

# Buddha's Idea concerning Food and a New View of Nutrition

*Hyeon-Sook Lim, PhD,  
Sang-Ju Hwang, PhD,  
and Sung Bae Park, PhD*

---

---

## Abstract

---

---

*“Whole health” refers to spiritual, emotional, and social health as well as physical well-being. The Buddha insisted thousands of years ago that physical, mental, and spiritual phenomena cannot be separated. The mind and even the soul are tightly linked to the body. Furthermore, the Buddha recognized that everything in the universe is its own complete system, even a grain of rice or a head of cabbage. It is understandable that food is composed of both materials and elements beyond matter, such as spirits. However, Nutrition as a modern science focuses on food containing only physical material, while human beings consume food merely to maintain the body. Kesten, though a nutritionist, understood the ancient wisdom of food, including the Buddha's thought which has been undervalued and often even ignored in the field of Nutrition. She has provided some new insights regarding Nutrition with comprehending the inherent properties of food. Thus, in this article, the Buddha's ideas concerning food including vegetarianism*

---

Hyeon-Sook Lim is a professor of the Department of Food and Nutrition, Chonnam National Univ., Korea.  
Sang-Ju Hwang is a professor of the Department of Fine Arts, Dongguk Univ., Korea.  
Sung Bae Park is a professor of Asian Philosophy and Religions and Director of the Center for Korean Studies, Department of Asian and Asian-American Studies, Stony Brook Univ., USA.

*International Journal of Buddhist Thought & Culture* February 2009, vol. 12, pp. 29-57.

© 2009 International Association for Buddhist Thought and Culture

and “Integrative Nutrition,” which were also proposed by Kesten, were reviewed to form a new view of Nutrition.

Key words : Buddha, Kesten, Food, Nutrition, Vegetarianism.

---

---

## I. Introduction

There is a saying, “We are what we eat.” The implication is that the body is composed of materials derived from food. In reality, the human body is formed of matter which is provided from external elements such as proteins, lipids, minerals, etc. All acts performed by human beings, both physical and mental, are electro-chemical functions produced by hormones, neurotransmitters, and enzymes; these are fueled in the body by nutrients derived from food. Similarly, consciousness, mindfulness, and awareness are also created through electro-chemical processes. These concepts are central to Nutrition as a modern science. This is the basis of the belief that food energizes body, mind, and soul, because the three are interconnected.

But if the focus is only on body it is easy to indulge in satisfying taste buds instead of eating properly. The recent increase in rates of food-related diseases and obesity reveals that current dietary behavior tend to focus only on the body which is not sufficient to maintain “whole health.” “Whole health” refers to spiritual, emotional, and social health as well as physical well-being.

Buddha insisted thousands of years ago that physical, mental, and spiritual phenomena cannot be separated. There is no real talking without mindfulness; no true thought without consciousness; and no actual action without awareness. Mind and even soul are intrinsically linked to the body and vice versa, as body is connected to the mind and soul and each influences the others. For example, being mentally alert sets up a corresponding tension in the body, such as muscular contraction and a pounding of the heartbeat. Being physically ill causes mental weakness and

unhappiness. For this reason, all human beings need to receive appropriate emotional sustenance and affection, as well as consuming proper food. It is obvious that babies cannot grow to be healthy unless they receive their parents' care and devotion and appropriate food.

The Buddha recognized that everything in the universe is its own complete system, even a grain of rice or a head of cabbage. Thus, human beings, animals, bugs, and plants have equal rights. *Indra's Net* is a wonderful metaphor illustrating this connection.<sup>1</sup> It is not difficult to understand that food is composed not only of materials but also of elements beyond matter, such as spirits. Monism emphasizes this comprehensive view of the interconnectedness of body and mind. Monism, "oneness," "same," and "complete," is in total contrast to dualism, "separation," "different," and "incomplete."

Nutrition as a modern science focuses on food only as physical material and the importance of human beings consuming food merely to maintain the body. Scientific knowledge related to Nutrition has distorted much of the traditional understanding of the wisdom of food, including the traditions based on Buddhist teachings. Instead of a broad and open view of food as a holistic concept connected to mind, soul, community and ecology, nutrition views food as merely a measurable and calculable matter, which affects only the body. This has influenced us to think that the body is a machine needing only fuel for its operation.

Kesten (2001), though a nutritionist, understood the ancient wisdom about food, including Buddha's thought which has been undervalued and often even ignored. Kesten (2001) provides some new insights regarding Nutrition by explaining how the inherent properties of food relate to a state of well-being: spiritually, emotionally, socially, and physically. In this seminal work Kesten 1) proposed the concept of "Integrative Nutrition," which does not divide matter and spirit, 2) declared what real food is, 3) identified the four facets of food, 4) presented the six healing secrets of food, and 5) discussed the ways to create a conscious connection.

"Integrative Nutrition" maintains the interactive and comprehensive view

---

<sup>1</sup> *Indra's Net*: a metaphor for the non-dual transcendent basis of all existence; a vast web of invisible interconnected threads.

that food is profoundly interdependent with spirit, emotion, community, and even ecology. Eating with mindfulness, appreciation, and a feeling of connection to one another and to one's environment can deeply enhance one's health.

In order to connect the Buddhist wisdom of food with the modern scientific understanding of Nutrition it is necessary to review the Buddha's ideas concerning body, mind, and soul. Such a review reveals the positive aspects of Buddhist vegetarian diets both nutritionally and ecologically, and leads us to investigate more deeply Kesten's concept of "Integrative Nutrition." It is essential to develop new nutritional concepts concerning the attainment of "whole health." Nutrition and religion share interrelated goals, which are to achieve freedom from physical disease and spiritual suffering, respectively. In this paper we will first review the concept of "Integrative Nutrition" and then discuss the Buddha's concept of food.

## **II. The concept of "Integrative Nutrition" proposed by Kesten**

The term "Integrative Nutrition" was proposed by Kesten (2001) in her book, *The Healing Secrets of Food*. Her concept is a holistic approach concerned with both the physical dimension of nutrition and the spiritual, emotional, and social dimensions of what and how human beings eat. Her approach is very similar to that of Buddhism as she arrived at this concept by marrying the ancient food wisdom of major world religions and cultural traditions and the wisdom of modern science of Nutrition. Kesten realized that most religions and cultures relate to food as more than mere sustenance.

