic acid-containing supplements reduce the risk of neural tube defect–affected pregnancies (Wolff et al., 2009). In this case, intake of vegetables containing folic acid is FAT but intake of folic acid in the form of tablets would constitute drug therapy. A number of studies have shown that high intakes of folic acid, the chemically synthesized form, but not natural form, can cause adverse effects in some individuals, including the masking of the hematological manifestations of vitamin B_{12} deficiency, leukemia, arthritis, bowel cancer, and ectopic pregnancies (Iyer and Tomar, 2009). In addition, the biological function of food cannot be replaced by a single bioactive compound within foods. Interactions of individual ingredients should be investigated (Freeman et al., 2010).

Antioxidants. Recent research has uncovered new biologically active substances/ingredients from food sources, including antioxidants, such as polyphenols, flavonoids and isoflavones, and bioactive peptides, which offer several health benefits, all of which play a pivotal role in the prevention of diseases, particularly those related to aging. Active ingredients derived from plants or food may also be called "functional compounds," among which the antioxidant is the most important. Oxidative stress is believed to be closely related to aging and age-related diseases. Antioxidants, which can decrease the oxidative stress in the body, have been intensively investigated for the prevention and/or treatment of stroke and neurodegenerative diseases such as Alzheimer's disease (AD) (Kaur and Ling, 2008; Sun et al., 2010). Regular consumption of antioxidant-rich foods, cruciferous vegetables/spices or polyphenol-rich foods is associated with reductions in incidence of cancer, cardiovascular disease, diabetes, and arthritis incidence as well as in biochemical markers for neurodegenerative damage (Bastianetto et al., 2008; Calabrese et al., 2010; Saluk-Juszczak, 2010).

Peptides. Apart from serving as a protein source, some dietary peptides can produce specific effects in the body (Erdmann et al., 2008). These peptides can be absorbed intact; they can exert actions on target organs or modulate intestinal epithelial cell function (Shimizu and Son, 2007). For example, both donkey and goat milk possess immune modulating capacities and release nitric oxide, a potent vasodilator endowed with antiatherogenic properties, in the elderly (Jirillo et al., 2010). Milk phospholipids reduce hepatic accumulation of intestinal cholesterol and increase fecal cholesterol excretion (Kamili et al., 2010). Peptides from egg yolk proteins were found to exhibit antioxidant properties (Young et al., 2010). Luteolin, a food-derived flavonoid, is a valuable compound for the treatment of metabolic syndrome and as a neuroprotectant; it produces antiischemic activity through a rebalancing of pro-oxidant/antioxidant status (Ando et al., 2009; Zhao et al., 2010). The aforementioned substances are potential candidates for drug development.

Food-derived Nutritional Therapy

Nutrient must be obtained from an external source because the organism cannot synthesize it or produce insufficient quantities (Wikipedia, 2014c). Nutritional therapy, which is different from food-derived drug (orthodox drug) therapy mainly used for disease treatment under the guidance of physicians, is suitably adopted by specific groups of people. Nutritional therapy involves the use of dietary supplements instead of medications for the prevention of diseases or the improvement of our well-being.

Nutrients, such as vitamins, essential amino acids and fatty acids, and trace elements, are essential to our body function, and they must be acquired from foods. In addition, a number of nutrients have recently been identified. For example, phosphatidylserine, which is a member of the membrane phospholipids, is especially abundant in the brain. Soybean-derived phosphatidylserine and phosphatidylserine extracted from bovine cortex could improve the memory functions of the elderly with memory complaints and patients suffering from AD (Kato-Kataoka et al., 2010). Isoflavone, a class of plant estrogens, has structural similarities to estradiol; therefore, isoflavone supplementation can alleviate menopausal symptoms in women (Basaria et al., 2009). Hence, the application of phosphatidylserine or isoflavone in clinical condition is called food-derived nutrient therapy rather than drug therapy. Although antioxidant (polyphenols and flavonoids) derived from foodstuffs are clinically used, due to the absence of these substances in our body, therapy using antioxidant derived from food may be called food-derived drug therapy.

Nutraceutical product may provide health or medical benefits for the prevention and treatment of diseases (Das et al., 2012). Commercially available nutraceuticals are made of isolated or synthesized nutrients, herbal active substances, or dietary supplements. Nutraceutical health products or nutraceuticals at present have gradually become the main-stay of health food in the global market. In Beijing, Shanghai, Guangzhou, and Tianjin, 93% of the children, 98% of the elderly, and 50% of the young are using various types of health products. The sale of health products in 2010 is forecast to increase up to 100 billion RMB (about 16 billion US) in China's market (Functional food in China, 2010). A survey indicated that most Korean adults (62%) took one or more dietary supplements such as ginseng, multivitamins, glucosamine, probiotics, and vitamin C (Ock et al., 2010). In 2003–2006, 53% of the American used dietary supplements; 34.5% used dietary supplements that contained folic acid (Bailey et al., 2010). In 1999–2004, approximately 34% of US children and adolescents used vitamin and mineral supplements (Shaikh et al., 2009). However, this self-medication practice may cause the adverse reaction and harm to health.

Currently, nutraceuticals are in great demand all over the world, particularly in the US market. The popular use of nutraceuticals has raised a growing concern regarding the efficacy and safety of these products. The lay public must be educated regarding the appropriate use of nutraceuticals for promoting health. Some nutraceutical products should be limited to people with chronic diseases and metabolic syndrome. The use of dietary supplements should ideally be done under the guidance of a doctor or dietitian. In addition, foodstuff, which contains many kinds of nutrients, may interact with nutraceutical ingredients and affect the well-being of body function. Single nutrient compound, which is either extracted from food or synthesized, cannot replace natural foods. Nutrients that are required by the body should be acquired from natural foodstuffs rather than commercially available functional foods and nutraceuticals.

Food Restriction Therapy

Food is a complex mixture of chemicals with many functional groups, and they not only confer positive effects, but may also make negative contributions to health (MacDonald et al., 2009). In other words, diseases can be caused by food intake in an inappropriate manner. As such, control diet therapy has attracted a lot of attention in the management of good health.

Restriction of Dietary Volume

A growing body of evidence has suggested that the dietary pattern or habit is an important contributing factor to the development of chronic diseases. Dietary restriction (DR) involves two aspects: (1) restriction of total amount of food intake and (2) restriction of some type of food intake. Food can be both beneficial and harmful to human health, depending upon the age, metabolic capacity, body mass index, health status, and food matrix. Any excess food intake–whether positive or negative (malnutrition being an example of the latter)–can lead to detrimental effects on the health of the body.

Excessive intake of any food is harmful to health. It has been known that DR, reduced food uptake without malnutrition, can extend animal lifespan from invertebrates to mammals (Mair and Dillin, 2008). It has been found that DR increases the average lifespan in *Caenorhabditis elegans* (by 40%), yeast, and fruit flies (Novoseltsev and Novoseltseva, 2010; Skinner and Lin, 2010; Mouchiroud et al., 2011; Partridge, 2011). Caloric restriction (CR) was found to delay cardiac aging by correcting preexisting mitochondrial dysfunction and apoptotic activation in rats (Niemann et al., 2010). It is believed that CR-induced lifespan extension is associated with a decrease in oxidative stress (Chong-Han, 2010). It is well known that the primary prevention and treatment for type 2 diabetes, hyperlipidemia, obesity/overweight, and fatty liver with metabolic dysfunction or people having a sedentary lifestyle is using hypocaloric and low-fat diet as well as eating the right amount of carbohydrates (sweets, potatoes, pasta, or rice), fats, and proteins. DR could maintain a low blood glucose level in streptozotocin-induced diabetes in animals (Goyary and Sharma, 2010). Prolonged CR appears to extend the lifespan of rhesus monkeys, which exhibited lower body fat, slower rate of muscle loss with age, lower incidence of neoplasia, cardiovascular disease, type 2 diabetes mellitus and endometriosis, improved insulin sensitivity and glucose tolerance (Kemnitz, 2011). High intake of animal protein may increase the risk of hypertension in aged people, and the restriction of protein intake protects the rats from hypertension and kidney disease, even though some peptides from meat protein have a strong angiotension-converting enzyme inhibitory activity (Altorf-van der Kuil et al., 2010; Ahhmed and Muguruma, 2010; De Miguel et al., 2011). In China, a survey showed that a positive correlation was observed between the concentration of DDTs in human milk and consumption of animal-origin food (Zhou et al., 2011). Daily excessive intake of poultry with skin, shellfish, fried food, sugar, and juice may cause chronic kidney disease and hyperuricemia in elderly men (Chang, 2011a). DR should be implemented as an interventional strategy for the treatment of diet-related diseases such as cancer, diabetes, hyperlipidemia, and hypertension, etc.

DR is merely a restriction of energy intake. Food restriction (FR) is applied to specific food or ingredient. For example, the incident of cardiovascular diseases positively correlated with salt intake, and sodium restriction (dietary salt by 3 g per day) can reduce the incidence of hypertension, stroke, and myocardial infarction (Sacks and Campos, 2010; Soldin et al., 2010). Herein, salt is also a risk factor for cardiovascular diseases and the amount of salt intake should be controlled in patients with hypertension, particularly in salt-sensitive hypertension (Sanada et al., 2011). The reduction of salt intake is beneficial for ameliorating diabetic kidney diseases (Suckling et al., 2010). Currently, dietary protein/salt restriction is an effective approach for the clinical management of chronic kidney disease. Iron restriction (IR) attenuated the development of hypertension and heart failure in rats fed with high-salt diet, which suggested that IR could also be an effective strategy for the management of hypertensive patients (Naito et al., 2011). Overall, we not only know the benefits of foods, but also the harmful effects of foods on our health. This understanding is instrumental to harness the greatest potential of dietary control in the prevention and treatment of diseases.

Restriction of Dietary Habit

Due to cultural and geographical differences, people dwelling in different regions on earth formed different eating habits which encompass cooking methods and food consumption patterns, i.e. food culture. Now, we begin to realize that some of the eating habits are very hazardous to our health. The most harmful dietary habit to human health is the regular consumption of salted, smoked, pickled, fried, and grilled foods. Smoked foods such as bacon, smoked liver, smoked fish, smoked eggs, and smoked tofu contain high content of the procarcinogen benzo[a]pyrene, a five-ring polycyclic aromatic hydrocarbon whose metabolites are mutagenic and highly carcinogenic (Benford et al., 2010; Madureira et al., 2014). Fried and smoked foods also contain high content of benzo[a]pyrene, up to 10–20 times of the average foods (Lu, 2010). Salted foods produced dimethyl sulfoxide nitrate which can be transformed into a nitrite carcinogen called dimethyl amine in the body (Photo: Health Inventory, 2011).

In Iceland, the content of benzo[a]pyrene reached approximately 20 (smoked mutton), 1.5 (smoked horse meat), and 60 μg/kg (smoked seabirds) (Dungal and Sigurjonsson, 1967). Therefore, the high incidence of gastric cancer among the residents of Iceland might be related to the consumption of smoked foods. In China, Kazak herdsmen also like to eat smoked meat and they also have a high risk of cancer (GuangMing Daily, 2008). As early as in 1960's, it was found that rats fed with smoked mutton or trout tended to suffer from malignant tumours (Dungal and Sigurjonsson, 1967). Hokkaido in Japan had a high incidence of esophageal cancer because the people there like to eat pickled food. The incidence of esophageal cancer significantly reduced in this region after the government called on people not to eat too many salted foods (Modern Express, 2008). In China, there was a family of three who ate salted fish for five years, and they all suffered from esophageal cancer (NetEase news, 2006). There are 390,000 cases of oral cancer in the world, and 228,000 (58%) of which are in South and Southeast Asia where most residents in these regions use to chew betel or areca nut (Dharmananda, 2006). Meat-sweet dietary pattern or habit is very popular in Europe and Western countries, but it increased the risk of estrogen receptor-positive breast cancer among postmenopausal women with high body mass index (BMI) (Cui et al., 2007).

We must stay away from these deadliest foods and eating habit that lead to an increased risk of many diseases. Therefore, the adoption of plant-based foods in diet and getting rid of poor eating habit such as eat wolf, eat while doing other things and chasing each other, and overeating may offer the best investment for health (Bernstein et al., 2010). Our eating habits and lifestyle not only affect our health, but also have a far-fetched influence on our future generations. Research has indicated that offspring of male mice fed a low-protein diet exhibited elevated hepatic expression of many genes involved in lipid and cholesterol biosynthesis and decreased levels of cholesterol esters (Carone et al., 2010). More often than not, simple lifestyle and eating habit can achieve the same purpose of drug therapy. For example, incorporating the consumption of a low energy dense dietary preload (grapefruit, grapefruit juice, and water) in a caloric-restricted diet is a highly effective weight loss strategy instead of taking weight loss products or drugs (Silver et al., 2011). Regular consumption of phenolic-rich fruits, particularly in conjunction with meals, appears to be a prudent strategy to protect health and lower disease risk (Burton-Freeman, 2010). These phenomena are summarized in Figure 2.

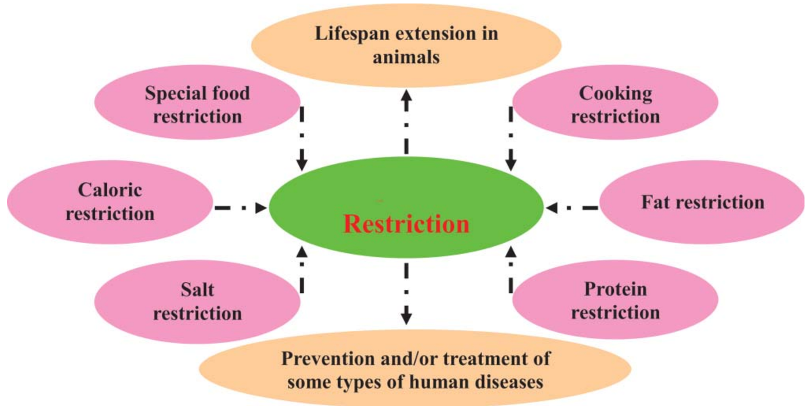

Figure 2. Food restriction therapy.

CHINESE DIETARY THERAPY

Chinese dietary/food therapy (CDT/CFT) is defined as the food therapy based on the Chinese traditional culture. Compared to the normal food therapy, CFT has the following characteristics.