Nutritional science was born as a modern science in the 1880s but ironically, its view of food as merely a measurable and calculable value has created a spiritually nutritional Dark Age. Because of its limiting scientific view, public health interest in food has come to be focused almost exclusively on reducing the risks of chronic diseases such as heart disease, diabetes, hypertension, and cancer; while on the other hand, promoting certain dietary

regimes in order to lose weight. Although these projects have greatly benefited humanity, there are still greater benefits that can be achievable if nutritional approaches also take into account other inherent properties of food to include their potential to impact on spiritual, emotional, and social well-being. Kesten believes that while the goal of Nutrition is to provide objective truths about food, such as the influences of various nutrients on our physical health, this is an incomplete understanding of the meaning of food. Since food is interdependent and profoundly interconnected with spirit, emotion, community, and environment, we cannot acquire “whole health” without this consciousness. “Whole health” refers to an integrated state of well-being of mind with true enjoyment, well-being of soul with true delight, well-being of social connection with true gladness, and well-being of body with true healthiness. That is why eating with mindfulness, appreciation, and connection to one another is crucial to enhance total health.

It is deeply regretful that these concepts of food have been ignored for so long. As described earlier, Nutrition is similar to other sciences, in that it tends to focus only on what can be measured and to ignore everything that is not measurable which is why the inherent healing properties of food have been obscured. Most people, even nutritionists, do not consider these concepts; thus, we eat food only as a means of enhancing our physical condition. Viewed through such a restricted lens, food is seen from a singular and biological perspective of isolated findings. Nutritionists have discovered many important concepts about the functions and mechanisms of nutrients in the body. Initially there was much discussion about proteins, carbohydrates, and lipids; then vitamins and minerals were added to the equation, and finally, phytochemicals such as polyphenols have become the most recent focus of attention. These findings are worthy in terms of researching the healing secrets of food. But unfortunately, because it has focused only on the physiological dimension Nutrition has ignored other important aspects of food.

Kesten’s theory of “Integrated Nutrition” has been a great milestone in advancing our knowledge of nutrition. Kesten sought to reunite the spiritual, emotional, and social meaning of food with its physical aspect, thereby making

it possible to reclaim the entire legacy of Nutrition. Her “Integrated Nutrition” explores the relationships among food, healthfulness, delightfulness, appreciation, social activity, and insightfulness.

In his book, *Ageless Body, Timeless Mind* (1993) Chopra wrote “The most significant breakthrough is not contained in isolated findings but in a completely new worldview.” As “whole health” can only be obtained through spiritual, emotional, and social as well as physical well-being, the current information obtained from the science of Nutrition is not sufficient for achieving “whole health.” A complete view of Nutrition must connect soul, mind, community, and environment with the body. A new understanding of food is needed, with an appreciation of food’s multidimensional healing secrets of mindfulness, feeling, socializing, connection, etc.

#### A. The declaration of real food

A by-product of the Industrial Revolution is its unfortunate contribution to the current view of nutrition through the development of technology to refine and process food. Two benefits of food are lost through these operations: 1) physical matter such as vitamins, minerals, and phytochemicals and 2) the intangible connection to and appreciation for food. For example, brown rice is broken down into white rice, germ, and bran through polishing. The consumption of white rice which has been stripped of essential nutrients has become popular for the masses instead of brown rice. Fresh vegetables and fruits are over-cooked, over-salted, and canned or bottled using artificial preservatives. Moreover, synthetic soft drinks are consumed widely, and genetically modified foods have become universally popular. Although the manufacturers attempt to enrich white rice and many processed foods by reincorporating the nutrients lost in processing, these foods are not the same as the original. Refining and processing operations also distort a human being’s relationship to food: the consumer no longer feels a connection or appreciation for the people who produce food. Thus, it is difficult to attain spiritual, emotional, and social well-being by consuming these refined or

processed foods.

Kesten (2001) was concerned about this situation and declared that food needs to be fresh, natural, whole, nourishing, and healthful, with its original integrity intact. This is in direct contradiction to the present concept of food. Most of us accept food that has had its initial components destroyed and thus is not fresh, whole, or natural. Society does not fully comprehend the effects of consuming these processed foods. The nutrients provided through food act to maintain the bodily functions, but the body cannot function completely with nutrients alone, without recognizing its interconnected-ness with mind, soul, community, and environment.

#### B. The four facets of food

Kesten (2001) proposed a broad view of food which included four facets of food usage for physical well-being, spiritual well-being, emotional well-being, and social well-being. From the current perspective of Nutrition, food affects physical well-being. In this view, food satisfies hunger and provides energy and nutrients. Thus, the value of food is evaluated only by its nutrient content, as enriched or fortified. The aim of nutrition is to maintain bodily function and to treat, prevent, or reverse food-borne diseases. This is the facet of physical well-being.

The second facet concerns spiritual well-being. The main concept here is the spiritual connection with food, through an awareness of the interrelationship of all beings in the world: air, sun, soil, water, plants, animals, and humans. If food is eaten with an awareness of this connection it becomes a path to spiritual happiness. This spiritual aspect of nutrition is concerned with various characteristics of consciousness, such as mindfulness, loving, regard, and appreciation.

The third facet concerns emotional well-being. This links emotions to food-related behaviors, such as cravings or fear of certain foods which can lead to problems like anorexia or bulimia. Psychological nutritionists conduct research about the effects of certain foods on emotions via the release of

hormones, and the influence of certain emotions and moods on food choices. The goal here is to use food to achieve a desired emotional outcome.

The last facet concerns social well-being. This addresses the influence of food when consumed in a socially supportive environment. There are different benefits according to the situation: whether an individual eats alone or with others, whether sitting at a well-set table or on a couch watching TV, and whether the atmosphere of the room is positive or negative. Sharing food with family members, friends, colleagues, or congenial neighbors is very important to our social well-being. Thus, social nutrition introduces other-oriented consciousness. Kesten (2001) has helped to broaden the field of Nutrition by proposing these four facets of food.