(1) Long history of use. When Chinese introduced agriculture and farming in ancient time, they also discovered the medical properties and function of foods. Therefore, in China, the history of food therapy can be dated back as far as 2000 BC, but it has not become popular until the Tang dynasty (608–906 AD). The Yellow Emperor's Classic of Internal Medicine written around 300 BC laid the foundation for forming the theory of CFT. In this book, daily foods including herbs may be classified with four properties (Si-Qi in Chinese), five tastes (Wu-Wei in Chinese), and Yin-Yang according to their natures and characteristics (Wikipedia, 2014b).
(2) Unique theory. CFT uses natural foods rather than single ingredients/nutrients derived from foods for preventing and treating diseases or promoting longevity. Unlike functional food and nutrient concept in Western medicine, CFT is based on the understanding of human variability in preferences, requirements, and responses to diet and food biological activity, as well as the compound existed in foods. The CFT theory believes that foods eaten every day should be selected according to their four properties, five tastes, and Yin-Yang with reference to seasonal changes in body functions and conditions (Lee and Shen, 2008). For example, a person with Yin body type (cold hands and feet, low body temperature, enjoying warmer foods and drinks, preferring quietness, being easily tired, being lazy, bradykinesia, and low sex drive) should eat more Yang foods such as indica-rich, dark brown sugar, sheep meat, chicken, shrimps, fishes, litchi, jujube, walnuts, and aromatic foods. A person having Yang body type (warm hands and feet, being energetic, preferring cold drinks, and high sex drive) should eat more Yin foods including mulberry, purslane, dandelion, sow thistle, cabbage, lily, melon, watermelon, bitter gourd, seaweed, kelp, corn, pears, bananas, ginkgo, olive, chrysanthemum, towel gourd, cucumber, radish, taro, water spinach, tofu, mung bean, and dried black fungus. Personalized diet is therefore a conceptual analogue of personalized medicine and works by means adapting food to individual needs (Ghosh, 2010). Although the theoretical basis of CFT is not entirely conclusive, it has been practiced for thousands of years in China.
(3) Alternative thought. A particular kind of food may affect a specific organ in the body, and therefore food therapy should be useful in treating certain organ dysfunctions. Generally, pungent, sour, sweet, bitter, and salty foods affect lungs/large intestine, liver/gall bladder, spleen/stomach, heart/small intestine, and kidney/bladder functions, respectively (Chinese food therapy, 2010a). According to the Five Elements (Wu-Xing in Chinese) theory in traditional Chinese culture, green, red, yellow, white, and black foods benefit the liver, heart, spleen/stomach, lungs, and kidneys, respectively–five colors nourishing five viscera (organs). In addition, analogism/analogy, the product of archaic thinking, is also used in CFT. For example, CFT believes that eating black beans is beneficial for the kidneys. Why? First, the shape of beans is like kidney. This is consistent with the belief that it is to add something which is lacking in the body. Second, according to the theory of Five Elements (metal, wood, water, fire, and earth/soil), Five Viscera (liver, heart, spleen/stomach, lungs, and kidneys), as well as Five Colors (green, red, yellow, white, and black) black food can maintain kidney function and control water metabolism (Figure 3).

Although the traditional theories on food function are kind of abstract, they are not pseudoscience or superstition.

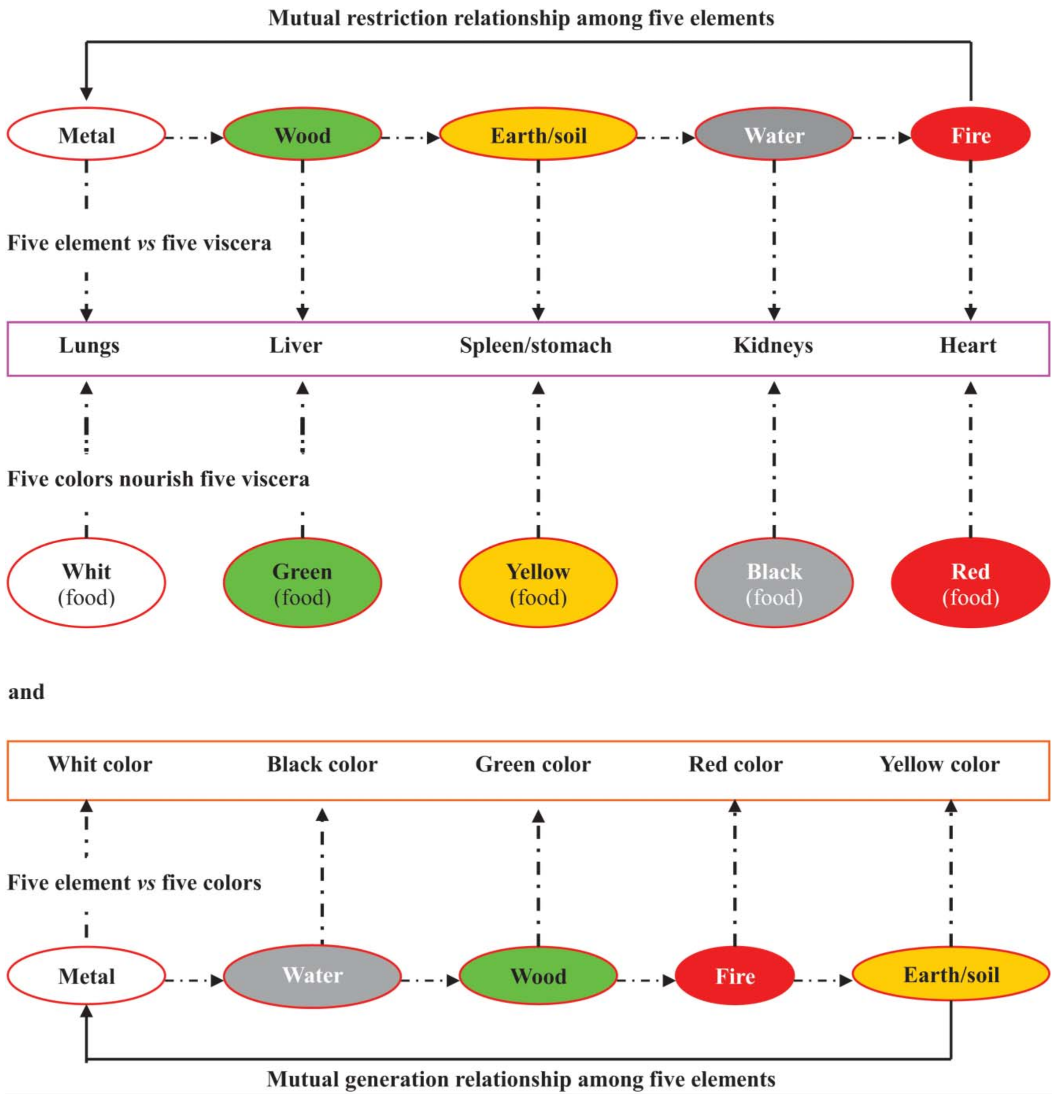

Figure 3. Five elements, five viscera (organs), and five colors (foods) in Chinese dietary therapy.

For thousands years, Chinese use these self-explanatory theories on food function as the guidance for healthcare. Because the important involvement of diet, climate, and social environment in the development and treatment of disease, we should choose the right food/regimen for health benefits in accordance with physiological conditions, geographical location, and season. Weather changes (wind, heat, damp, dry, and cold) can lead to homeostasis imbalance and illness, therefore, changing the diet can help preventing and treating disease arising from changes in season or weather and food characteristics.

(4) Popularity. As traditional Chinese medicine (TCM) has become more popular over the world, CFT is recognized by more and more people. For example, Chinese green tea (Camellia sinensis) is used as a functional beverage and a component of dietary supplements for preventing cancers (Liu et al., 2008; Graziose et al., 2010; Yang and Wang, 2010). However, due to the presence of tannins, drinking tea at meal times may inhibit iron as well zinc and copper absorption by decreasing their bioavailability (Pizarro et al., 1994). As diet therapy is one of the treatment modalities in TCM and food plays a central role in Chinese culture. Food therapy is therefore more widely accepted by Chinese, particularly those in Southern China. People living in Guangdong and Hong Kong are used to enjoy slow-cooked soups (Bao-Tang in Chinese) using tonic Chinese herbs and herbs that can dispel the dampness (Qu-Shi in Chinese) or clearing the heat (Qing-Re in Chinese). The former is referred to as “supplement” (Bu in Chinese) and the latter is referred to as “elimination” (Xie in Chinese). Merging Bu/Xie with Xie/Bu is a perfect combination in philosophy, in that it is able to adjust and balance the body’s functions for homeostasis, regardless of changes in climatic conditions.

(5) Same source for medicine and food. As medicine and food are of the same source in TCM, the combination of diet and Chinese herbal therapy can achieve the best clinical outcomes. In addition to treating illness with herbs and/or acupuncture, a dietary change is often an important component of the therapy in the practice of TCM. Based on the conditions of individual patient and food nature, TCM practitioners always advise their patient regarding what kinds of food should be eaten in greater quantities and which foods should not be eaten at all. Food is used as medicine. At the same time, Chinese herbs are often used as food. In Hong Kong, the commonly used Chinese herbs for slow-cooked soups include *Radix Ginseng*, *Radix Astragali, Radix Codonopsis Pilosulae, Adenophora Stricta, Radix Polygonati Officinalis, Semen Coicis, Bulbus Lilii, Fructus Lycii, Cordyceps*, and *Semen Ginkgo*. Herbal teas are usually made of one or several kinds of Chinese herbs, including *Abrus Cantoniensis, Houttuynia cordata* Thunb., *Lobelia chinensis Lour.*, *Plantago asiatica* L., *Brucea javanica* (L.) Merr., *Ilex Pubescens* Hook. et Arn., *Ilex asprella* (Hook. et Arm.) Champ. ex Benth, *Rosa laevigata* Michx., *Desmodium styracifolium* (Osbeck.) Merr., *Semen Momordica* Charantia., *Schefflera octophylla* (Lour.) Harms, *Helicteres angustifolia* L., *Polygonum chinense* L., Morus alba L., *Ilex rotunda* Thunb., Semen Oroxyli, *Imperata cylindrica* (L.) Beauv. var. major(Nees) C.E. Hubb., *Lophatherum gracile* Brongn and *Lygodium japonicum* (Thunb.) Sw, etc. (Zhao, 2003).

(6) Challenges ahead. It should be emphasized that the quality of modern food is significantly different from its ancient counterpart. Ancient experience on CFT therefore needs to be re-evaluated in regard to food composition, function, and mechanism of action with reference to those of modern food. However, the theoretical basis of CFT should still be “four properties”, “five tastes”, and “Yin-Yang.” Otherwise, there is no difference between CFT and functional food in terms of the theory underlying their application. While CFT is based on cumulated practical experiences, modern FAT therapy and functional food are built on a wide spectrum of scientific evidence on chemistry and biological activity of functional food. Indeed, no contradiction exists between science and experience. Experience can be upgraded to science, and science also needs to learn from experiences. Through a long-term observation and usage in China, foods have been found to have four different properties (cold, cool, warm, and hot) and five tastes (pungent, sour, sweet, bitter, and salty), which are related to their functional characteristics. Although the description of food function and characteristics does not use the scientific language of modern medicine, CFT has been very effective in preventing and treating illness since ancient time. Over 2500 years ago, Hippocrates wrote, “In medicine one must pay attention not to plausible theorizing but to experience and reason together.” Details of CFT are summarized in Figure 4.

FOOD SAFETY THREAT

Modern nutritional research specifically focuses on promoting health, preventing or delaying the onset of diseases, and

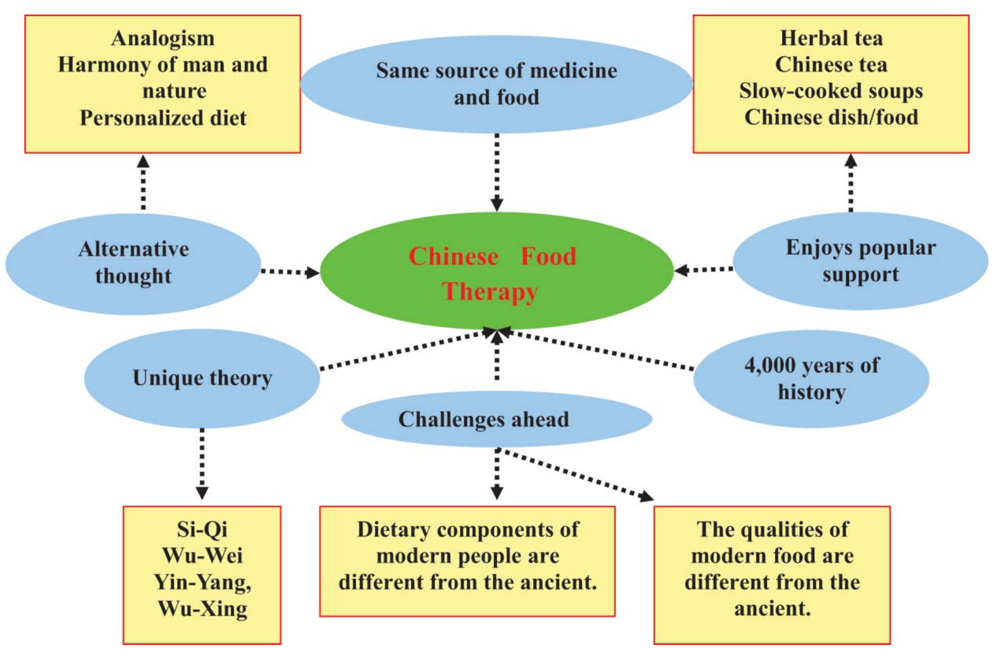

Figure 4. Characteristics of Chinese food therapy.

optimizing performance. Recently, both food security and food safety are of great concern over the world. Food security refers to whether the quantity of food is enough to meet human needs (Godfray et al., 2010; Tester and Langridge, 2010). Food safety concerns whether food is hazardous to human health, particularly related to food-borne diseases (Newell et al., 2010). There are approximately 200,000 cases of food-borne diseases each year in England and Wales (Food Standards Agency, 2013). In China, from 1994–2005, there were 12,687 incidents of food-borne diseases reported by the authority, with the resultant 289,380 hospitalizations and 2,297 deaths (Wang et al., 2007). Although, food security and food safety are inseparable topics, here only the latter is addressed. Food safety directly affects the quality of life from generation to generation in humans (Zhao et al., 2008). Figure 5 gives us a panoramic view of food safety and Table 1 shows the incidence of food-borne illnesses in the United States.

Pollutants

During plantation, process, and storage, foods that we eat every day are easily contaminated by various toxics such as sewage-derived substances, chemicals, pesticides, fertilizers, radiations, heavy metals, and pathogens, all of which are the major causes of food-borne diseases or illnesses ranging from mild gastroenteritis to life-threatening diseases.

Pathogens

A pathogen, a biological agent that is also called infectious agent, can be parasite, bacterium/fungus, virus, and prions, etc. It can cause disease or illness to its host such as human, animal, and plant or even another pathogen. For instance,

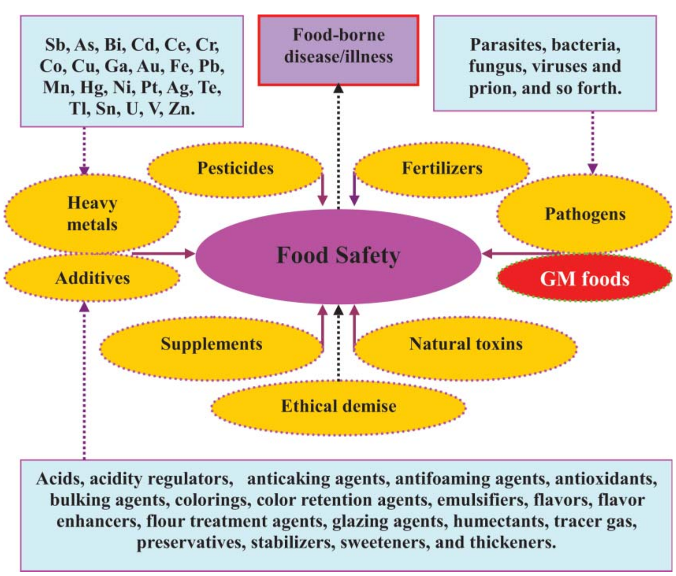

Figure 5. Threats on food safety.

Table 1. Incidents of food-borne illnesses/diseases, and deaths each year in the United States (Mead et al., 1999; Bottemiller, 2010)

	Cases	Deaths
Food-borne illnesses	480,000,000 (data in 2010)	3,000 (data in 2010)
	760,000,000 (data in 1999)	5,000 (data in 1999)
Known pathogens (data in 2010)		
Norovirus	54,000,000	149
Salmonella	>1,000,000	378
E. coli	176,000	20
Campylobacter	845,024	76
Listeria	1,591	255
Unknown pathogen	62,000,000 (data in 1999)	3,200 (data in 1999)

bacteriophage or phage, viruses that specifically infect bacteria, can kill the pathogenic bacterium (Fenton et al., 2010). Known pathogens account for an estimated 14 million illnesses, 60,000 hospitalizations, and 1,800 deaths in the United States each year (Mead et al., 1999).

Bacteria/fungi. Although the vast majority of bacteria are harmless or beneficial to human, a few pathogenic bacteria can cause infectious diseases and they are also responsible for many food-borne diseases. It was shown in China during 1994–2003 that bacterial etiology accounted fully for 38.5% of all food-borne diseases and partly for 50.9% of the cases (Liu et al., 2004). Between 1993 and 2010, 6,313 bacterial outbreaks were reported by 20 countries in Latin America and the Caribbean (Pires et al., 2011). *Salmonella*, *Campylobacter*, *Escherichia coli*, and *Listeria monocytogenes* are accounted for the majority of outbreaks of bacterial food-borne diseases (Newell et al., 2010). *Giardia* (32.52%), *Salmonella* (30.98%), and *Campylobacter* (30.82%) were the most frequent causes of nonviral enteric illnesses in Quebec (Kabor et al., 2010). In Korea, for the period of 1998–2007, a total of 9,472 *Salmonella* isolates were identified in patients suffering from food-borne and water-borne illnesses (Kim, 2010). In England and Wales, between 1992 and 2008, 2,429 food-borne outbreaks were reported and *Salmonella* accounted for half of them (Gormley et al., 2011).

A fungus is a member of a large group of eukaryotic organisms including microorganisms such as yeasts and molds, as well as the more familiar mushrooms. Mold has made a significant contribution to medicine in that *Penicillium* fungi can produce penicillin as a secondary metabolite. However, *Aspergillus flavus*, another mold that has become the second most important *Aspergillus* species in causing human infections, grows in almost any stored crop seed. In Tunisia, 34.4% of the 180 tested samples were contaminated with aflatoxins, and sorghum, spices and nuts were most contaminated (Ghali et al., 2010). Mycotoxins including aflatoxins, ochratoxin A, and fumonisins are also found in the rice sold in Canadian market (Bansal et al., 2011). *Aspergillus flavus*, which is a dangerous pathogen to plant, animal, and human, can cause aspergillosis diseases with an increased incidence in immunocompromised populations (Amaike and Keller, 2010; Wogan et al., 2011). The fungus can produce aflatoxins, including aflatoxins B and G. It is well known that aflatoxins, which can undergo metabolic activation to form epoxide and DNA adducts as well as to modify the *p53* gene (Amaike and Keller, 2010), are one of the most powerful procarcinogens in animals and humans (Klich, 2007; Bourdon et al., 2011; Wogan et al., 2011).

Due to excessive and unjustified usage of antibiotics in humans and food chains, superbugs, including methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococci (VRE), are resistant to the most powerful antibiotics (Rahman et al., 2010). Every year an estimated 25,000 patients are died of antibiotic-resistant bacterial infections in the European Union region, and most of the infections are acquired in hospitals (Kanerva et al., 2012). It is estimated that the antibiotic use in animals and fishes is at least 1,000-fold greater than that in humans (Conly, 2010). Once superbugs have emerged from foodstuffs, they will pose a great threat to human health. Scientists believe that the hemorrhagic *E. coli* that had just raged Europe might emerge in 2001 and then underwent rapid mutation (WHO, 2010; Allocati et al., 2913). As a result, it has now become resistant to antibiotics such as penicillin, streptomycin, and sulfonamide agents.

Viruses/prions. Although beneficial viruses have been discovered in hosts, they are responsible for 67% of the food-related acute gastroenteritis cases in the United States (Mead et al., 1999; Roossinck, 2011). Viruses related to food-borne illnesses include noroviruses (NV), hepatitis A and E, rotavirus, and enterovirus, etc. NV, a group of viruses that cause acute gastroenteritis and diarrhea in humans, are widely distributed in both clinical and environmental settings (Tuan Zainazor et al., 2010; Mattison, 2011). They belong to the Caliciviridae family and are relatively resistant to environmental challenge. In Japan 7% and in Korea 3.4% of fecal specimens collected from asymptomatic food handlers unrelated to NV outbreaks were infected with NV (Ozawa et al., 2007; Yu et al., 2011). Nowadays, NV is the leading cause of food-borne illness outbreaks of gastroenteritis in all age groups. For example, in Japan NV account for 28% of all cases of food poisoning (Nishida et al., 2003). In the United Kingdom, 600,000–1,000,000 people catch norovirus every year (Nordqvist, 2010). NV has been subdivided into five genogroups, GI–GV, based on comparisons of the genetic sequences and the capsid protein. GI and GII may be further subdivided into 13 genotypes and 16 genotypes, respectively (Okada et al., 2005). Genogroups GI, GII, and GIV infect humans, whereas genogroups GIII and GV typically infect animals through the fecal–oral route (La Rosa et al., 2008; Yu et al., 2011). Up till now, there is no specific therapy for NV-induced gastroenteritis. The most effective measure for preventing NV infection and transmission is appropriate hand washing and not eating raw foods without proper washing, particularly oysters that have been known to carry NVs.

In general, infectious agents should contain either DNA or RNA or both. However, prion is composed of protein in a misfolded form. Once prion infects a healthy organism, it induces the normal prion protein (PrP^{C}) to convert into an abnormally aggregated isoform known as PrP^{Sc}. These newly formed prions can then go on to convert more proteins themselves and produce large amounts of prion-form proteins in the brain, forming clumps that damage or destroy nerve cells. The loss of cells creates microscopic sponge-like holes in the brain, resulting in microglia activation, astrocytosis, prion plaque deposition, and neuronal degeneration in humans and animals, which are characteristic of a class of incurable neurodegenerative diseases (see Figure 6) (Brown and Mastrianni, 2010; Lee et al., 2011). Prion diseases can be transferred between animals, humans, from humans to animals, and from animals to humans. In humans, prion diseases cause amnesia, extreme aggressiveness, lack of understanding power, loss of coordination, etc. Once the symptoms appear, death may occur from six months to 60 months after the onset of the disease. At present, there is no treatment for prion diseases and no vaccine to prevent them. In order to prevent the spread of disease, one should consume poultry, lamb and fish, instead of beef. As the abnormal prions can be transferred through blood, one should also avoid blood transfusions and consumption of products related to sheep, cow, and blood (Sisó et al., 2010).

Pesticides

Pathogen is a species in nature that we cannot wipe it out. However, pesticide is a kind of synthetic toxic compound thrown into the earth by humans. They are very stable compounds that resist photolytic, biological and chemical degradation. Pesticides may persist more than 100 years in human body and are not broken down after death. Because pesticides are widely and extensively used, pesticide pollution is a problem that the whole world is facing, particularly in developing country. For example, milk specimens from Afyonkarahisar province of Turkey were found to be contaminated by 21 different pesticides (Bulut et al., 2010; Pentamwa et al., 2010). China has the largest pesticide consumption in the world, and the total amount of pesticide consumption increased to 1.33 Mt in 2003 from 862,000 tonnes in 1983 (Zhong et al., 2000). The use of highly toxic pesticides such as methamidophos, dimethoate, parathion, methylparathion, and dichlorphos was frequent and amounted to 90,800 tons in 1990 (Zhong et al., 2000). Therefore, it is not surprising why hexachlorobenzene levels in air and human milk in China were relatively higher than those in other countries (Wang et al., 2010). PCBs, organic phosphoorus pesticides, and persistent organic pollutants (POPs) can be detected in the breast milk of 90% lactating women living in Beijing, of which 10% of them are at dangerous concentrations (NetEase News, 2009). At present, pesticides and aflatoxins are not only detected in foods, but also in natural herbal drug materials and products (Leung et al., 2005; Oh, 2009; Cai et al., 2010). Although pesticide

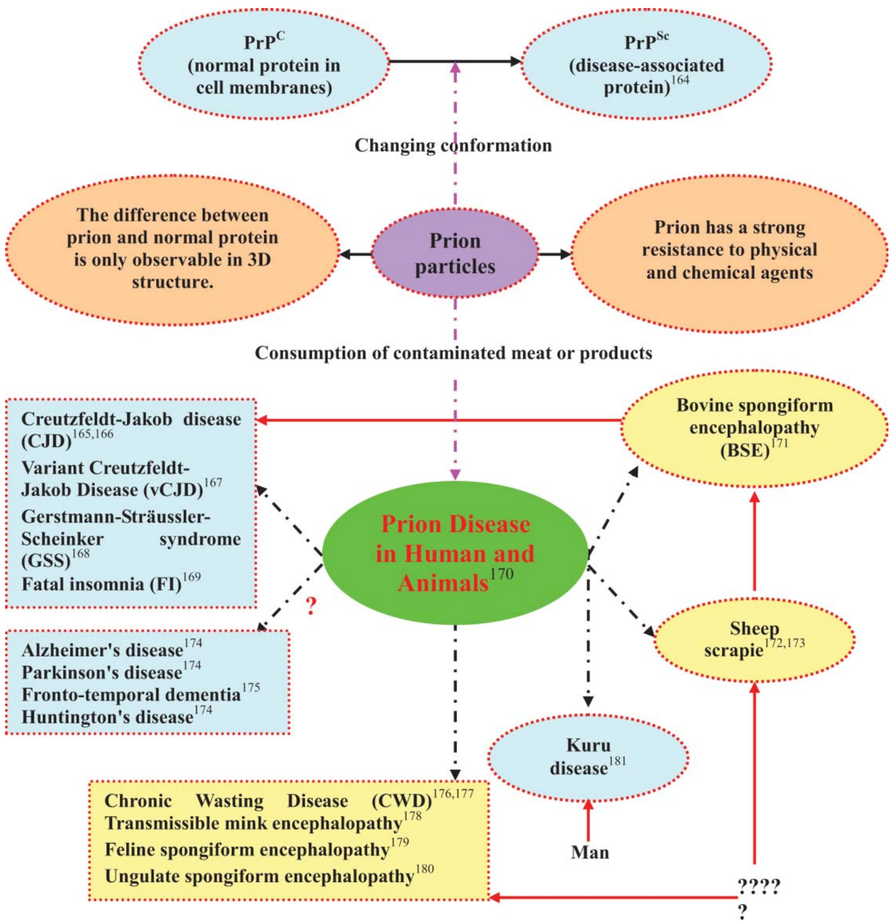

Figure 6. Prions and prion-folding diseases in human and animals.

levels in foods and herbal products as well as in human milk do not pose an acute health risk, long-term exposure to them should not be overlooked.

Since the 1960s, the risks posed by pesticides, as they are designed to have toxicity effects on target organisms, have become of increasing concern in international communities and public (Ahmad et al., 2010; Baris et al., 2010; El-Shahawi et al., 2010; Tsai, 2010). Because of easy accessibility of pesticides, the advent of pesticides provided a means for suicide in humans. It has been estimated that 3.7% of suicides employed pesticides in Europe, 4.9% in America, 16.5% in Eastern Mediterranean, 22.9% in Africa, 20.7% in South East Asia, and 55.8% in Western Pacific (Gunnell et al., 2007). The overall incidence of self-poisoning with pesticides is 1.7 per 100,000, representing the second most frequently used suicide method after hanging, in the Greek island of Crete (Kastanaki et al., 2010). South Asians often use self-poisoning with pesticides as a method for suicide may be found in culture, upbringing, styles of communication, and genetics (van Spijker et al., 2009). It has been conservatively estimated that there are 258,234 deaths from pesticide self-poisoning around the world each year, accounting for 30% of suicides globally (Kastanaki et al., 2010). Chronic toxicity of pesticides results from long-term and low-level exposure to these chemicals, including the growth of tumors and liver/kidney injury (Weichenthal et al., 2010; Smith, 2010). Pesticides also affect the nervous system, endocrine system, and reproductive system (Keifer and Firestone, 2007; Rosas and Eskenazi, 2008; Sikka and Wang, 2008).

Heavy Metals

Heavy metals (HMs), which belong to a kind of natural elements with a specific gravity that is at least five times the specific gravity of water, are important environmental pollutants, particularly in areas with high anthropogenic pressure. They often exist in a positively charged form and can bind on to negatively-charged organic molecules to form complexes that cannot be destroyed and degraded. HMs include antimony (Sb), arsenic (As), bismuth (Bi), cadmium (Cd), cerium (Ce), chromium (Cr), cobalt (Co), copper (Cu), gallium (Ga), gold (Au), iron (Fe), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), platinum (Pt), silver (Ag), tellurium (Te), thallium (Tl), tin (Sn), uranium (U), vanadium (V), and zinc (Zn) (Heavy metal detoxification, 2009). Small amounts of these elements are actually necessary for good health, but large intake of any of them may cause health problems, which result from inhibition of protein folding and mitochondrial respiratory chain, and increase in oxidative stress (Houston, 2007; Belyaeva et al., 2008; Sharma et al., 2008). The important contribution factors for heavy metals pollutants were mainly mining, waste gas emission, wastewater irrigation, and the use of heavy metal products such as cosmetic and materials for house renovation, etc. (Shi et al., 2008; Singh et al., 2010; Lus et al., 2011; Sun et al., 2011; Yu et al., 2011). In China, at present, more than 100 sites severely contaminated by chromium dregs have been identified in a recent survey by Ministry of Environmental Protection of the People's Republic of China (NetEase News, 2011b). HMs may enter the body through food, water supply, air, or skin depending on one's workplace and lifestyle.