These new nutritional truths need to be understood, because physical well-being is merely one part of “whole health,” and cannot be accomplished by caring for body alone. Yet, nutritional knowledge is solely concerned with the ingredients in foods, the functions of nutrients in the body, food-related health problems, what is needed to prevent and treat them, and so forth. Similar to the situation in America, almost half of the Korean population dies of diet-related diseases—heart disease, diabetes, hypertension, stroke, and cancer (KNSO 2006). These diet-related deaths occur despite the accumulation of a vast amount of nutritional knowledge. The number of people struggling with diet-related health problems has considerably increased; one example is obesity (KMHWEA 2006). Many Koreans are now watching their weight and counting calories and how much fat they consume. This is a very strong indicator that our current knowledge about nutrition is incomplete. Food is not merely about nutrients and numbers. A more complete understanding is necessary; requiring an understanding that enables “complete” nourishment of the physical, emotional and intellectual aspects of a human being. Thus, new nutrition truths must be integrative and comprehensive and deal with non-physical food-related needs, such as the pleasure of eating, food-linked feelings, and the enjoyment of social dining. In other words, nutritionists must develop optimal eating programs to cultivate body, mind, and soul.

### C. The six healing secrets of food

Kesten (2001) realized that, because our knowledge of food is predominantly ‘body’ related, society’s food-related problems are worsening and compounding. She exhorts us to recognize our physical or emotional isolation from each other, from nature, and even within ourselves which is negatively influenced by our eating habits. In a hurry-worry society, meals are no longer enjoyed at the table, in a quiet setting with supportive family, or with food that is truly nourishing. Instead, eating is done quickly and mindlessly while driving to work, standing at the kitchen counter or watching TV. We are only concerned with flavors to satisfy our taste buds, calorie content and fat grams for dieting; or nutraceuticals to prevent chronic diseases. Most nutritionists, food writers, health professionals, and even religious leaders, approach nutrition and health in this fashion. By only focusing on externals, the soul, mind, community, earth, and universe are neglected and no attention is paid to the healing secrets of food. Yet it is clearly evident that the body may contract problems such as indigestion, stroke, or a heart attack if there is any emotional shock, spiritual trouble, or conflict among family members. It is well known that meditation has health benefits (Woo 2003; Lee 2002a). Traditionally, only Eastern spiritual practitioners such as Buddhists used this powerful healing technique for spiritual pursuits. However, today, the idea of meditation to attain health benefits has become main stream even in Western countries.

Kesten (2001) presents six healing secrets which reveal that food constitutes a six-part gift analogous to dice: socializing, feelings, mindfulness, appreciation, connection, and optimal food. If we accord the “nutritional dice” its merit we shall be rewarded with the healing secrets of food.

These six secrets are:

1. The healing secrets of socializing: by uniting with others through food.
2. The healing secrets of feelings: by being aware of feelings before, during, and after eating.

3. The healing secrets of mindfulness: by bringing moment-to-moment, nonjudgmental awareness to each aspect of our meals.

4. The healing secrets of appreciation: by appreciating food and its origins from the heart.

5. The healing secrets of connection: by creating a union with Mother Nature by flavoring food with love.

6. The healing secrets of optimal foods: by eating fresh, whole foods in their natural state as often as possible.

This wise, multifaceted, open, and broad culinary world needs to be given much greater emphasis so that today's limited view of food can be expanded.

#### D. Ways to create a conscious connection

Kesten (2001) proposes several ways to create a conscious connection. Through these methods, the healing secrets can be incorporated into one, complete, and optimal meal-meditation. Moreover, she emphasizes that it is easy to create a union with the Divine<sup>2</sup> by tasting food with love.

Ways to create a conscious connection:

1. Pursue peacefulness: It is important to release all negative emotions and thoughts when dealing with food in order to embark on a conscious-connection journey. For instance, when shopping for food or preparing meals, do so in a calm, peaceful, and pleasant frame of mind. Simply put, when dealing with food we should relinquish all emotional busyness in our mind and replace it with loving regard for our food. By doing so, a deep appreciation of all things in Mother Nature can be attained.

2. Connect with the mystery of life: Before eating, it is important to acknowledge the interrelationships and connections of all living entities that have had contact with the food: soil, water, and food intermediaries. Soil produces plants that nourish human beings and animals; water is a key component of all edible foods as well as human beings; and food

---

<sup>2</sup> The Divine: God.

intermediaries such as farmers, truckers, grocers, chefs, friends, and family expend energy in gathering and preparing the food. As this interconnection is experienced it creates a conscious connection with all things in Mother Nature.

3. Imagine each food in its original form: Picture the golden rice shafts blowing in the breeze whenever facing a bowl of cooked rice; whenever tasting grilled potato we can imagine the scent of the tubers as they are pulled from the earth; and taking a bite from a fresh apple why not visualize the sun shining on the apple trees? To visualize each food in its initial incarnation is important to create a conscious connection with Mother Nature.

### **III. Buddha's concept of food**

The new view of Nutrition which Kesten calls "Integrative Nutrition," has already been acknowledged by Buddhism for thousands of years. Actually, the philosophy of "Integrative Nutrition" and "whole health" is at the core of the food-related wisdom as understood by other major religions and cultural traditions as well. The Buddhist tradition emphasizes food and offers guidelines for its cultivation and use.

Buddhism teaches that our true ability to see nature is distorted by ignorance, which is caused by the cycle of death and rebirth. All suffering stems from this cycle. So, *Ahimsa*,<sup>3</sup> the compassionate treatment of animals is essential to ending all suffering and ignorance. A compassionate treatment of animals leads naturally to the Buddhist vegetarian diet.

Buddhism focuses on the inherent integrity of foods and emphasizes ageless, invisible, and meaningful nourishment for spiritual, emotional, and social happiness. These concepts encompass the insights of Buddhist nutrition. The desired outcome of this wisdom is to perceive food as "equal" to ourselves in that it contains the mystery of human life, and to also appreciate the "oneness" that is inborn in food. The ancient Buddhists must have made each moment of eating a meaningful experience and made time to create a

---

<sup>3</sup> *Ahimsa*: The compassionate, non-violent treatment of animals and all sentient beings.

conscious connection to the mystery of life inherent in both food and existence.

There are other restrictions involving food that vary between Buddhist sects, such as proper times and amounts of food that can be eaten and the forbiddance of raw foods. However, adherence to the rule of eating food that does not violate the First Precept among the Five Moral Precepts,<sup>4</sup> no killing, is the most important and universal. Thus, in Buddhism, adhering to a completely vegetarian diet is a natural and logical consequence of the Moral Precept against the taking of life. That is why Buddhism, in general, fundamentally prohibits eating any and all animal meat or intoxicants at all times. The Bodhisattva Precepts<sup>5</sup> also explicitly forbid the eating of non-vegetarian foods and also the eating of garlic, onions, and other related plants.