Exposure to toxic HMs is generally classified as acute (14 days or less), intermediate (15–354 days), and chronic (more than 365 days) (Heavy metal detoxification, 2009). HM poisoning is the toxic accumulation of heavy metals in soft tissues of the body. HM toxicity is generally involved in many disease conditions and functional disorders in humans, including learning deficits, memory difficulties, lack of concentration, dyslexia, mental retardation, psychosis, numbness, AD, Parkinson's disease (PD), autism, seizures, tremors, hyperactivity, shaky hands, muscular weakness, paralysis, motor dysfunction, burning sensation in hands, blindness, headaches, insomnia, fatigue; poor appetite, loss of taste and smell, gingivitis, liver injury, kidney damage, chronic obstructive lung disease, emphysema, arthritis, fragile bones, allergies, hyperpigmentation, hyperkeratosis, cancer, birth defects, alopecia, anemia, growth impairment, and cardiovascular diseases (Jrup, 2003; Dorne et al., 2011; Heavy metal detoxification, 2009). HM poisoning is considered a medical emergency. When HM poisoning is diagnosed, it is important to begin treatment as soon as possible to minimize long-term damage to the patients. Current managements/treatments of HM poisoning are summarized in Figure 7. It is noteworthy that as pollution has become a global problem, we are now living in an intoxicated world. In this regard, even Chinese herbs and herbal products can also be contaminated by HMs (Saper et al., 2004; Kosalec et al., 2009; Meena et al., 2010). Therefore, caution has to be exercised when herbs are used for treating HM poisoning.

It has been determined that crops and vegetables grown in soils and/or water used for irrigation contaminated with HMs have greater accumulation of HMs than those grown in uncontaminated soil (Islam et al., 2007; Singh et al., 2010). In China, currently, there are nearly 20 million hectares of cultivated land affected by HMs such as Cd, As, Cr, and Pb in an area of nearly two million hectares of cultivated land, accounting for 1/5 of arable land (NetEase News, 2011v). In 2002, 28.4% and 10.3% rice in Chinese market were contaminated by Pb and Cd, respectively (NetEase News, 2011d). In April 2008, 63 rice samples from farmers markets in Jiangxi, Hunan, and Guangdong provinces were tested and the results showed that over 60% of the samples exceeded the national limit of cadmium content in rice (Yang et al., 2011). The concentrations of HMs in the marketed vegetables also exceeded greatly the safety limits given by FAO/WHO and Chinese regulation (Yang et al., 2011). In China, the growth in GDP is accompanied by the increased extent of environmental pollution and public health problems (NetEase News, 2011a). Since 2009, there have been more than 30 reported cases of severe heavy metal pollution in China; 900 tones of the highly toxic metal was discharged in 2007 (Wang, 2012). Sheng-Xian Zhou, minister of Environmental Protection, speech on October 10, 2011–from January to August this year, there are 11 cases of heavy metal contamination in China (www.chinanews.com/, 2011).

Additives

The food industry cannot survive without additives. Additives have been used by mankind for hundreds of years. Traditional food additives include salt, sugar, and vinegar, particularly spices, a group of esoteric food adjuncts that have been in use for thousands of years to enhance the sensory quality of foods (Srinivasan, 2005). Since the second half of the 20th century, with the rapid development of food industry, there has been a massive explosion in the chemical adulteration of foods with additives of both natural and artificial origin. In association with this bloom, a considerable controversy prevails in regard to possible benefits and potential health threat of food additives (Mepham, 2011). Currently, the worldwide application of varieties of food additives have been up to 25,000 species, with 5,000 items being commonly used. The FDA has limited the use of food additives from 2,922 to 1,755; in Japan about 1,100 species are used as food additives; EU allows the use of 1,000–1,500 additives; and China allows the use of 1,962 kinds of food additives (He et al., 2009). Indeed, both the production of additives and the application of additives in food industry serve only for commercial purposes, and the body does not need them. Recently, China has shortlisted 69 kinds of illegal food additives and 82 prohibiting substances used in animal feed (NetEase News, 2011e).

At present, many foreign compounds (poisons) are present in our body due to environmental and food pollution as well as abuses of drugs, food additives/supplements, and health products. According to a WWF report in 2004, the analysis of blood samples of 14 European ministers from 13 European countries for 103 different man-made chemicals from seven different chemical families (namely, organochlorine pesticides, polychlorinated biphenyls, synthetic musks, per fluorinated chemicals, brominated flame retardants, phthalates, and antibacterials) revealed that 55 of the 103 chemicals analyzed were detected (Mathur et al., 2005). There are at least 300 kinds of chemical toxins in our body and these toxic substances also are found in the fetus (www.medcyber.com, 2005).

Figure 7. Treatment of heavy poisoning (Heavy Metal Toxicity, 2011).

In addition, the use of herbal/botanical products or preparations has been growing rapidly worldwide as herbal dietary supplements get access to market. They have become part of the common diet and medication, alone or in combination and are attractive to consumers under the trendy influence of return to nature. In 1994, the US Congress passed the Dietary Supplement Health and Education Act (Fu et al., 2009). In Italy there are 24,000 registered food supplements; 10,000 of these contain plants and herbal extracts; 2,000 include nutrients and plants (Carrat et al., 2010). Although we cannot believe that food additives and herbal food supplements are harmful to humans, they are definitely not the more being the better in human body. The key issue is the amount of intake and whether it is a long-term exposure. In Europe, it has been found that 84 active substances from plants are positive for at least one health effect after chronic and/or acute exposure, including carcinogenicity, reproductive, and neurodevelopmental disorders, as well as endocrine disruption (Karabelas et al., 2009).

Once a food additive or supplement is allowed to use, it will be abused and may eventually damage our body. Single additive/supplement may be safe, but it is hard to say whether a number of them together are still safe, particularly for long-term exposure. As we all know, commercial food products contain various additives or ingredients that can produce harmful effect on our body, and some of them may even cause diseases such as cancer. Therefore, no matter how busy we are, we should cook our own food. Men and women in their reproductive years, pregnant women, infants, and young people should take more natural foods (green foods) that have not been processed in the factory.

GM Foods

The advent of genetically modified (GM) foods and GM plant-derived foods in our dining table has four reasons: (1) advanced genetic engineering techniques; (2) global population growth; (3) people’s curiosity; and (4) commercial interests. Since Mendel, an Austrian Augustinian monk and scientist, found the “inheritance law” (also named “Mendelian Laws of inheritance”), new wonders are constantly being created on exploring life processes, including creating even new species such as man-made bacteria (Gibson et al., 2010). The development of modern genetic engineering techniques provides the possibility of GM food development. In 1999, the global population passed 6 billion, at the present, it is estimated to be at 7 billion and forecast to reach 9.2 billion by 2050 (Rosenberg, 2009). To feed the several billion people living on this planet, the production of high-quality food is going to be a major challenge in the years to come. Hence, new technologies must be developed to accelerate breeding through improving crop genotype methods. It is the persuasive reason for the development of GM foods.

Curiosity is an inherent characteristic of humans, and it reflects the human's thirst for knowledge. Curiosity is a double-edged sword and, sometimes, causes human and natural disaster. From the age of cold steel to the present era of nuclear and chemical weapons, the development of each one is the fruition of human curiosity and creativity. Medical development is also the same. Originally, people used herbs to treat diseases, but currently, people use chemical drugs to treat diseases. However, how many deaths are caused by drugs today? How many chemical drugs are withdrawn from the market? In agriculture, the emergence from pesticides and fertilizers to GM foods is also a result of advancements in science. Today, fertilizers and pesticides are posing risks on the environment and human health. How about GM foods? If natural foods are being replaced by GM ones, the same issues will also be encountered.

GM food can offer an effective approach to improving global food security, but its application is a debatable and controversial social issue. More and more people began to care about the safety implications of consuming GM foods (Miller, 2010; Parrott et al., 2010; Tsourgiannis et al., 2011). In the near future, we will be or have been surrounded by various GM foods. It is well known that the gene of a species is the result of evolution through millions of years, wherein the gene carries information regarding the relationship between the species and the environment. GM food is not only a scientific issue, but also a philosophical problem at the same time. Currently, the gene of a species is modified in the laboratory using molecular biology techniques to enhance desired traits, such as increased nutrient value, yield, tolerance to drought, or the resistance to pests, herbicides, or harsh environmental conditions, and induce the production of edible vaccines (Qaim, 2010; Whitman, 2000). Although GM food has such enormous potential advantages for humans, the benefits for other species and nature should also be considered. The development of GM food, therefore, also entails ethical problems related to the environment and other species, as well as animal welfare and safety.

Although it has not been reported that GM foods and other crops produce direct and negative impact on human health, the negative effects on environment and animals are an indisputable fact (Whitman, 2000; Hug, 2008). Results obtained from testing the feeding of GM foods in animals indicated that they may cause some hepatic, pancreatic, renal, or reproductive toxic effects and may alter hematological, biochemical, and immunologic parameters (Dona and Arvanitoyannis, 2009). We cannot halt the development of GM foods, but we must proceed with caution to avoid causing harm to public health and environment including other plants and animals (de Vendmois et al., 2010). Strengthening safety assessment and philosophical thought of GM foods may be our only approach to take preventive measures against global disaster caused by GM foods or crops (EFSA, 2008). More important, business profits cannot supersede food safety.

Ethical Demise

As far as Chinese culture goes, people put eating at highest priority as like living in heaven. We should treasure the food we eat every day, which is the most precious gift from Mother Nature. However, incidents of food safety violation occur frequently in the world, particularly in China (DNKB, 2011; Guangzhou Daily, 2011a; Shuanghui Group, 2011; CCTV, 2011; Beijing Evening News, 2001; Chang, 2011b; China.com.cn, 2011). The frequent occurrence of food poisoning incidents reflects the demise of food industry's ethical and social responsibility (www.chinaiiss.com, 2010). Some enterprises and individuals ignore public health and even lives in order to reap the ill-gotten gains. This also reflects a lack of government regulation and poor surveillance. We strongly urge the China government to pay a great attention to the nationwide food safety issues and set up highest standards for food quality control and rigid regulating mechanisms for ensuring food safety.

Food contamination, whether accidental or intentional, by toxic substances has become a serious problem in developing countries. The most unfortunate example is melamine poisoning in tainted infant formula in China in 2008. More than 294,000 children in China were reportedly adversely affected by various adulterated formula preparations–over 50,000 of these were hospitalized, with six reported deaths (Ingelfinger, 2008). Melamine-urinary calculi were most often seen in 6- to 18-month-old baby, and the male-to-female ratio was 3.1:1.0, as indicated by the analysis of 50 cases (Wen et al., 2010). As many infants with urinary tract calculi or stones are asymptomatic and small stones are not detectable with standard method, a far larger number of cases of melamine-related illness than the official report should have been reported. Melamine-contamination event taken place in China shocked the world and caused the global concern on this substance in various food products (Gossner et al., 2009).

Melamine, $C_3H_6N_6$, is an organic base and a trimer of cyanamide, with a 1,3,5-triazine skeleton. It is combined with formaldehyde to produce melamine resin, a very durable thermosetting plastic used in Formica, and melamine foam, a polymeric cleaning product (Wikipedia, 2010). Melamine can produce cyanuric acid through substitution reaction (hydrolysis) under the influence of gastric acid, and the two compounds then combine to form melamine cyanurate, a large network structure, with resultant formation of urinary stone. Due to the presence of nitrogen atoms in the molecule, melamine is often used by unscrupulous traders as a food or feed additive to enhance the indicator for protein content. It is well known that protein is mainly composed of amino acids with element nitrogen. The average nitrogen content of protein was 16%, while the melamine's nitrogen content of 66% by mass. Protein content is estimated by multiplying the nitrogen content by 6.25, as described by Kjeldahl method, a commonly used protein assay in the food industry (Baidu, 2011). Hence, food or feed supplemented with melamine will show an elevated value of protein contents. The inspection conducted by China's national inspection agency revealed that at least 22 dairy enterprises across the country were found to adulterate melamine in some of their products (World Health Organization, 2008).

In 2007, melamine-adulterated pet feed manufactured in China exported to the United States, and caused the death of a large number of dogs and cats due to kidney failure (World Health Organization, 2008). Unfortunately, this cannot prevent the serious melamine-contamination event in 2008. Unbelievably, in 2010, the milk powder containing melamine (up to 559 times more than standard) appeared again in Gansu, Qinghai, and Jilin province (Xinhuanet, 2010). More examples include the use of sudan red, brown meat essence, ractopamine, and clenbuterol, with these compounds being proved to be harmful to human, including carcinogenic effect and the toxicity of cardiovascular, nervous, and digestive system (Stiborov et al., 2002; Zhang and Wu, 2002; An et al., 2007; Chinas food safety, 2011). Although the use of sudan red and clenbuterol have been officially banned, they are still used in foods or feeds by unscrupulous manufacturers. In February 2011, the FDA refused to import 56 kinds of food/feed from China, of which five products contained melamine (Guangzhou Daily, 2011b).

Do not let your food be your poison. You may not care about who will be the next president, and what time people can be on Mars, but you should care about what you and your family are eating and drinking. A healthy people require a healthy food/diet as well as a good dietary/eating habit.

CONCLUSIONS

Mother Nature works in a very precise and rational manner. When we get sick, natural therapy, either as primary therapy or as an adjunctive treatment to orthodox medicine, is recommended for effective intervention. Indeed, nearly half of orthodox drugs now in use were originally derived from natural sources like edible plants. Nowadays, interventions derived from Mother Nature, such as food therapy, herbal therapy, and lifestyle change, should be used for the prevention and treatment of diseases. CAMT is a formal practice in safeguarding health in ancient world. Despite the perception that conventional medicine seems to be more scientific and efficacious, CAMT continues to be practiced in both developed and developing countries. A World Health Organisation survey indicated that about 70–80% of the world populations rely on nonconventional medicine in their primary healthcare. If the remedies provided by Mother Nature cannot safeguard our health, they should have disappeared from the earth by elimination. As the Chinese saying goes, "Everything has its own value of existence in the world." After all, many human diseases result from a lifestyle that is contradictory to the law of Mother Nature. Healthy lifestyle, rational social structure and values, and effective government regulation on food industry are the best way to promote public health, so as to prevent diseases. As food can not only safeguard health, but also cause diseases in the case of food contaminations, the government should put in a greater effort on enforcing food safety by improving the surveillance mechanism. For example, the risk of myocardial infarction appears to be modified by a prudent diet high in raw vegetables and fruits (Do et al., 2011), but contaminated vegetables/fruits can cause cancer and other foodborne diseases.

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REFERENCES

Agarwal, S. and Rao, A. V. (2000). Tomato lycopene and its role in human health and chronic diseases. *CMAJ.* **163**:739–744.

Ahhmed, A. M. and Muguruma, M. (2010). A review of meat protein hydrolysates and hypertension. *Meat Sci.* **86**(1):110–118.

Ahmad, T., Rafatullah, M., Ghazali, A., Sulaiman, O., Hashim, R. and Ahmad, A. (2010). Removal of pesticides from water and wastewater by different adsorbents: A review. *J. Environ. Sci. Health C Environ. Carcinog. Ecotoxicol. Rev.* **28**(4):231–271.

Allocati, N., Masulli, M., Alexeyev, M. F. and Di Ilio, C. (2913). *Escherichia coli* in Europe: An overview. *Int. J. Environ. Res. Public Health* **10** (12):6235–6254.

Almberg, E. S., Cross, P. C., Johnson, C. J., Heisey, D. M. and Richards, B. J. (2011). Modeling routes of chronic wasting disease transmission: Environmental prion persistence promotes deer population decline and extinction. *PLoS One* **6**(5):e19896

Altorf-van der Kuil, W., Engberink, M. F., van Rooij, F. J., Hofman, A., van't Veer, P., Witteman, J. C. and Geleijnse, J. M. (2010). Dietary protein and risk of hypertension in a Dutch older population: The Rotterdam study. *J. Hypertens.* **8**(12):2394–2400.

Amaike, S. and Keller, N. P. (2010). *Aspergillus flavus*. *Annu. Rev. Phytopathol.* **49**:107–133.

Ando, C., Takahashi, N., Hirai, S., Nishimura, K., Lin, S., Uemura, T., Goto, T., Yu, R., Nakagami, J., Murakami, S. and Kawada, T. (2009). Luteolin, a food-derived flavonoid, suppresses adipocyte-dependent activation of macrophages by inhibiting JNK activation. *FEBS Lett.* **583**(22):3649–3654.

An, Y., Jiang, L., Cao, J., Geng, C. and Zhong, L. (2007). Sudan I induces genotoxic effects and oxidative DNA damage in HepG2 cells. *Mutat. Res.* **627**:164–170.

Arimochi, H., Morita, K., Nakanishi, S., Kataoka, K. and Kuwahara, T. (2009). Production of apoptosis-inducing substances from soybean protein by

Clostridium butyricum: Characterization of their toxic effects on human colon carcinoma cells. *Cancer Lett.* **277**(2):190–198.

Baidu. (2011). Melamine. Available from http://baike.baidu.com/view/298398.htm. Accessed May 9, 2011. Chinese.

Bailey, R. L., Dodd, K. W., Gahche, J. J., Dwyer, J. T., McDowell, M. A., Yetley, E. A., Sempos, C. A., Burt, V. L., Radimer, K. L. and Picciano, M. F. (2010). Total folate and folic acid intake from foods and dietary supplements in the United States: 2003–2006. *Am. J. Clin. Nutr.* **91**(1):231–237.

Bansal, J., Pantazopoulos, P., Tam, J., Cavlovic, P., Kwong, K., Turcotte, A. M., Lau, B. P. and Scott, P. M. (2011). Surveys of rice sold in Canada for aflatoxins, ochratoxin A and fumonisins. *Food Addit. Contam. Part A Chem. Anal. Control Expo. Risk Assess.* **28**(6):767–774.

Barash, J. A. (2009). Clinical features of sporadic fatal insomnia. *Rev. Neurol. Dis.* **6**(3):E87–93.

Baris, R. D., Cohen, S. Z., Barnes, N. L., Lam, J. and Ma, Q. (2010). Quantitative analysis of over 20 years of golf course monitoring studies. *Environ. Toxicol. Chem.* **29**(6):1224–1236.

Basaria, S., Wisniewski, A., Dupree, K., Bruno, T., Song, M. Y., Yao, F., Ojumu, A., John, M. and Dobs, A. S. (2009). Effect of high-dose isoflavones on cognition, quality of life, androgens, and lipoprotein in post-menopausal women. *J. Endocrinol. Invest.* **32**(2):150–155.

Bastianetto, S., Krantic, S. and Quirion, R. (2008). Polyphenols as potential inhibitors of amyloid aggregation and toxicity: Possible significance to Alzheimer's disease. *Mini. Rev. Med. Chem.* **8**:429–435.

Beijing Daily. (2010). Chinese herb feed additives. Available from http://teyang.aweb.com.cn/2010/0127/658094740160.shtml. Accessed November 25, 2010. Chinese

Beijing Evening News. (2001). Poisonous rice in China. Available from http://finance.sina.com.cn/x/20010919/109319.html. Accessed July 3, 2011. Chinese.

Belyaeva, E. A., Dymkowska, D., Wieckowski, M. R. and Wojtczak, L. (2008). Mitochondria as an important target in heavy metal toxicity in rat hepatoma AS-30D cells. *Toxicol. Appl. Pharmacol.* **231**(1):34–42.

Benford, D., Dinovi, M. and Setzer, R. W. (2010). Application of the margin-of-exposure (MoE) approach to substances in food that are genotoxic and carcinogenic e.g.: Benzo[a]pyrene and polycyclic aromatic hydrocarbons. *Food Chem. Toxicol.* **48**(Suppl 1):S42–48.

Bernstein, A. M., Bloom, D. E., Rosner, B. A., Franz, M. and Willett, W. C. (2010). Relation of food cost to healthfulness of diet among US women. *Am. J. Clin. Nutr.* **92**(5):1197–1203.

Bottemiller, H. (2010). New estimates lower incidence of food poisoning. Available from http://www.foodsafetynews.com/2010/12/cdc-releases-new-foodborne-illness/#.U1qOCI2BT6I. Accessed March 14, 2011.

Bourdon, J. C., Khoury, M. P., Diot, A., Baker, L., Fernandes, K., Aoubala, M., Quinlan, P., Purdie, C. A., Jordan, L. B., Prats, A. C., Lane, D. P. and Thompson, A. M. (2011). p53 mutant breast cancer patients expressing p53γ have as good a prognosis as wild-type p53 breast cancer patients. *Breast Cancer Res.* **13**(1):R7.

Bradshaw, J. M., Pearson, G. R. and Gruffydd-Jones, T. J. (2004). A retrospective study of 286 cases of neurological disorders of the cat. *J. Comp. Pathol.* **131**(2–3):112–120.

Brown, K. and Mastrianni, J. A. (2010). The prion diseases. *J. Geriatr. Psychiatry Neurol.* **23**(4):277–298.

Budhathoki, S., Joshi, A. M., Ohnaka, K., Yin, G., Toyomura, K., Kono, S., Mibu, R., Tanaka, M., Kakeji, Y., Maehara, Y., Okamura, T., Ikejiri, K., Futami, K., Maekawa, T., Yasunami, Y., Takenaka, K., Ichimiya, H. and Terasaka, R. (2011). Soy food and isoflavone intake and colorectal cancer risk: The Fukuoka colorectal cancer study. *Scand. J. Gastroenterol.* **46**(2):165–172.

Bulut, S., Akkaya, L., Gök, V. and Konuk, M. (2010). Organochlorine pesticide (OCP) residues in cow's, buffalo's, and sheep's milk from Afyonkarahisar region, Turkey. *Environ. Monit. Assess.* **181**(1–4):555–562.

Burton-Freeman, B. (2010). Postprandial metabolic events and fruit-derived phenolics: A review of the science. *Br. J. Nutr.* **104**(Suppl 3):S1–S14.

Cai, F., Gao, W., Li, H., Chen, J. and Li, Z. (2010). Aflatoxin contamination of Chinese herbal medicine in China and its potential management strategies. *China J. Chin. Mater. Med.* **35**(19):2503–2507. Chinese.

Calabrese, V., Cornelius, C., Trovato, A., Cavallaro, M., Mancuso, C., Di Rienzo, L., Condorelli, D., De Lorenzo, A. and Calabrese, E. J. (2010). The hormetic role of dietary antioxidants in free radical-related diseases. *Curr. Pharm. Des.* **6**:877–883.

Calonge, N., Petitti, D. B., DeWitt, T. G., Dietrich, A. J., Gregory, K. D., Grossman, D., Isham, G., LeFevre, M. L., Leipzig, R. M., Marion, L. N., Melnyk, B., Moyer, V. A., Ockene, J. K., Sawaya, G. F., Schwartz, J. S. and Wilt, T. (2009). Folic acid for the prevention of neural tube defects: U. S. Preventive Services Task Force recommendation statement. *Ann. Intern. Med.* **150**:626–631.

Carey, J. R. (2003). Life span: A conceptual overview. Available from http://www.popcouncil.org/pdfs/PDRSupplements/Vol29_LifeSpan/Carey_pp1–18.pdf. Accessed May 28, 2011.

Carone, B. R., Fauquier, L., Habib, N., Shea, J. M., Hart, C. E., Li, R., Bock, C., Li, C., Gu, H., Zamore, P. D., Meissner, A., Hofmann, H. A., Friedman, N. and Rando, O. J. (2010). Paternally induced transgenerational environmental reprogramming of metabolic gene expression in mammals. *Cell* **143**(7):1084–1096.

Carratù, B., Federici, E., Gallo, F. R., Geraci, A., Guidotti, M., Multari, G., Palazzino, G. and Sanzini, E. (2010). Plants and parts of plants used in food supplements: An approach to their safety assessments. *Ann. Ist. Super. Sanita* **46**(4):370–388.

CCTV. (2008). The benefits of chicken fed a feed containing Chinese herb. Available from http://space.tv.cctv.com/act/article.jsp?articleId=ARTI1208854310638566. Accessed June 14, 2011. Chinese.

CCTV. (2011). Shanghai Hualian supermarket traced to many years of dyeing bread sales. Available from http://news.qq.com/a/20110411/001376.htm. Accessed June 29, 2011. Chinese.

Chang, W. C. (2011a). Dietary intake and the risk of hyperuricemia, gout and chronic kidney disease in elderly Taiwanese men. *Aging Male* **14**(3):195–202

Chang, A. Y. (2011b). Waste oil in China. Available from http://forum.china.com.cn/thread-1077837–1-1.html. Accessed July 2, 2011. Chinese.

Chan, R., Woo, J. and Leung, J. (2011). Effects of food groups and dietary nutrients on bone loss in elderly Chinese population. *J. Nutr. Health Aging* **15**(4):287–294.

Chen, M., Shelton, A. and Ye, G. Y., (2011). Insect-resistant genetically modified rice in China: From research to commercialization. *Annu. Rev. Entomol.* **56**:81–101.

Chen, C. C. and Wang, Y. H. (2014). Estimation of the exposure of the UK population to the bovine spongiform encephalopathy agent through dietary intake during the period 1980 to 1996. *PLoS One*, 15;9(4):e94020.

China.com.cn. (2011). Leather milk in China. Available from http://www1.china.com.cn/economic/node_7111414.htm. Accessed July 12, 2011. Chinese.

China's food safety. (2011). *China's food safety incidents in 2011*. Available from http://www.21food.cn/html/zhuanti/foodsafe2011/. Accessed April 26, 2014. Chinese.

Chinese food therapy. (2010a) Available from http://www.dhyansanjivani.org/chinese_food.asp. Accessed November 27, 2010.

Chinese food therapy. (2010b) Available from http://www.dhyansanjivani.org/chinese_food.asp. Accessed July 12, 2010.

Chong-Han, K. (2010). Dietary lipophilic antioxidants: Implications and significance in the aging process. *Crit. Rev. Food Sci. Nutr.* **50**(10):931–937.

Conly, J. (2010). Antimicrobial resistance: Revisiting the "tragedy of the commons". *Bull. World Health Organ* **88**(11):805–806.

Cui, X., Dai, Q., Tseng, M., Shu, X. O., Gao, Y. T. and Zheng, W. (2007). Dietary patterns and breast cancer risk in the shanghai breast cancer study. *Cancer Epidemiol. Biomarkers Prev.* **16**(7):1443–1448.

Das, L., Bhaumik, E., Raychaudhuri, U. and Chakraborty, R. (2012). Role of nutraceuticals in human health. *J. Food Sci. Technol.* **49**(2):173–83

Delaney, D., Maluniu, K., Sondra, C. et al. (2008). How to boost your intake of polyphenol antioxidants. Available from http://www.wikihow.com/Boost-Your-Intake-of-Polyphenol-Antioxidants. Accessed Nov 6, 2010.

De Miguel, C., Lund, H. and Mattson, D. L. (2011). High dietary protein exacerbates hypertension and renal damage in Dahl SS rats by increasing infiltrating immune cells in the kidney. *Hypertension* **57**(2):269–274.

de Vendômois, J. S., Cellier, D., Vélot, C., Clair, E., Mesnage, R. and Séralini, G. E. (2010). Debate on GMOs health risks after statistical findings in regulatory tests. *Int. J. Biol. Sci.* **6**(6):590–598.

Dharmananda, S. (2006). The fate of areca from abuse to loss? Available from http://www.itmonline.org/arts/areca.htm. Accessed November 27, 2010.

Di Cagno, R., Mazzacane, F., Rizzello, C. G., Vincentini, O., Silano, M., Giuliani, G., De Angelis, M. and Gobbetti, M. (2010). Synthesis of isoflavone aglycones and equol in soy milks fermented by food-related lactic acid bacteria and their effect on human intestinal Caco-2 cells. *J. Agric. Food Chem.* **58**(19):10338–10346.

DNKB. (2011). Plasticizing agent poisoned in Taiwan for nearly 30 years. Available from http://digi.dnkb.com.cn/dnkb/html/2011–05/29/content_167812.htm. Accessed June 16, 2011. Chinese.

Dona, A. and Arvanitoyannis, I. S. (2009). Health risks of genetically modified foods. *Crit. Rev. Food Sci. Nutr.* **49**(2):164–175.

Dorne, J. L., Kass, G. E., Bordajandi, L. R., Amzal, B., Bertelsen, U., Castoldi, A. F., Heppner, C., Eskola, M., Fabiansson, S., Ferrari, P., Scaravelli, E., Dogliotti, E., Fuerst, P., Boobis, A. R. and Verger, P. (2011). Human risk assessment of heavy metals: Principles and applications. *Met. Ions Life Sci.* **8**:27–60.

Do, R., Xie, C., Zhang, X., Männistö, S., Harald, K., Islam, S., Bailey, S. D., Rangarajan, S., McQueen, M. J., Diaz, R., Lisheng, L., Wang, X., Silander, K., Peltonen, L., Yusuf, S., Salomaa, V., Engert, J. C., Anand, S. S. and INTERHEART investigators. (2011). The Effect of chromosome 9p21 variants on cardiovascular disease may be modified by dietary intake: Evidence from a case/control and a prospective study. *PloS Med.* **9**(10):e1001106. doi:10.1371/journal.pmed.1001106.

Dungal, N. and Sigurjonsson, J. (1967). Gastric cancer and diet. A pilot study on dietary habits in two districts differing markedly in respect of mortality from gastric cancer. *Br. J .Cancer* **21**(2):270–276.

EFSA GMO Panel Working Group on Animal Feeding Trials. (2008). Safety and nutritional assessment of GM plants and derived food and feed: The role of animal feeding trials. *Food Chem. Toxicol.* **46**(Suppl 1):S2–S70.

El-Shahawi, M. S., Hamza, A., Bashammakh, A. S. and Al-Saggaf, W. T. (2010). An overview on the accumulation, distribution, transformations, toxicity and analytical methods for the monitoring of persistent organic pollutants. *Talanta* **80**:1587–1597.

Erdman, J. W. Jr., Ford, N. A. and Lindshield, B. L. (2009). Are the health attributes of lycopene related to its antioxidant function? *Arch. Biochem. Biophys.* **483**:229–235.

Erdmann, K., Cheung, B. W. and Schröder, H. 2008. The possible roles of food-derived bioactive peptides in reducing the risk of cardiovascular disease. *J. Nutr. Biochem.* **19**:643–654.

Erik, T. (2005). James Lind, Zheng He and the prevention of scurvy. Available from http://www.orthomolecular.org/library/jom/2005/pdf/2005-v20n04-p255.pdf. Accessed November 28, 2010.

Faruque, A. S., Ahmed, A. M., Ahmed, T., Islam, M. M., Hossain, M. I., Roy, S. K., Alam, N., Kabir, I. and Sack, D. A. (2008). Nutrition: Basis for healthy children and mothers in Bangladesh. *J. Health Popul. Nutr.* **26**:325–339.