The Buddha's teachings and Buddhist traditions provide important guidelines about food for all of us: these guidelines may be adopted literally as well as metaphorically for today's more secular and science-centered world. Following these guidelines can initiate an understanding of optimal foods and how these foods affect emotions, mindfulness, appreciation, and connection between all beings in nature and society. The Buddha and our ancient ancestors must have instinctively understood the significance of putting meaning into meals. Eating must have been a celebration of life. The Five Moral Precepts serve as basic guidelines for how to live with and think about food. Furthermore, the Five Contemplations<sup>6</sup> offer a means for reflecting on our food during consumption. These nutritional truths are infused with sense, love, care, regard, connection, community, spirituality, and eventually entire well-being. Although it is an old wisdom, it is very similar to "Integrative Nutrition" proposed by Kesten (2001) in the twenty-first century.

The impermanence of food is a reflection on all life. Food provides a connection with the life energy inherent in the universe. Broader meditative

---

4 The Five Moral Precepts: No killing, stealing, sexual misconduct, lying, partaking of intoxicants.

5 The Bodhisattva precepts: Two hundred and fifty commandments for Buddhist monks.

6 The Five Contemplations: Five contemplations of the chant sung while eating to assist one in thinking about food.

awareness of food enables the experience of its powerful effects; indeed, when consciously cultivated, this awareness becomes a vehicle for connection to both “Mother Nature,” and our entire well-being. The relationship to food is balanced and complete only when the connection of mind, body, soul, nature, and community is achieved. Ultimately, balancing and completing the relationship to food by looking at more than food’s calorific and nutrient value will enhance physical, emotional, spiritual, and social well-being. Earthly awareness will then be transformed into spiritual perfection.

In Buddhism, the essence of life is described as “*Dharma*”<sup>7</sup> which is the teaching of Buddha, universal truth, and the balanced way of nature. At the very moment of eating we can experience a merging with ultimate reality. Thus, it could be said that “*Dharma*” is eating and eating is “*Dharma*.” This reflective feeling of “*oneness*” is common, because the sense of “*oneness*” can occur anytime and anywhere if the experience of eating is fully embraced. It is much like the sense of union that we experience when very beautiful music touches the soul. When music is mindfully appreciated from the heart, this sense of union is felt.

Buddhists, Yogis and Hindus all believe that each meal is an opportunity to access “the Ancient One.”<sup>8</sup> They see the world as a hierarchy, like a ladder of interpenetrating substances, and the ingested foods become a potent medium for transmitting these substances. Viewed from this spiritual perspective, eating is transformed into a blessed act that connects one’s soul to “the Ancient One.” Buddhists, Yogis, and Hindus alike share an insightful admiration for the interaction between food and a vast web of invisible interconnected threads, “*Indra’s Net*.”

#### A. Buddhist perspective on vegetarianism

The paper entitled, “A Buddhist Perspective on Vegetarianism” written by Shywan (1995), offers a perspective on Buddhist vegetarianism. Shywan

---

<sup>7</sup> *Dharma*: The truth taught by Buddha.

<sup>8</sup> The Ancient One: Divine, God.

explained three reasons for being a vegetarian:

1. Practicing mercy: Having a merciful and compassionate heart may manifest in all aspects of one's life, but the simplest and most direct way is by following a vegetarian diet. A merciful person cannot bear to eat the flesh of living creatures. Preventing the suffering of living creatures by not consuming their flesh in order to satisfy taste buds is the minimal expression of sympathy that can be offered. The choice of not killing comes out of kindness and the choice of not eating living creatures comes out of compassion.

As described earlier, the sympathetic treatment of animals in Buddhism was an expression of the First Moral Precept, no killing, and resulted in a vegetarian diet that fundamentally prohibits consumption of any and all animal meat. It is at the heart of the Buddhist diet. There is no hierarchy of sentient beings in Buddhism; all are equally important although each abides on a different level. The Buddha taught that to keep the First Moral Precept is essential to end of all suffering and ignorance; thus, adhering completely to a vegetarian diet is a natural and logical consequence.

2. Believing in Cause and Consequence: The basic concept of Cause and Consequence is simple. Good is rewarded with good, evil is rewarded with evil, and the rewarding of good and evil is only a matter of time. Viewed from this concept, every piece of flesh eaten and every creature's life taken incurs a future cost. It is difficult to try to prove the existence of this concept of Cause and Consequence, and it may even sound a bit far-fetched. However, in terms of this life, the negative consequences of eating meat include atherosclerosis, heart disease, high blood pressure, encephalitis, stroke, gallstones, cirrhosis, and some cancers. A link has been established in all these diseases between saturated fatty acids and cholesterol which are primarily of animal-origin. The consequences of eating meat are, in fact, immediate and clearly observable in terms of physical health.

Moreover, in Buddhism, since all sentient beings are considered to be components of one original whole organism, each one of us should care for all the others. If one kills another he is actually killing a part of himself. All

beings affect and are affected by collective *Karma*.<sup>9</sup> *Karma* works somewhat like a bank account. Beings that have caused bad *Karma* are reborn as lesser beings such as animals or demons; those who follow the Five Moral Percepts and extend good *Karma* will be reborn as higher beings, such as gods or humans. Since human beings are in the best position to make choices to gain good *Karma* for further enlightenment, this is the most desired level.

3. Purifying body and mind: This concept is more difficult to support with a logical explanation. However, it is well known that meat produces nitrogen (N)-containing waste products, such as ammonia, urea, and uric acid, after being digested and metabolized in the body. These are harmful to our body. Beside N-containing waste products, silicic acid, found mainly in red meat and milk and absorbed from these foods, seems to build up, helping to create tumors (Rutishauser 2008; Miyagi et al. 2008). This compound is found on the surface of animal cells but is not found in human cells.

Furthermore, animals are not always healthy themselves; thus, if we eat the flesh of unhealthy animals, disease-carrying microorganisms and toxins can also be ingested. Even prions, which cause mad-cow disease in cows and Creutzfeldt Jacob Disease in humans, are found in animals that have been fed Meat and Bone Meal. One problem with vegetable foods today is contamination by pesticides; but even so, they are still much cleaner than meat. An additional benefit of vegetarianism is a calm mind that results in not having to worry about the conditions under which an animal has died to provide meat.

That is why whenever a Buddhist sees a person getting ready to kill an animal he devises a skillful method to rescue and protect it, freeing it from its suffering and difficulties. All sentient beings desire life and fear death. All animals attempt to escape when being killed, for example, a fish thrown on dry land; the mind struggles to get free from the power of death. Only a *Dharma* gathering can liberate living beings.