Felton, J. S., Knize, M. G., Wu, R. W., Colvin, M. E., Hatch, F. T. and Malfatti, M. A. (2007). Mutagenic potency of food-derived heterocyclic amines. *Mut. Res.* **616**:90–94.

Femenias, D. G. R. (2005). Fresh fruit and vegetables as health foods in the human diet. Available from http://www.frutas-hortalizas.com/pdf_UK09/168_181.pdf. Accessed November 11, 2010.

Fenton, M., Ross, P., McAuliffe, O., O'Mahony, J. and Coffey, A. (2010). Recombinant bacteriophage lysins as antibacterials. *Bioeng. Bugs* **1**(1):9–16.

Food Standards Agency. (2013). Measuring foodborne illness levels. Available from http://www.food.gov.uk/policy-advice/microbiology/fds/58736#.U1qGjY2BT6I. Accessed March 12, 2011.

Freeman, B. L., Eggett, D. L. and Parker, T. L. (2010). Synergistic and antagonistic interactions of phenolic compounds found in navel oranges. *J. Food Sci.* **75**(6):C570–76.

Fu, P. P., Chiang, H. M., Xia, Q., Chen, T., Chen, B. H., Yin, J. J., Wen, K. C., Lin, G. and Yu, H. (2009). Quality assurance and safety of herbal dietary supplements. *J. Environ. Sci. Health C Environ. Carcinog. Ecotoxicol. Rev.* **27**(2):91–119.

Functional Food. (2009). Available from http://en.wikipedia.org/wiki/Functional_food. Accessed November 5, 2010.

Functional Food in China. Available from http://www.bjwcn.com/yingxiao/123.html. Accessed November 11, 2010. Chinese.

Ganapathi, T. R., Sunil Kumar, G. B., Srinivas, L., Revathi, C. J. and Bapat, V. A. (2007). Analysis of the limitations of hepatitis B surface antigen expression in soybean cell suspension cultures. *Plant Cell Rep.* **26**(9):1575–1584.

Gemma, C., Vila, J., Bachstetter, A. and Bickford, P. C. (2007). Chapter 15 oxidative stress and the aging brain: From theory to prevention. Available from http://www.ncbi.nlm.nih.gov/books/NBK3869/. Accessed April 25, 2014

Ghali, R., Khlifa, K. H., Ghorbel, H., Maaroufi, K. and Hedilli, A. (2010). Aflatoxin determination in commonly consumed foods in Tunisia. *J. Sci. Food Agric.* **90**(14):2347–2351.

Ghosh, D. (2010). Personalised food: How personal is it? *Genes Nutr.* **5**(1):51–53.

Gibson, D. G., Glass, J. I., Lartigue, C., Noskov, V. N., Chuang, R. Y., Algire, M. A., Benders, G. A., Montague, M. G., Ma, L., Moodie, M. M., Merryman, C., Vashee, S., Krishnakumar, R., Assad-Garcia, N., Andrews-Pfannkoch, C., Denisova, E. A., Young, L., Qi, Z. Q., Segall-Shapiro, T. H., Calvey, C. H., Parmar, P. P., Hutchison, C. A. 3rd., Smith, H. O. and Venter, J. C.(2010). Creation of a bacterial cell controlled by a chemically synthesized genome. *Science* **329**:52–56.

Gilch, S., Chitoor, N., Taguchi, Y., Stuart, M., Jewell, J. E. and Schätzl, H. M. (2011). Chronic wasting disease. *Top. Curr. Chem.* **305**:51–77.

Gobbetti, M., Cagno, R. D. and De Angelis, M. (2010). Functional microorganisms for functional food quality. *Crit. Rev. Food Sci. Nutr.* **50**(8): 716–727.

Godfray, H. C., Beddington, J. R., Crute, I. R. Haddad, L., Lawrence, D., Muir, J. F., Pretty, J., Robinson, S., Thomas, S. M. and Toulmin, C. (2010). Food security: The challenge of feeding 9 billion people. *Science* **327**(5967): 812–818.

Gormley, F. J., Little, C. L., Rawal, N., Gillespie, I. A., Lebaigue, S. and Adak, G. K. (2011). A 17-year review of foodborne outbreaks: Describing the continuing decline in England and Wales (1992–2008). *Epidemiol. Infect.* **139**(5):688–699.

Gossner, C. M., Schlundt, J., Ben Embarek, P., Hird, S., Lo-Fo-Wong, D., Beltran, J. J., Teoh, K. N. and Tritscher, A. (2009). The melamine incident: Implications for international food and feed safety. *Environ. Health Perspect.* **117**(12):1803–1808.

Goyary, D. and Sharma, R. (2010). Dietary restriction prevents diabetogenic effect of streptozotocin in mice. *Indian J. Biochem. Biophys.* **47**(4):254–256.

Graziose, R., Lila, M. A. and Raskin, I. (2010). Merging traditional Chinese medicine with modern drug discovery technologies to find novel drugs and functional foods. *Curr. Drug Discov. Technol.* **7**(1):2–12.

GuangMing Daily. (2008). Smoked and fried food is harmful. Available from http://www.gov.cn/fwxx/kp/2008–04/07/content_937855.htm. Accessed No vember 27, 2010. Chinese

Guang, C. and Phillips, R. D. (2009). Plant food-derived Angiotensin I converting enzyme inhibitory peptides. *J. Agric. Food Chem.* **57**(12): 5113–5120.

Guangzhou Daily. (2011a). Dongguan in Guangdong province, a large number of suspected storage system with ink stone batik vermicelli. , at Available from http://news.163.com/11/0424/03/72CHTJ8R00014AED.html. Accessed July 17, 2011. Chinese.

Guangzhou Daily. (2011b). Four Chinese-made food products of melamine detected in the United States. Available from http://news.163.com/11/0318/04/6VDBEOJC00014AED.html. Accessed March 24, 2011. Chinese.

Gullett, N. P., Ruhul Amin, A. R., Bayraktar, S. Pezzuto, J. M., Shin, D. M., Khuri F. R., Aggarwal, B. B., Surh, Y. J. and Kucuk, O. (2010). Cancer prevention with natural compounds. *Semin. Oncol.* **37**(3):258–281.

Gunnell, D., Eddleston, M., Phillips, M. R. and Konradsen, F. (2007). The global distribution of fatal pesticide self-poisoning: Systematic review. *BMC Public Health*, doi:10.1186/1471–2458–7-357

Györéné, K. G., Varga, A. and Lugasi, A. (2006). A comparison of chemical composition and nutritional value of organically and conventionally grown plant derived foods. *Orv. Hetil.* **147**:2081–2090. Hungarian.

Han, H. M. and Koh, B. K. (2011). Antioxidant activity of hard wheat flour, dough and bread prepared using various processes with the addition of different phenolic acids. *J. Sci. Food Agric.* **91**(4):604–608.

Heath, C. A., Cooper, S. A., Murray, K., Lowman, A., Henry, C., MacLeod, M. A., Stewart, G., Zeidler, M., McKenzie, J. M., Knight, R. S. and Will, R. G. (2011). Diagnosing variant Creutzfeldt-Jakob disease: A retrospective analysis of the first 150 cases in the UK. *J. Neurol. Neurosurg. Psychiatry*, **82** (6):646–651.

Heavy Metal Detoxification. (2009). Available from http://www.lef.org/protocols/health_concerns/heavy_metal_detoxification_07.htm. Accessed July 2, 2011.

Heavy Metal Toxicity. (2011). Available from http://www.lef.org/protocols/prtcl-156b.shtml. Accessed May 3, 2011.

Heber, D. (2004). Vegetables, fruits and phytoestrogens in the prevention of diseases. *J. Postgrad Med.* **50**(2):145–149.

He, Q., Chan, H. and Liu, L. B. (2009). The function and risk control of chemical additives in foods. *Prog. Chem.* **21**(11):2424–2434. Chinese.

Hirayama, F., Lee, A. H., Binns, C. W., Zhao, Y., Hiramatsu, T., Tanikawa, Y., Nishimura, K. and Taniguchi, H. (2009). Soy consumption and risk of COPD and respiratory symptoms: A case-control study in Japan. *Respir. Res.* doi:10.1186/1465-9921-10-56.

Hornbeak, D. M., Dirani, M., Sham, W. K., Li, J., Young, T. L., Wong, T. Y., Chong, Y. S. and Saw, S. M. (2010). Emerging trends in breastfeeding practices in Singaporean Chinese women: Findings from a population-based study. *Ann. Acad. Med. Singapore* **39**(2):88–94.

Houston, M. C. (2007). The role of mercury and cadmium heavy metals in vascular disease, hypertension, coronary heart disease, and myocardial infarction. *Altern. Ther. Health. Med.* **13**(2):S128–133.

Hug, K. (2008). Genetically modified organisms: Do the benefits outweigh the risks? *Medicina* (Kaunas), **44**(2):87–99.

Ingelfinger JR. (2008). Melamine and the global implications of food contamination. *N. Engl. J. Med.* **359**:2745–2748.

Islam, E., Yang, X. E., He, Z. L. and Mahmood, Q. (2007). Assessing potential dietary toxicity of heavy metals in selected vegetables and food crops. *J. Zhejiang Univ. Sci. B*, **8**(1):1–13.

Iyer, R. and Tomar, S. K. (2009). Folate: A functional food constituent. *J. Food Sci.* **74**(9):R114–122.

Jacobs, L. and Shoemaker, W. (2007). Can You Live to Be 120 Years Old? Available from http://ramlea.5u.com/Can%20120.htm. Accessed April 25, 2014

Jirillo, F., Jirillo, E. and Magrone, T. (2010). Donkey's and goat's milk consumption and benefits to human health with special reference to the inflammatory status. *Curr. Pharm. De.* **16**:859–863.

Järup, L. (2003). Hazards of heavy metal contamination. *Br. Med. Bull.* **68**:167–182.

Kaboré, H., Michel, P., Levallois, P., Déry, P., Payment, P. and Lebel, G. (2010). A descriptive review of selected nonviral enteric illnesses reported in children in Quebec between 1999 and 2006. *Can. J. Infect. Dis. Med. Microbiol.* **21**(2):e92–e98.

Kamili, A., Wat, E., Chung, R. W., Tandy, S., Weir, J. M., Meikle, P. J. and Cohn, J. S. (2010). Hepatic accumulation of intestinal cholesterol is decreased and fecal cholesterol excretion is increased in mice fed a high-fat diet supplemented with milk phospholipids. *Nutr. Metab.* (Lond), **7**:90.

Kanerva, M., Ollgren, J., Hakanen, A. J. and Lyytikäinen, O. (2012). Estimating the burden of healthcare-associated infections caused by selected multidrug-resistant bacteria Finland, 2010. *Antimicrob. Resist. Infect. Control* **1**(1):33. doi: 10.1186/2047-2994-1-33.

Karabelas, A. J., Plakas, K. V., Solomou, E. S., Drossou, V. and Sarigiannis, D. A. (2009). Impact of European legislation on marketed pesticides–a view from the standpoint of health impact assessment studies. *Environ. Int.* **35** (7):1096–1107.

Kastanaki, A. E., Kraniotis, C. F., Kranioti, E. F., Nathena, D., Theodorakis, P. N. and Michalodimitrakis, M. (2010). Suicide by pesticide poisoning: Findings from the island of Crete, Greece. *Crisis* **31**(6):328–334.

Kato-Kataoka, A., Sakai, M., Ebina, R., Nonaka, C., Asano, T. and Miyamori, T. (2010). Soybean-derived phosphatidylserine improves memory function of the elderly Japanese subjects with memory complaints. *J. Clin. Biochem. Nutr.* **47**(3):246–255.

Kaur, C. and Ling, E. A. (2008). Antioxidants and neuroprotection in the adult and developing central nervous system. *Curr. Med. Chem.* **5**:3068–3080.

Keifer, M. C. and Firestone, J. (2007). Neurotoxicity of pesticides. *J. Agromedicine* **12**(1):17–25.

Kell, D. B. (2010). Towards a unifying, systems biology understanding of large-scale cellular death and destruction caused by poorly liganded iron: Parkinson's, Huntington's, Alzheimer's, prions, bactericides, chemical toxicology and others as examples. *Arch. Toxicol.* **84** (11):825–889.

Kemnitz, J. W. (2011). Calorie restriction and aging in nonhuman primates. *ILAR. J.* **52**(1):66–77.

Kim, S. (2010). *Salmonella* serovars from foodborne and waterborne diseases in Korea, 1998–2007: Total isolates decreasing versus rare serovars emerging. *J. Korean Med. Sci.* **25**(12):1693–1699.

Kim, H. W. and Khil, J. M. (2007). A study on isoflavones intake from soy foods and perimenstrual symptoms. *Taehan Kanho Hakhoe Chi* **37**(3): 276–285. Korean

Klich, M. A. (2007. Aspergillus flavus: The major producer of aflatoxin. *Mol. Plant Pathol.* **8** (6):713–722.

Koluman, A. and Dikici, A. (2013). Antimicrobial resistance of emerging foodborne pathogens: Status quo and global trends. *Crit. Rev. Microbiol.* **39** (1):57–69.

Kosalec, I., Cvek, J. and Tomić, S. (2009). Contaminants of medicinal herbs and herbal products. *Arh. Hig. Rada Toksikol.* **60**(4):485–501.

Kumar, G. B., Ganapathi, T. R., Revathi, C. J., Srinivas, L. and Bapat, V. A. (2005). Expression of hepatitis B surface antigen in transgenic banana plants. Planta **222**:484–493.

Lanska, D. J. (2010). Chapter 29: Historical aspects of the major neurological vitamin deficiency disorders: Overview and fat-soluble vitamin A. *Handb. Clin. Neurol.* **95**:435–444.

La Rosa, G., Pourshaban, M., Iaconelli, M. and Muscillo, M. (2008). Detection of genogroup IV noroviruses in environmental and clinical samples and partial sequencing through rapid amplification of cDNA ends. *Arch. Virol.* **153**:2077–2083.

Lee, S. J., Ahn, J. K., Khanh, T. D., Chun, S. C., Kim, S. L., Ro, H. M., Song, H. K. and Chung, I. M. (2007). Comparison of isoflavone concentrations in soybean (*Glycine max* (L.) *Merrill*) sprouts grown under two different light conditions. *J. Agric. Food Chem.* **55**(23):9415–9421.

Lee, S. J., Lim, H. S., Masliah, E. and Lee, H. J. (2011). Protein aggregate spreading in neurodegenerative diseases: Problems and perspectives. *Neurosci. Res.* **70**(4):339–348.

Lee, M. M. and Shen, J. M. (2008). Dietary patterns using traditional Chinese medicine principles in epidemiological studies. *Asia Pac. J. Clin. Nutr.* **17** (Suppl 1):79–81.

Leung, K. S., Chan, K., Chan, C. L. and Lu, G. H. (2005). Systematic evaluation of organochlorine pesticide residues in Chinese materia medica. *Phytother. Res.* **19**(6):514–518.

Liberski, P. P. and Budka, H. (2004). Gerstmann–Sträussler–Scheinker disease. I. Human diseases. *Folia Neuropathol.* **42**(Suppl B):120–140.

Liberski, P. P. and Kuru, D. (2009). Carleton Gajdusek: A close encounter. *Folia Neuropathol.* **47**(2):114–137.

Liberski, P. P., Sikorska, B., Guiroy, D. and Bessen, R. A. (2009). Transmissible mink encephalopathy–review of the etiology of a rare prion disease. *Folia Neuropathol.* **47**(2):195–204.

Liu, X., Chen, Y., Wang, X. and Ji, R. (2004). Foodborne disease outbreaks in China from 1992 to 2001 national foodborne disease surveillance system. *J Hyg Res.* **33**:725–727. Chinese.

Liu, J., Xing, J. and Fei, Y. (2008). Green tea (*Camellia sinensis*) and cancer prevention: A systematic review of randomized trials and epidemiological studies. *Chin. Med.* **3**:12.

Loechl, C. U., Menon, P., Arimond, M., Ruel, M. T., Pelto, G., Habicht, J. P. and Michaud, L. (2009). Using programme theory to assess the feasibility of delivering micronutrient Sprinkles through a food-assisted maternal and child health and nutrition programme in rural Haiti. *Matern. Child Nutr.* **5**:33–48.

Lu, J. B. (2010). Cancer preventive guide. Available from http://www.china-anti-cancer.net/linkg05.htm. Accessed March 28, 2011. Chinese

Luís, A. T., Teixeira, P., Almeida, S. F., Matos, J. X. and da Silva, E. F. (2011). Environmental impact of mining activities in the Lousal area (Portugal): Chemical and diatom characterization of metal-contaminated stream sediments and surface water of Corona stream. *Sci. Total. Environ.* **409** (20):4312–4325.

Lund, B. M. and O'Brien, S. J., (2011). The occurrence and prevention of foodborne disease in vulnerable people. *Foodborne Pathog. Dis.* **8**(9): 961–973

MacDonald, L., Foster, B. C. and Akhtar, H. (2009). Food and therapeutic product interactions–a therapeutic perspective. *J. Pharm. Pharm. Sci.* **12**(3) 367–377.

Madureira, D. J., Weiss, F. T., Van Midwoud, P., Helbling, D. E., Sturla, S. J. and Schirmer, K. (2014). Systems toxicology approach to understand the kinetics of benzo(a)pyrene uptake, biotransformation, and DNA adduct formation in a liver cell model. *Chem. Res. Toxicol.* **27**(3):443–453.

Mair, W. and Dillin, A. (2008). Aging and survival: The genetics of life span extension by dietary restriction. *Annu. Rev. Biochem.* **77**:727–754.

Mathur, H. B., Agarwal, H. C., Johnson, S. and Saikia, N. (2005). Analysis of pesticide residues in blood samples from villages of Punjab. Available from http://www.cseindia.org/userfiles/Punjab_blood_report.pdf. Accessed February 21, 2011.

Mattison, K. (2011). Norovirus as a foodborne disease hazard. *Adv. Food Nutr. Res.* **62**:1–39.

Mead, P. S., Slutsker, L., Dietz, V., McCaig, L. F., Bresee, J. S., Shapiro, C., Griffin, P. M. and Tauxe, R. V. (1999). Food-related illness and death in the United States. *Emerg Infect. Dis.* **5**(5):607–625.

Meena, A. K., Bansal, P., Kumar, S., Rao, M. M. and Garg, V. K. (2010). Estimation of heavy metals in commonly used medicinal plants: A market basket survey. *Environ. Monit. Assess.* **170**(1–4):657–660.

Mepham, B. (2011). Food additives: An ethical evaluation. *Br. Med. Bull* **99**:7–23.

Messina, M. (2010). Insights gained from 20 years of soy research. *J. Nutr.* **140**(12):2289S–2295S.

Miller, H. I. (2010). The regulation of agricultural biotechnology: Science shows a better way. *N. Biotechnol.* **27**(5):628–634.

Modern Express. (2008). Carcinogenic food. Available from http://news.xinhuanet.com/health/2008–06/13/content_8358893.htm. Accessed November 27, 2010. Chinese

Molesworth, A. M., Mackenzie, J., Everington, D., Knight, R. S. and Will, R. G. (2011). Sporadic Creutzfeldt-Jakob disease and risk of blood transfusion in the United Kingdom. *Transfusion* **51**(8):1872–1873.

Mouchiroud, L., Molin, L., Kasturi, P. Triba, M. N., Dumas, M. E., Wilson, M. C., Halestrap, A. P., Roussel, D., Masse, I., Dallière, N., Ségalat, L., Billaud, M. and Solari, F. (2011). Pyruvate imbalance mediates metabolic reprogramming and mimics lifespan extension by dietary restriction in Caenorhabditis elegans. *Aging Cell* **10**(1):39–54.

Murray, K. (2011). Creutzfeldt-Jacob disease mimics, or how to sort out the subacute encephalopathy patient. *Pract. Neurol.* **11**(1):19–28.

Naito, Y., Hirotani, S., Sawada, H., Akahori, H., Tsujino, T. and Masuyama, T. (2011). Dietary iron restriction prevents hypertensive cardiovascular remodeling in Dahl salt-sensitive rats. *Hypertension* **57** (3):497–504.

NetEase news. (2006). Salted fish-induced esophageal cancer. Available from http://news.163.com/08/0613/03/4E9PPV0V00011229.html. Accessed November 27, 2010. Chinese

NetEase News. (2009). Persistent organic pollutants: Human killer throughout the surrounding. Available from http://discover.news.163.com/09/0525/09/5A59Q976000125LI_2.html. Accessed February 21, 2011. Chinese.

NetEase News. (2011a). Cancer villages in China. Available from http://news.163.com/11/1014/03/7G9UTLCA00014JB6.html. Accessed October 16, 2011.

NetEase News. (2011b). Chromium contamination in China. Available from http://discover.news.163.com/11/0902/10/7CUL3F21000125LI.html. Accessed May 5, 2011. Chinese.

NetEase News. (2011c). Commodity grain base in China contaminated by heavy metals. Available from http://discover.news.163.com/11/0107/09/6PPMMGEXXXX125LI.html. Accessed February 19, 2011. Chinese.

NetEase News. (2011d). Cadmium contamination in Chinese rice. Available from http://news.163.com/11/0215/03/6STD6PJA00014AED.html. Accessed February 19. Chinese.

NetEase News. (2011e). Ministry of Health/Agriculture announced the list of dichlorvos and other illegal food additives. Available from http://news.163.com/11/0424/02/72CDFS2300014AED.html. Accessed June 5, 2011. Chinese.

Newell, D. G., Koopmans, M., Verhoef, L., Duizer, E., Aidara-Kane, A., Sprong, H., Opsteegh, M., Langelaar, M., Threfall, J., Scheutz, F., van der Giessen, J. and Kruse, H. (2010). Food-borne diseases–the challenges of 20 years ago still persist while new ones continue to emerge. *Int. J. Food Microbiol.* **139**(Suppl 1):S3–15.

Neyrinck, A. M. and Delzenne, N. M. (2010). Potential interest of gut microbial changes induced by non-digestible carbohydrates of wheat in the management of obesity and related disorders. *Curr. Opin. Clin. Nutr. Metab. Care.* **13**(6):722–728.

Niemann, B., Chen, Y., Issa, H., Silber, R. E. and Rohrbach, S. (2010). Caloric restriction delays cardiac ageing in rats: Role of mitochondria. *Cardiovasc. Res.* **88**(2):267–276.

Nishida, T., Kimura, H., Saitoh, M., Shinohara, M., Kato, M., Fukuda, S., Munemura, T., Mikami, T., Akiyama, M., Kato, Y., Nishi, K., Kozawa, K. and Nishio, O. (2003). Detection, quantitation, and phylogenetic analysis of noroviruses in Japanese oysters. *Appl. Environ. Microbiol.* **69**:5782–5786.

Noinville, S., Chich, J. F. and Rezaei, H. (2008). Misfolding of the prion protein: Linking biophysical and biological approaches. *Vet. Res.* **39**(4):48.

Nordqvist, C. (2010). Detail article: What is norovirus infection? what causes norovirus infection? https://ahmadladhani.wordpress.com/2010/02/15/detail-article-what-is-norovirus-infection-what-causes-norovirus-infection/. Accessed July 4, 2011.

Novosel'tsev, V. N. and Novosel'tseva, Z. A. (2010). Caloric restriction increases life span in sterile and non-sterile *D. melanogaster* females: Systems analysis. *Adv. Gerontol.* **23**(2):186–195. Russian.

Nyachuba, D. G. (2010). Foodborne illness: Is it on the rise? *Nutr. Rev.* **68** (5):257–269.

Ock, S. M., Hwang, S. S., Lee, J. S., Song, C. H. and Ock, C. M. (2010). Dietary supplement use by South Korean adults: Data from the national complementary and alternative medicine use survey (NCAMUS) in 2006. *Nutr. Res. Pract.* **4**:69–74.

Oh, C. H. (2009). Monitoring of residual pesticides in herbal drug materials of Korea and China. *Bull. Environ. Contam. Toxicol.* **82**(5):639–643.

Okada, M., Ogawa, T., Kaiho, I. and Shinozaki, K. (2005). Genetic analysis of noroviruses in Chiba Prefecture, Japan, between 1999 and 2004. *J. Clin. Microbiol.*, **43**:4391–4401.

Ozawa, K., Oka, T., Takeda, N. and Hansman, G. S. (2007). Norovirus infections in symptomatic and asymptomatic food handlers in Japan. *J. Clin. Microbiol.* **45**:3996–4005.

Pan, S. Y., Gao, S. H., Zhou, S. F., Yu, Z. L. and Ko, K. M. (2012). New perspectives in complementary and alternative medicine I: Overview and alternative therapy. *Altern. Ther. Health Med.* **18**(4):20–36.

Parrott, W., Chassy, B., Ligon, J., Meyer, L., Petrick, J., Zhou, J., Herman, R., Delaney, B. and Levine, M. (2010). Application of food and feed safety assessment principles to evaluate transgenic approaches to gene modulation in crops. *Food Chem. Toxicol.* **48**(7):1773–1790.

Partridge, L. (2011). Some highlights of research on aging with invertebrates, 2010. *Aging Cell* **10**(1):5–9.

Pelchat, M. L. (2009). Food addiction in humans. *J. Nutr.* **139**:620–622.

Pentamwa, P., Kanaratanadilok, N. and Oanh, N. T. (2010). Indoor pesticide application practices and levels in homes of Bangkok Metropolitan Region. *Environ. Monit. Assess.* **181**(1–4):363–372.

Pérez-Guisado, J. and Muñoz-Serrano, A. (2011). A pilot study of the Spanish Ketogenic Mediterranean Diet: An effective therapy for the metabolic syndrome. *J. Med. Food* **14**(7–8):681–687.

Phillip, J. (2013). Deep fried foods increase risk of developing aggressive prostate cancer by one-third. Available from http://www.naturalnews.com/039024_deep_fried_foods_prostate_cancer_carcinogens.html#. Accessed April 25, 2014.

Photo: Health Inventory. (2011). Photo: Health Inventory: Living in nine kinds of food most likely to cause cancer.Available from http://www.instant-news.us/news-213463.html. Accessed April 25, 2011.

Pilacinski, W., Crawford, A., Downey, R., Harvey, B., Huber, S., Hunst, P., Lahman, L. K., MacIntosh, S., Pohl, M., Rickard, C., Tagliani, L. and Weber, N. (2011). Plants with genetically modified events combined by conventional breeding: An assessment of the need for additional regulatory data. *Food Chem. Toxicol.* **49**(1):1–7.

Pires, S. M., Vieira, A., Perez, E., Wong, D. L. and Hald, T. (2011). Attributing human foodborne illness to food sources and water in Latin America and the Caribbean using data from outbreak investigations. *Int. J. Food Microbiol.* doi:10.1016/j.ijfoodmicro.2011.04.018.

Pizarro, F., Olivares, M., Hertrampf, E. and Walter, T. (1994). Factors which modify the nutritional state of iron: Tannin content of herbal teas. *Arch. Latinoam. Nutr.* **44**(4):277–280.

Portugal, Mda, G., Marinho, V. and Laks, J. (2011). Pharmacological treatment of frontotemporal lobar degeneration: Systematic review. *Rev. Bras. Psiquiatr.* **33**(1):81–90.

Qaim, M. (2010). Benefits of genetically modified crops for the poor: Household income, nutrition, and health. *N. Biotechnol.* **27**(5):552–557.

Rahman, H., Austin, B., Mitchell, W. J., Morris, P. C., Jamieson, D. J., Adams, D. R., Spragg, A. M. and Schweizer, M. (2010). Novel anti-infective compounds from marine bacteria. *Mar. Drugs.* **8**(3):498–518.

Reganold, J. P., Andrews, P. K., Reeve, J. R., Carpenter-Boggs, L., Schadt, C. W., Alldredge, J. R., Ross, C. F., Davies, N. M. and Zhou, J. (2010). Fruit and soil quality of organic and conventional strawberry agroecosystems. *PLoS One* **5**(9):e12346.

Roossinck, M. J. (2011). The good viruses: Viral mutualistic symbioses. *Nat. Rev. Microbiol.* **9**(2):99–108.

Rosas, L. G. and Eskenazi, B. (2008). Pesticides and child neurodevelopment. *Curr. Opin. Pediatr.* **20**(2):191–197.

Rosenberg, M. (2009). Current world population. Available from http://geography.about.com/od/obtainpopulationdata/a/worldpopulation.htm. Accessed May 20, 2011.

Ruel, M. T., Menon, P., Habicht, J. P., Loechl, C., Bergeron, G., Pelto, G., Arimond, M., Maluccio, J., Michaud, L. and Hankebo, B. (2008). Age-based preventive targeting of food assistance and behaviour change and communication for reduction of childhood undernutrition in Haiti: A cluster randomised trial. *Lancet* **371**:588–595.

Ruiz-Torres, A. and Beier, W. (2005). On maximum human life span: Interdisciplinary approach about its limits. *Adv. Gerontol.* **16**:14–20.

Sacks, F. M. and Campos, H. (2010). Dietary therapy in hypertension. *N. Engl. J. Med.* **362**:2102–2112.

Saluk-Juszczak, J. (2010). Anthocyanins as components of functional food for cardiovascular risk prevention. *Postepy Hig. Med. Dosw.* (Online), **64**:451–458. Polish.

Sanada, H., Jones, J. E. and Jose, P. A. (2011). Genetics of salt-sensitive hypertension. *Curr. Hypertens. Rep.*, **13**(1):55–66.

Saper, R. B., Kales, S. N., Paquin, J., Burns, M. J., Eisenberg, D. M., Davis, R. B. and Phillips, R. S. (2004). Heavy metal content of ayurvedic herbal medicine products. *JAMA.* **292**(23):2868–2873.

Shaikh, U., Byrd, R. S. and Auinger, P. (2009). Vitamin and mineral supplement use by children and adolescents in the 1999–2004 National Health and Nutrition Examination Survey: Relationship with nutrition, food security, physical activity, and health care access. *Arch. Pediatr. Adolesc. Med.* **163**(2):150–157.