In Buddhist thought, each food has various levels of energy associated with it. For example, vegetarian foods have lighter energy, while animal foods

---

<sup>9</sup> *Karma*: One's deed as a determinant factor in one's future life.

possess heavier energy. Foods of heavier energy such as meat are considered to carry heavier *Karma*. This heavier energy spreads all over the body and influences it in a negative way (Lee 2002b).

### B. What did the Buddha say about food?

There are many statements about food in the Buddhist sutras; a key section of the *Shurangama Sutra* states: When a believer asked the Buddha if, when a bowl of rice is eaten, the life of all the grains of rice is taken, whereas by eating meat only one animal's life is taken, the Master replied as follows:

On the body of one single animal are, in fact, one hundred thousand million tiny organisms. These organisms are the fragments of what was once an animal. The soul of a human being at death may split up to become many animals. The soul of an animal can split up and become, in its smallest division, many organisms or plants. The feelings which plants have, then, are what separated from the animal's soul when it split up at death. Although the life force of a large number of plants may appear sizeable, it is not as great as that of a single animal or a single mouthful of meat. For example, tens of billions of grains of rice do not contain as much life force as a single piece of meat. If you open your Five Eyes<sup>10</sup> you can know this at a glance. If you have not opened your eyes, no matter how clearly one tries to explain it to you, you will not be able to understand it. No matter how it is explained, you will not believe it. Another example is the mosquitoes. The millions of mosquitoes may be simply the soul of one person who has been transformed into all those bugs. It is not the case that a single human soul turns into a single mosquito. One person can turn into countless numbers of mosquitoes. At death, the nature changes, the soul scatters, and its smallest fragments become plants. Thus, there is a difference between eating plants and eating animals. What is more, plants have a very short lifespan. The grass, for example, is born in the spring and dies within months. Animals live a long time. If you do not kill them, they will live for many years. Rice, regardless of conditions, will only live a short time. And so, if you really look

---

<sup>10</sup> Five Eyes: Five kinds of eyes with regard to how deeply we can see the principles of nature, which are human, Divine, wisdom, *dharma*, and Buddha eyes.

into it, there are many factors to consider, which even science has not considered correctly (*Shurangama Sutra*, BRF 64).

Similarly, when the Buddha was questioned by Mahakashyapa<sup>11</sup> about why the Thus Come One<sup>12</sup> forbade the eating of meat, he replied that meat-eating cuts off the seeds of great compassion.

### C. Results of failure to follow the first moral precept

The Buddhist term “*Ahimsa*” refers to the compassionate, non-violent treatment of animals and all sentient beings. It ensures a better life and better health. On the other hand, as described earlier, if one eats the flesh of living creatures, they shall destroy great sympathy as well as the seed of Buddha-hood within. That is, if animal foods are not eaten, the seeds of compassion and a sympathetic heart will be cultivated (Gunasekara 2003).

Eating meat starts a cycle of mutual consuming and killing, between those that are eating and those whose flesh is taken. The Buddha stated that after their retribution ends, the people who eat meat are bound to sink into the bitter sea of birth and death in a repetitive cycle. How can such people transcend the triple realm?<sup>13</sup>

Even requesting meat is like taking the life of a living being. A butcher is the worst however; even the deliberate purchase of animals for consumption represents a part of the killing process. Creating a demand for meat is the same as killing sentient beings. Eating meat causes two kinds of suffering: immediate suffering for the animal that is being slaughtered and continuing suffering caused by the cycle of death and rebirth. When a sentient being dies before attaining enlightenment, it is forced to begin again the painful process of rebirth. Since it is possible for animals to become enlightened, killing them deprives them of that chance. The killing act decreases greatly one’s chances

---

11 Mahakashyapa: One of the principal disciples of Sakyamuni Buddha and the first Buddhist patriarch after Buddha.

12 The Thus Come One: The name of historical Buddha Goutama used when referring to himself.

13 The triple realm: Three realms of desire (our world), form (realms of the lesser deities) and formlessness (realms of the higher deities).

of being born a human again by accumulating bad *Karma*. The only way to end this cycle is to reach full enlightenment.

#### D. The five contemplations while eating

The Five Contemplations while eating, according to the Buddha's instructions, is a guideline that compels Buddhists to think about the food they are eating. It is the first step in questioning what food is, why it is eaten, where it comes from, when should it be eaten, and how should it be eaten.

1. We should consider what food is. Consider food as an "equal" to ourselves in that it contains the mystery of human life, and appreciate that the "oneness" inborn of eating is a meaningful experience, a time to create a conscious connection to the mystery of life inherent in both food and ourselves. Food is profoundly connected with all other beings in *Indra's Net*. Thus, each moment we are interdependent and interconnected with spirit, emotion, community, and even the planet, rather than being an independent or isolated entity.

2. We should reflect on why we eat. Understand that the food provided is a necessity and a healing agent for the body, mind and soul. Thus, food is only received and eaten for the purpose of "realizing the Way,"<sup>14</sup> that is, another means to reach enlightenment (Prebsih 2002).

3. We should consider where food comes from. Imagine the place where the food originated and the amount of work that was necessary to grow, transport, prepare and cook it, and then bring it to the table. Thus, we should reflect upon whether we deserve the food or not.

4. We should reflect on when we are eating. Since food is only to be received in order to practice the "Way" as a remedy to support the body, we have to sense how hungry we are in terms of the soul as well as the body. Buddhists who are alert to this contemplation eat meals only in the morning.

5. We should then think about how food is eaten. The benefits that food brings are different according to the dining situation; eating alone or with

---

14 The Way: The path for enlightenment.

others, sitting at a well-set table or on a couch watching TV. Sharing food at a table with supportive family members, friends, colleagues, or neighbors is very important to our social well-being. Dining in a socially positive environment would yield greatest benefits. Food should be eaten with consciousness of connection, regard, mindfulness, and appreciation so that it becomes a path to spiritual happiness.

This path reveals what it means to eat optimally and to be awakened to the power of food to nurture our spiritual, emotional, social and physical well-being. If the Five Contemplations are considered whenever food is eaten, “whole health” can be achieved.

Thus, before every meal, Buddhists chant the Five Contemplations:

“Where does the food come from?  
It is shameful to accept it with low virtue.  
After discarding all greed,  
And considering it as a remedy to support the body,  
I accept the food to achieve the Way.”