Sharma, S. K., Goloubinoff, P. and Christen, P. (2008). Heavy metal ions are potent inhibitors of protein folding. *Biochem. Biophys. Res. Commun.* **372**(2):341–345.

Shimizu, M. and Son, D. O. (2007). Food-derived peptides and intestinal functions. *Curr. Pharm. Des.* **13**:885–895.

Shi, D. Z., Wu, W. X., Lu, S. Y., Chen, T., Huang, H. L., Chen, Y. X. and Yan, J. H. (2008). Effect of MSW source-classified collection on the emission of PCDDs/Fs and heavy metals from incineration in China. *J. Hazard Mater.* **153**(1–2):685–694.

Shobana, S., Harsha, M. R., Platel, K., Srinivasan, K. and Malleshi, N. G. (2010). Amelioration of hyperglycaemia and its associated complications by finger millet (*Eleusine coracana* L.) seed coat matter in streptozotocin-induced diabetic rats. *Br. J. Nutr.* **28**:1–9.

Shuanghui Group. (2011). Shuanghui Group use pork containing Sho-Rou-Jing. Available from http://finance.sina.com.cn/focus/shzr_2011/index.shtml. Accessed July 23, 2011. Chinese.

Sigurdson, C. J. and Miller, M. W. (2003). Other animal prion diseases. *Br. Med. Bull.* **66**:199–212.

Sikka, S. C. and Wang, R. (2008). Endocrine disruptors and estrogenic effects on male reproductive axis. *Asian J. Androl.* **10**(1):134–145.

Silver, H. J., Dietrich, M. S. and Niswender, K. D. (2011). Effects of grapefruit, grapefruit juice and water preloads on energy balance, weight loss, body composition, and cardiometabolic risk in free-living obese adults. *Nutr. Metab.* **8**(1):8.

Singh, A., Sharma, R. K., Agrawal, M., Fiona, M. and Marshall, F. M. (2010). Risk assessment of heavy metal toxicity through contaminated vegetables from waste water irrigated area of Varanasi, India. *Trop. Ecol.* **51**(2S):375–387.

Siró, I., Kápolna, E., Kápolna, B. and Lugasi, A. (2008). Functional food. product development, marketing and consumer acceptance–a review. *Appetite* **51**(3):456–467.

Sisó, S., González, L. and Jeffrey, M. (2010). Neuroinvasion in prion diseases: The roles of ascending neural infection and blood dissemination. *Interdiscip. Perspect. Infect. Dis.*, doi:10.1155/2010/747892.

Skinner, C. and Lin, S. J. (2010). Effects of calorie restriction on life span of microorganisms. *Appl. Microbiol. Biotechnol.* **88**(4):817–828.

Smith, D. W. (2010). Pesticide toxicity. Available from http://agsafety.tamu.edu/PESTICIDE%20TOXICITY.pdf. Accessed March 11, 2011.

Soldin, O. P., Pearce, E. N. and Stagnaro-Green, A. (2010). Dietary salt reductions and cardiovascular disease. *N. Engl. J. Med.* **362**:590–599.

Srinivasan, K. (2005). Role of spices beyond food flavoring: Nutraceuticals with multiple health effects. *Food Rev. Int.*, **21**:167–188.

Stiborová, M., Martínek, V., Rýdlová, H., Hodek, P. and Frei, E. (2002). Sudan I is a potential carcinogen for humans: Evidence for its metabolic activation and detoxication by human recombinant cytochrome P450 1A1 and liver microsomes. *Cancer Res.* **62**:5678–5684.

Suckling, R. J., He, F. J. and Macgregor, G. A. (2010). Altered dietary salt intake for preventing and treating diabetic kidney disease. *Cochrane Database Syst. Rev.* **12**:CD006763.

Sunil Kumar, G. B., Ganapathi, T. R., Revathi, C. J., Prasad, K. S. and Bapat, V. A. (2003). Expression of hepatitis B surface antigen in tobacco cell suspension cultures. *Protein Expr. Purif.* **32**(1):10–17.

Sun, R., Shu, F., Hao, W., Li, L. and Sun, W. L. (2011). Heavy metal contamination and Pb isotopic composition in natural soils around a Pb/Zn mining and smelting area. *J. Environ. Sci.* **32**(4):1146–1153. Chinese.

Sun, A. Y., Wang, Q., Simonyi, A. and Sun, G. Y. (2010). Resveratrol as a therapeutic agent for neurodegenerative diseases. *Mol. Neurobio.* **41**:375–383.

Tapsell, L. C., Hemphill, I., Cobiac, L., Patch, C. S., Sullivan, D. R., Fenech, M., Roodenrys, S., Keogh, J. B., Clifton, P. M., Williams, P. G., Fazio, V. A. and Inge, K. E. (2006). Health benefits of herbs and spices: The past, the present, the future. *Med. J. Aust.* **185**(Suppl 4):S4–24.

Terry, L. A., Howells, L., Bishop, K., Baker, C. A., Everest, S., Thorne, L., Maddison, B. C. and Gough, K. C. (2011). Detection of prions in the faeces of sheep naturally infected with classical scrapie. *Vet. Res.* **42**(1):65.

Tester, M. and Langridge, P. (2010). Breeding technologies to increase crop production in a changing world. *Science* **327**(5967):818–822.

Teucher, B., Olivares, M. and Cori, H. (2004). Enhancers of iron absorption: Ascorbic acid and other organic acids. *Int. J. Vitam. Nutr. Res.* **74**(6): 403–419.

Tranulis, M. A., Benestad, S. L., Baron, T. and Kretzschmar, H. (2011). Atypical prion diseases in humans and animals. *Top. Curr. Chem.* **305**:23–50.

Tsai, W. T. (2010). Current status and regulatory aspects of pesticides considered to be persistent organic pollutants (POPs) in Taiwan. *Int. J. Environ. Res. Public Health* **7**(10):3615–3627.

Tsourgiannis, L., Karasavvoglou, A. and Florou, G. (2011). Consumers' attitudes towards GM free products in a European Region. The case of the Prefecture of Drama–Kavala–Xanthi in Greece. *Appetite*, **57**(2):448–458. Greece.

Tuan Zainazor, C., Hidayah, M. S., Chai, L. C., Tunung, R., Ghazali, F. M. and Son, R. (2010). The scenario of norovirus contamination in food and food handlers. *J. Microbiol. Biotechnol.* **20**(2):229–237.

Vaccari, G., Panagiotidis, C. H., Acin, C., Peletto, S., Barillet, F., Acutis, P., Bossers, A., Langeveld, J., van Keulen, L., Sklaviadis, T., Badiola, J. J., Andreéoletti, O., Groschup, M. H., Agrimi, U., Foster, J. and Goldmann, W. (2009). State-of-the-art review of goat TSE in the European Union, with special emphasis on PRNP genetics and epidemiology. *Vet. Res.* **40**(5):48.

van Boekel, M., Fogliano, V., Pellegrini, N., Stanton, C., Scholz, G., Lalljie, S., Somoza, V., Knorr, D., Jasti, P. R. and Eisenbrand, G. (2010). A review on the beneficial aspects of food processing. *Mol. Nutr. Food Res.*, **54** (9):1215–1247.

van Spijker, B. A., Graafsma, T., Dullaart, H. I. and Kerkhof, A. J. (2009). Impulsive but fatal self-poisoning with pesticides among South Asians in Nickerie, Suriname. *Crisis* **30**(2):102–105.

Veggiotti, P., Burlina, A., Coppola, G., Cusmai, R., De Giorgis, V., Guerrini, R. and Tagliabue, A. and Dalla Bernardina, B. (2011). The ketogenic diet for Dravet syndrome and other epileptic encephalopathies: An Italian consensus. *Epilepsia* **52**(suppl 2):83–89.

Wai, K. N., Bishop, J. C., Mack, P. B. and Cotton, R. H. (1947). The vitamin content of soybeans and soybean sprouts as a function of germination time. *Plant Physiol.* **22**(2):117–126.

Wang, E. D. (2012). Heavy metal contamination in China. Available from http://epaper.21cbh.com/html/2012–09/12/content_33581.htm?div=-1. Accessed April 26, 2014. Chinese

Wang, S., Duan, H., Zhang, W. and Li, J. W. (2007). Analysis of bacterial foodborne disease outbreaks in China between 1994 and 2005. *FEMS Immunol. Med. Microbiol.* **51**(1):8–13.

Wang, G., Lu, Y., Han, J., Luo, W., Shi, Y., Wang, T. and Sun, Y. (2010). Hexachlorobenzene sources, levels and human exposure in the environment of China. *Environ. Int.* **36**(1):122–130.

Weichenthal, S., Moase, C. and Chan, P. (2010). A review of pesticide exposure and cancer incidence in the Agricultural Health Study cohort. *Environ. Health Perspect.* **118**(8):1117–1125.

Wen, J. G., Li, Z. Z., Zhang, H., Wang, Y., Zhang, R. F., Yang, L., Chen, Y., Wang, J. X. and Zhang, S. J. (2010). Melamine related bilateral renal calculi in 50 children: Single center experience in clinical diagnosis and treatment. *J. Urol.* **183**(4):1533–1537.

Whitman, D. B. (2000). Genetically modified foods: Harmful or helpful? Available from http://www.csa.com/discoveryguides/gmfood/overview.php. Accessed June 3, 2011.

WHO. (2010). Antimicrobial resistance: Revisiting the "tragedy of the commons". Available from http://www.who.int/bulletin/volumes/88/11/10–031110/en/. Accessed June 11, 2011.

Wikipedia. (2010). Melamine. Available from http://en.wikipedia.org/wiki/Melamine. Accessed June 4, 2011.

Wikipedia. (2014a). Antinomy. Available from http://en.wikipedia.org/wiki/Antinomy. Accessed April 25, 2014.

Wikipedia. (2014b). Chinese food therapy. Available from http://en.wikipedia.org/wiki/Chinese_food_therapy. Accessed April 25, 2014.

Wikipedia. (2014c). Nutrient. Available from http://en.wikipedia.org/wiki/Nutrient. Accessed April 25, 2014.

Williamson, C. (2009). Functional foods: What are the benefits? *Br. J. Community Nurs.* **14**(6):230–236.

Wogan, G. N., Kensler, T. W. and Groopman, J. D. (2011). Present and future directions of translational research on aflatoxin and hepatocellular carcinoma. A review. *Food Addit. Contam. Part A Chem. Anal. Control Expo. Risk Assess* **1**:1–9.

Wolff, T., Witkop, C. T., Miller, T., Syed, S. B. and U. S. Preventive Services Task Force. (2009). Folic acid supplementation for the prevention of neural tube defects: An update of the evidence for the U. S. Preventive Services Task Force. *Ann. Intern. Med.* **150**:632–639.

World Health Organization. (2008). Melamine-contamination event, China, September 2008. Available from http://toxipedia.org/download/attachments/6002751/WHO.Melamine.2008.pdf?version=1. Accessed March 23, 2011.

www.chinaiiss.com. (2010). Real phenomena of food safety in China. Available from http://society.chinaiiss.com/html/20109/2/p1d52_1.html#pic. Accessed July 23, 2011. Chinese.

www.chinanews.com/?. (2011). China showed a high incidence of heavy metal pollution situation. Available from http://www.chinanews.com/gn/2011/10–25/3413982.shtml. Accessed October 27, 2011. Chinese

www.medcyber.com. (2005). Toxic chemicals in our body. Available from http://big5.21tcm.com/focus/lc/nfm/2005–11–23–120119.shtml. Accessed February 21, 2011. Chinese.

Xinhuanet. (2010). Reproduction of excessive melamine milk powder in Gansu, Qinghai and Jilin province. Available from http://news.xinhuanet.com/local/2010–07/08/c_12314291.htm. Accessed May 7, 2011. Chinese.

Yang, C. S. and Wang, X. (2010). Green tea and cancer prevention. *Nutr. Cancer* **62**(7):931–937.

Yang, Q. W., Xu, Y., Liu, S. J., He, J. F. and Long, F. Y. (2011). Concentration and potential health risk of heavy metals in market vegetables in Chongqing, China. *Ecotoxicol. Environ. Saf.* **74**(6):1664–1669.

Young, D., Fan, M. Z. and Mine, Y. (2010). Egg yolk peptides up-regulate glutathione synthesis and antioxidant enzyme activities in a porcine model of intestinal oxidative stress. *J. Agric. Food Chem.* **58**(13): 7624–733.

Yu, J. H., Kim, N. Y., Lee, E. J. and Jeon, I. S. (2011). Norovirus infections in asymptomatic food handlers in elementary schools without norovirus outbreaks in some regions of Incheon, Korea. *J. Korean Med. Sci.* **26**(6): 734–739.

Yu, X. D., Yan, C. H., Shen, X. M., Tian, Y., Cao, L. L., Yu, X. G., Zhao, L. and Liu, J. X. (2011). Prenatal exposure to multiple toxic heavy metals and neonatal neurobehavioral development in Shanghai, China. *Neurotoxicol. Teratol.* **33**(4):437–443.

Zhang, S. X., Guo, H. W., Wan, W. T. and Xue, K. (2011). Nutrition education guided by Dietary Guidelines for Chinese Residents on metabolic syndrome characteristics, adipokines and inflammatory markers. *Asia Pac. J. Clin. Nutr.* **20**(1):77–86.

Zhang, Y. and Wu, Y. (2002). Toxicological effects of clenbuterol in human and animals. *J. hyg. Res.* **31**(4):328–330. Chinese.

Zhang, W., Xiao, S., Samaraweera, H., Lee, E. J. and Ahn, D. U. (2010). Improving functional value of meat products. *Meat. Sci.* **86** (1):15–31.

Zhan, H., Renjie Li, R. and Liu, X. (2008). Foodborne illness. Available from http://rudar.ruc.dk/bitstream/1800/3166/1/Foodborne_illness.pdf. Accessed May 29, 2011

Zhao, Z. Z. (2003). The past, present and future of Chinese herbal medicine in Hong Kong. Available from Available from http://www.tcmforum.com/

forum2.php?reply=0&forumID=201&fGroup=overseas. Accessed November 21, 2010.
Zhao, J., Luo, Q., Deng, H. and Yan, Y. (2008). Opportunities and challenges of sustainable agricultural development in China. *Philos. Trans. R. Soc. Lond. B Biol. Sci.* 3**63**(1492):893–904.
Zhao, G., Zang, S. Y., Jiang, Z. H., Chen, Y. Y., Ji, X. H., Lu, B. F., Wu, J. H., Qin, G. W. and Guo, L. H. (2010). Postischemic administration of liposome-encapsulated luteolin prevents against ischemia-reperfusion injury in a rat middle cerebral artery occlusion model. *J. Nutr. Biochem.* **22**(10): 929–936.
Zhong, W. K., Hao, J., Sun, M. X. and Chen, Y. L. (2000). Pesticides residues in food in China. *Pesticide* **39**:1–4. Chinese.
Zhou, P., Wu, Y., Yin, S., Li, J., Zhao, Y., Zhang, L., Chen, H., Liu, Y., Yang, X. and Li, X. (2011). National survey of the levels of persistent organochlorine pesticides in the breast milk of mothers in China. *Environ. Pollut.* **159** (2):524–531.