#### **IV. Nutritional aspects of vegetarianism**

In general, it is widely accepted that a well-planned vegetarian diet is nutritionally sound and beneficial for the prevention and treatment of chronic diseases. The term “preventative diet” has been used recently to emphasize the possibility of avoiding food-related diseases. There are two major reasons that people adopt a vegetarian diet similar to the Buddhist view; the first is concern for animals and the second is to promote health. Although Kesten (2001) does not recommend a strict vegetarian diet, she does state that food should be fresh, natural, whole, nourishing, and healthful, with its original integrity intact. She also focuses on the four facets of food: physical, spiritual, emotional, and social well-being. It is not easy to attain these advantages by eating the flesh of animals.

The organization of Web Dietitians has stated that a meat-free diet is

now mainstream (Webdietitians 2003). However, it is still concerned about vitamin B-12, some mineral including iron (Fe), zinc (Zn), and calcium (Ca), and protein. In this section we will first discuss the nutritional concerns covering the weak points of a vegetarian diet, and then consider the strong points of nutritional benefit.

#### A. Nutritional concerns: Weak point

Regarding protein, it is not necessary to eat animal food in order to get enough protein. Plant protein alone can provide enough of both the essential and non-essential amino acids, as long as the sources of dietary protein are varied, and caloric intake is high enough to meet energy needs. Whole grains, legumes, seeds, nuts, and vegetables all contain both essential and non-essential amino acids. It is well known that the bioavailability of soy protein is almost equal to that of animal protein (Americancancer 2003). The Mayo Clinic Staff has stated that legumes are a healthy substitute for meat, which has more saturated fat and cholesterol than legumes (Mayoclinic 2003). Legumes belong to a class of vegetables that includes beans, peas, and lentils. Seed sprouts, such as alfalfa sprouts and soybean sprouts, also are considered legumes.

Regarding minerals, there are various rich sources of minerals, such as copper (Cu), manganese (Mn), and iron (Fe), among plant-based foods. However, the bioavailability of dietary minerals from plants may be limited, as a result of high phytic acid and possibly other inhibitors in some plant foods. Also, the form of Fe, non-heme Fe, found in plant foods is less available than in animal foods. However, dried beans, peas, spinach, brewer's yeast, nuts, seeds, and dried fruits such as raisins, apricots, and peaches are all rich plant sources of Fe, although the richest sources of this mineral are red meat, liver, and egg yolk. Hunt (2003) concluded that as long as one consumes a wide range of foods, it is not clear that this reduced bioavailability has any functional consequences. He also pointed out that vegetarians do not have higher incidences of Fe-deficiency anemia, although they tend to have lower Fe stores than omnivores. Zn is mainly contained in oysters, clams, shrimp,

and meat. However, grains, nuts, and legumes are also excellent sources of Zn. Hunt mentioned that since there are no reliable and sensitive criteria to identify marginal zinc status, it is not possible to evaluate the influence of vegetarian diets on Zn status. Rich sources of Ca are milk, cheese, yogurt, and other dairy products. However, dark green vegetables, such as spinach, kale, turnip, broccoli, as well as some legumes and soybean products are also good sources of Zn and are plant-based. Moreover, fruits and vegetables may reduce urinary Ca loss (Sebastian et al. 1994), and a low ratio of animal to vegetable protein decreases the rate of bone loss (Sellmeyer et al. 2001). Furthermore, the question of minerals is no longer an issue, as it is possible to consume Fe, Ca, and/or Zn fortified products such as morning cereals, orange juice, and soymilk. With regard to vitamin B-12, this comes naturally only from animal sources. Fortunately, it can be found in some fortified breakfast cereals and soy beverages, and some brands of brewer's yeast, as well as in vitamin supplements.

#### B. Nutritional benefits: Strong points

Today, science has a better understanding of a plant-based diet because numerous studies have shown that a plant-based diet can yield various metabolic benefits, such as lower plasma cholesterol levels, decreased incidence of heart disease, lower blood pressure, improved glycemic control, lower risk of many cancers, decreased body weight, and even stronger bones (Jenkins et al. 2003). It is widely recognized that overall morbidity and mortality are lower in vegetarians compared with omnivores (ADA 1997). These benefits result from a diet which is high in unsaturated fat, dietary fiber, and phytochemicals, and low in saturated fat with no cholesterol from plant foods.

Davis and Kris-Etherton (2003) reported that a vegetarian diet is slightly lower in total fat than an omnivorous diet. However, the former has about one-third less saturated fat and about one-half as much cholesterol as the latter. This notable difference is one of the major reasons for its benefits stemming from a vegetarian diet. Moreover, since cholesterol originates from

animal-based foods, there is no cholesterol in a plant-based diet.

Dietary fiber is another potentially useful component of a vegetarian diet. Early studies on viscous fibers focused on cholesterol reduction (Palmer and Dixon 1966; Jenkins et al. 1975). However, it soon became apparent that this viscosity is also related to flattening the postprandial glycemia (Meyer et al. 2000).

Among the positive components of plant foods, phytochemicals are receiving increased attention because of their powerful and wide-ranging health benefits. It is believed that these plant-derived components may promote health by protecting the cells in our body. In plants, these compounds function to attract and repel harmful organisms; they also serve as photoprotectants, and respond to environmental changes. In humans, they can have complementary and overlapping functions: antioxidant actions, modulation of detoxification enzymes, stimulation of the immune system, reduction of inflammation, modulation of steroid metabolism, and antibacterial and antiviral effects. The combination of these biologic processes most likely alters the risk and course of cancer: they also inhibit mutagenesis and epigenesis of DNA.

Ornish (1990; 1993) emphasized throughout his books, *Dr. Dean Ornish's Program for Reversing Heart Disease and Eat More, Weigh Less*, that heart disease can be reversed by using four approaches: a low-fat vegetarian diet, stress reduction, moderate exercise, and no smoking. Among these approaches, the most important is undoubtedly a low-fat vegetarian diet. He encouraged his patients to eat as much low-fat vegetarian food as they wanted and found that most lose their excess weight. In addition to accenting vegetarian foods, he emphasized stress reduction through finding inner peace and social connections, although the relationship to weight control or cardiovascular health is more difficult to prove scientifically.

## **V. Environmental aspects of vegetarianism**

With special consideration to the effects of nutrition on health, the environment, society, and the economy, Nutrition ecology involves all components of the food chain, including production, harvesting, preservation, storage, transport, processing, packaging, trade, distribution, preparation, and consumption of food, as well as disposal of waste materials. The introduction of mass animal production has contributed to various negative influences on the environment. To avoid damage to ecosystems and to attain nutritional security, additional aspects need to be incorporated. The necessity of adopting a more holistic view for sustainable development has been highlighted by the current crises in the nutrition system, as discussed at the World Food Summit (2002). The nutrition system influences the environment, which in turn determines the quality of our food. The result of most research (Clrison-Kanyama 1998; Fox 1999) was that a vegetarian diet is well suited to protecting the environment, reducing pollution, and minimizing global climate changes. Leitzmann (2003) insisted that to maximize the ecologic and health benefits of a vegetarian diet, food should be regionally produced, seasonally consumed, and organically grown. A vegetarian diet which adheres to these conditions is scientifically based, socially acceptable, economically feasible, culturally desirable, sufficiently practicable, and quite sustainable.

When the ecosystem damage caused by industrial animal production is examined, certain aspects need to be considered (Giehl 1981). First, land requirements for meat-protein production are almost 10 times greater than for plant-protein production, thus leading to deforestation; second, about 40% of the world's grain harvest is fed to animals, and third, animal fertilizer contributes to high levels of potentially carcinogenic nitrates in drinking water and plant foods. In addition, animal production requires considerable energy and water resources (Pimentel and Pimentel 1999; Pinstrup-Andersen and Pandya-Lorch 1998).

Several researchers have suggested that the solution to the problems caused by industrial animal production is a vegetarian lifestyle (Ranaram and

Sabaté 2000; Hahn 1997; Gussow 1994). The positive ecologic effects of vegetarianism may be further increased by avoiding processed foods and by selecting seasonally available and locally produced organic foods. In this way, support can be given to assist the continuation of family farming, securing employment, and security of the global food supply (Gussow and Clancy 1986). In addition to these ecological benefits, caging and slaughtering of animals can be avoided. Through these initiatives, the Buddha's concern for animal rights may be fulfilled. "Sustainability" means creating conditions that fulfill current global needs and which also support future generations to meet their needs. From a nutritional point of view, sustainability also deals with fair distribution of food through ecologic and preventive eating behavior. To achieve sustainability requires a complete reevaluation of our common values in order to obtain a new understanding concerning our quality of life. The issue of adequate quantity of food needs to be addressed at all social levels, with the goal of achieving nutritional security for all.

In agreement with the Buddha's teaching, Kapleau (1982) insisted that animals are needed as domestic companions to nurture and love, as well as wildlife to preserve the fragile balance of our ecosystem. Animals are also needed for another reason: as a link to past origins.

Leitzmann (2003) formulated the following seven principles to fulfill demands concerning ecologic, economic, social, and health aspects: food should 1) be predominantly derived from plants 2) originate from organic farming, 3) be produced regionally and seasonally, 4) be minimally processed, 5) ecologically packaged, 6) the food trade should be fair, and 7) food should be tastefully prepared. These principles are very similar to those proposed by Kesten in her concept of "Integrative Nutrition." A diet based on these principles has a scientific basis, is socially acceptable, economically feasible, culturally desirable, practicable, and has a high degree of sustainability.

Goodland and Pimentel (2000) proposed that encouraging individuals to eat more efficiently on the food chain, consuming less meat and more plant-based foods, may lead to increased sustainability and reduced environmental costs of food production systems.

Nutrition ecology is also a question of personal priorities. Interested and well-informed consumers can weigh the arguments and make the necessary decisions. The vision of a sustainable future depends upon individuals who feel responsible for both the environment and their health. One of the most effective ways to achieve the goals of nutrition ecology, including healthy and sustainable food choices, is a vegetarian lifestyle.

## **VI. Conclusion**

This article has drawn similarities between Kesten's new view of Nutrition and the Buddha's thoughts on food. The Buddha's insights about food ask us who are living in the twenty-first century, to revise our out-dated ideas about nutrition and health that food is fuel and the body is a machine which regulates the right mixture of nutrients to be healthy. This understanding was formulated only a century ago, yet it eclipsed all the ancient food-related wisdom by emphasizing only visible and calculable matters, and ignoring invisible dimensions such as emotional and spiritual health and wellbeing.

"Integrative Nutrition" has many correspondences with the teachings of Buddhism, which has served humankind for millennia. This practice approaches food and nutrition holistically; emphasizing not only the physical but also spiritual, emotional, and social dimensions. With this approach there is potential to maintain optimal health of body, emotions, sense of spiritual connection, and social link to one another, community, world, and planet as an interlinking whole

Fortunately, with societies changing, people in Western countries are turning away from meat and animal products, and redirecting their attention to a vegetarian diet. This trend is encouraging nutritionists to study the effects of a vegetarian diet. Kesten is a remarkable nutritionist who has overcome the limits of modern Nutrition by studying the ancient religious wisdoms of food and attempting to unite them with Nutritional science. However, her efforts are

just the beginning. More research is necessary concerning Buddhist concepts of food and how to unite them with Nutrition in order to create practical guidelines to nourish not only the body, but also the mind and soul. Eating properly can harmonize body, mind, and soul.

If Nutrition is studied from the viewpoint of Buddha-nature, the marvelous state of “whole health” can be obtained. This involves the integration of body, mind and soul; with a positive state of mind and soul full of goodness and holiness, the body also becomes healthier. However, with a negative state of mind and soul which is full of anger, ignorance, and wickedness, the body becomes sick.

## References

- American Dietetic Association (ADA) 1997 Position of the American Dietetic Association: Vegetarian Diets. *J Am Diet Assoc* 97:1317-21.
- Americanheart 2003 <http://www.americanheart.org/presenter.jhtml?identifier=4777>.
- Carlson-Kanyama, A. 1998 Climate Change and Dietary Choices—How Can Emissions of Greenhouse Gases from Food Consumption be Reduced? *Food Policy* 23:277–93.
- Chopra, D. 1993 *Ageless Body, Timeless Mind: The Quantum Alternative to Growing Old*. New York: Harmony Books.
- Davis B. C., and P. M. Kris-Etherton 2003 Achieving Optimal Essential Fatty Acid Status in Vegetarians: Current Knowledge and Practical Implications. *Am J Clin Nutr* 78:640S-46S.
- Fox, M. A. 1999 The Contribution of Vegetarianism to Ecosystem and Health. *Ecosys Health* 5:70–74.
- Giehl, D. 1981 *Vegetarianism*. New York: Harper and Row.

- Goodland, R.,  
and D. P.  
Pimentel  
2000  
Environmental Sustainability and Integrity in the  
Agriculture Sector. In *Ecological Integrity:  
Integrating Environment, Conservation, and Health*.  
ed. D. Pimentel, L. Westra, and F. N. Reed.  
Washington DC: Island Press.
- Gunasekara, D. V.  
2003  
*Buddhism and Vegetarianism: The Rationale for the  
Buddha's View on the Consumption of Meat*.  
<http://www.buddhismtoday.com/english/veg/012-budveg.html>.
- Gussow, J. D.  
1994  
Ecology and Vegetarian Considerations: Does  
Environmental Responsibility Demand the  
Elimination of Live Stock? *Am J Clin Nutr*  
59:1110S-16S.
- Gussow, J. D.,  
and K. L. Clancy  
Dietary Guidelines for Sustainability. *J Nutr Educ*  
18:1-5.
- Hahn, N. I.  
Growing a Healthy Food System. *J Am Diet Assoc*  
97:949-50.
- Hunt, J. R.  
Bioavailability of Iron, Zinc, and other Trace  
Minerals from Vegetarian Diets. *Am J Clin Nutr*  
78:633S-39S.
- Jenkins, D. J.,  
C. W. Kendall,  
A. Marchie,  
A. L. Jenkins,  
L. S. Augustin,  
D. S. Ludwig,  
N. D. Barnard,  
and J. W.  
Anderson  
2003  
Type 2 Diabetes and the Vegetarian Diet. *Am J  
Clin Nutr* 78 (3):610S-16S.
- Jenkins, D. J.,  
C. Newton,  
A. R. Leeds, and  
J. H. Cummings  
1975  
Effect of Pectin, Guar Gum, and Wheat Fibre on  
Serum-cholesterol. *Lancet* 1:1116-17.
- Kapleau, R. P.  
1982  
*A Buddhist Case for Vegetarianism*. London: Rider.
- Kesten, D.  
2001  
*The Healing Secrets of Food*. Novato: New World  
Library.

- Korea National Statistical Office (KNSO) 2006 *Annual Report on Cause of Death Statistics*. Seoul. <http://www.nso.go.kr/eng/publications/publications.html>.
- Korea Ministry for Health Welfare and Family Affairs (KMHWFA) 2006 *The Third Korea National Health and Nutrition Examination Survey (KHANES III) 2005*. Seoul. [http://library.mohw.go.kr/volcano/global/docs/s\\_detail.html?mastid=53427&p\\_hanja\\_display=0](http://library.mohw.go.kr/volcano/global/docs/s_detail.html?mastid=53427&p_hanja_display=0).
- Lee, S-D. 2002a The Scientific Basis for the Benefits of Meditation on Health. In *The Scientific Approach to Buddhist Study-Human Life Science (III)*. <http://www.forsang.org/021foodnhealth3/e.html>.
- 2002b Food Purification and Health. In *The Scientific Approach to Buddhist Study-Food and Health (III)*. <http://www.forsang.org/021foodnhealth3/e.html>.
- Leitzmamm, C. 2003 Nutrition Ecology: The Contribution of Vegetarian Diets. *Am J Clin Nutr* 78:657S-59S.
- Mayoclinic 2003 <http://www.mayoclinic.com/invoke.cfm?id=NU00260>.
- Meyer, K. A., L. H. Kushi, D. R. Jacobs, Jr., J. Slavin, T. A. Sellers, and A. R. Folsom 2000 Carbohydrate, Dietary Fiber, and Incidence of Type 2 Diabetes in Older Women. *Am J Clin Nutr* 71:921-30.
- Miyagi, T., T. Wada, and K. Yamaguchi et al. 2008 Human Sialidase as a Cancer Marker. *Proteomics* 8:3303-11.
- Ornish, D. 1990 *Dr. Dean Ornish's Program for Reversing Heart Disease and Eat More*. New York: Random House.
- 1993 *Eat More, Weight Less*. New York: Harper Collins.
- Palmer, G. H., and D. G. Dixon 1966 Effect of Pectin Dose on Serum Cholesterol Level. *Am J Clin Nutr* 18:437-42.

- 
- Pimentel, D., and  
M. Pimentel  
1999      Population Growth, Environmental Resources and  
Global Food. *J Sustain Forestr* 9:35-44.
- Pinstrup-Andersen,  
P., and  
R. Pandya-Lorch  
1998      Food Security and Sustainable use of Natural  
Resources: A 2020 Vision. *Ecol Econ* 26:1-10.
- Prebish, C. B.  
2002      *Buddhism A to Z*. Lanham: Scarecrow Press.
- Rajaram, S.,  
and J. Sabaté  
2000.      Health Benefits of a Vegetarian Diet. *Nutrition*  
16:531-33.
- Rutishauser, U.  
2008      Polysialic Acid in the Plasticity of the Developing  
and Adult Vertebrate Nervous System. *Nat Rev  
Neurosci* 9:26-35.
- Sebastian, A.,  
S. T. Harris,  
J. H. Ottaway,  
K. M. Todd,  
and R. C.  
Morris, Jr.  
1994      Improved Mineral Balance and Skeletal Metabolism  
in Postmenopausal Women Treated with Potassium  
Bicarbonate. *N Engl J Med* 330:1776-81.
- Sellmeyer D. E.,  
K. L. Stone,  
A. Sebastian,  
and S. R.  
Cummings  
2001      A High Ratio of Dietary Animal to Vegetable  
Protein Increases the Rate of Bone Loss and the  
Risk of Fracture in Postmenopausal Women. Study  
of Osteoporotic Fracture Research Group. *Am J Clin  
Nutr* 73:118-22.
- Shywan, L. C.  
1995      A Buddhist Perspective on Vegetarianism. In  
*Vegetarian Cooking-Chinese Style*.  
<http://www.ivu.org/religion/articles/buddhist.html>.
- Webdietitians  
2003      [http://www.webdietitians.org/Public/NutritionInformatio  
n/92\\_nfs95.cfm](http://www.webdietitians.org/Public/NutritionInformation/92_nfs95.cfm).
- WHO  
2002      World Food Summit.
- Woo, M.  
2003.      *World Beyond World*. Seoul: CHAM Publishing.

