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Mibyou Care is A Key for Healthy Life Elongation: The Role of Mibyou-Care Functional Foods

Tetsuya Konishi

Abstract

Mibyou was originally defined in the traditional Chinese Medicine as the certain physiological state being not perfectly well but not ill and was recognized that the treatment of Mibyou is more important than treating diagnosable diseases. As the life span of human is getting sufficiently elongated, the demand for the healthy life expenditure increased, and the Mibyou is recognized to be the target for securing the healthy aging and wellness in the longevity society. Consequently, the concept of Mibyou is currently reevaluated, especially, in the preventive medicine. However, as sub-healthy condition is alternatively used for the Mibyou, the Mibyou was rather obscure concept, and thus, a new concept and definition of Mibyou was proposed by the Japan Mibyou Association (e.g., Japanese Society of Mibyou System) in 2006. According to the definition, the Mibyou is the specific physiological and disease condition distinct from the terminal diseases, which needs hospitalization and medical treatments, and includes such conditions that the individuals are able to enjoy normal life activity and well-being even if the clinical inspections show some abnormality. This made clear the targets of Mibyou care practices including dietary approach. For the beneficial use of functional foods in the Mibyou care practices, it is worthy to categorize the currently distributed functional foods into newly defined Mibyou-Care functional foods.

Keywords: Mibyou, Mibyou care, Mibyou-care functional food, preventive and integrative medicine

1. Introduction

The life span of human is getting elongated especially in developed countries, although the maximum life span is expected no longer than 135 years [1]. Under this situation, the needs for elongation of healthy life span are social concern [2]. The healthy life span is the life period in that individuals can actively enjoy their life activities and wellness without hospitalization or with fewer assistance by others, even if they carry any manageable disorders. In the longevity society, the life style and age-related diseases such as diabetes, dementia, and cancer are disincentive for the healthy life span [3]. They are the complex diseases with multiple pathogenic factors and symptoms, and thus, the treating strategy of modern western medicine to remove specific pathogen is often useless. Therefore, the prevention and control of these disorders are recognized more important rather than the treatment of serious endpoint diseases lead by these disorders. The importance of preventive

medicine has been discussed in the traditional oriental medicines using the term Mibyou [4]. The Mibyou was defined as a certain pathogenic condition being not healthy but not ill, and the treatment of Mibyou was considered more important than treating the diagnosed diseases since Mibyou is an entrance for the serious endpoint diseases. Mibyou that is also often described as sub-healthy condition in the present day [5] is thus an important concept that should be renovated in the current preventive medicine as a target for attaining healthy life expenditure.

2. Mibyou, traditional, and current concepts

Mibyou concept was established in ancient China more than 2000 year ago. The term was first appeared in one of the oldest Chinese medicine literature called “*Huangdi Neijing*” as a physiological condition that is not ill but not healthy [4]. It is important to treat the Mibyou before it progresses to diagnose endpoint diseases. Although this idea is quite valuable in today’s preventive medicine, the Mibyou condition is hardly diagnosed by the routine clinical test to give specific disease name. The pathological definition of Mibyou was left obscure and has not been well accepted in the modern medicine, although the term Mibyou was reconfirmed and approved at the 7th Asian-Oceanian International Aging symposium in 2003. There are several efforts to identify the Mibyou condition, which are now progressed. For example, the group of Toyama University observed progressive change of gene expression in adipocyte for 3 months using genetically defined spontaneous metabolic syndrome model rat and found 147 genes showed characteristic change of expression pattern before metabolic syndromes developed [6].

On the other hand, recent development of clinical examination technologies such as biochemical assay-detecting disease markers in blood and also physical methods for imaging nidus such as MRI (magnetic resonance imaging), CT (computed tomography), and ultrasound echo allow us to detect diseases, even cancers at very early stage. In such stages of disorder, the patients can behave and enjoy the life activity as normal without hospitalization. The Japan Mibyou Association currently distinguished these early stages of diseases from the diseases that need medical care with hospitalization and defined them as modern Mibyou [7]. According to the newly proposed definition, there are two types of Mibyou, the western medicine Mibyou (Modern Mibyou) and the traditional oriental medicine Mibyou (Classical Mibyou), and the Modern Mibyou is further classified into two conditions, Mibyou I and Mibyou II as shown in **Figure 1**. The Mibyou I is such conditions that individuals feel uneasy or ill but clinical examinations including blood biochemical markers

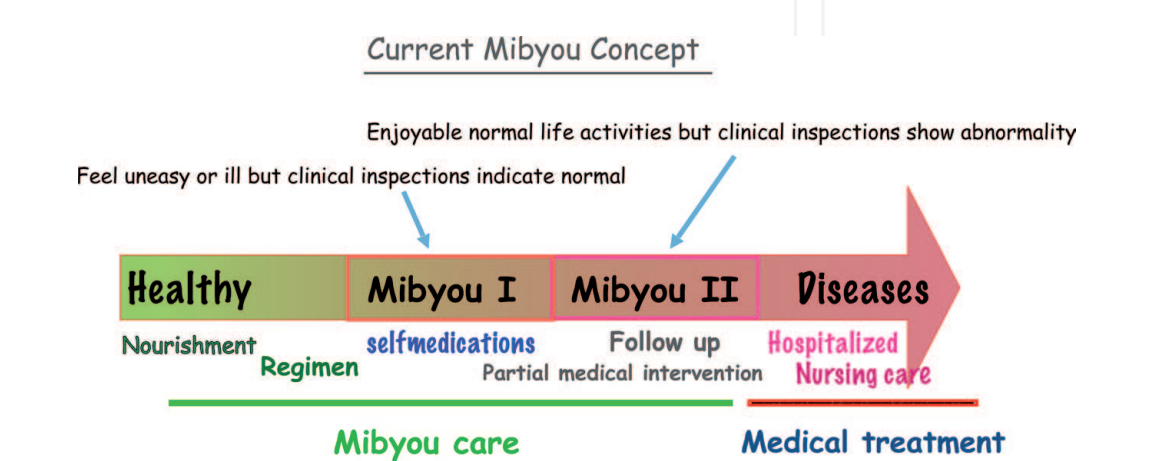


Figure 1.
Current Mibyou concept and Mibyou-Care for healthy life expenditure.

or imaging check do not show detectable abnormality. On the other hand, Mibyou II is defined as the condition where individuals do not feel abnormality or ill and can spend regular daily life by keeping wellness but clinical examinations show some abnormal level of disease markers or the presence of some abnormal images.

According to this new definition of Mibyou, the Mibyou I covers the condition related to classical Mibyou and several uneasy symptoms such as anxiety, sleep defect, physical pains, overweight, fatigue, and frail. The Mibyou II on the other hand covers many familiar disorders including obesity, hypertension, hyperglycemia, hyperlipidemia, diabetes, hyperuricemia, tiny stroke, latent cardiac failures, liver fat diseases, hepatitis virus B carrier, sarcopenia, and even early stage of cancers. By this categorization, such diseases as life style diseases and metabolic syndromes are covered by Mibyou II. This new definition of Mibyou provides more clear targets for Mibyou care practices.

3. Mibyou care practices

The health care targeting Mibyou (Mibyou-care practices) will be a reliable strategy to approach the healthy life span and to improve QOL (Quality of Life). The Mibyou I care, such as the daily behavioral habits carried out by normal healthy individuals for sustaining health, is especially important in the preventive medicine.

It is said that meal, physical excise, and brain activity (both mental and psychological) are the three factors sustaining health and wellness. Indeed, the Mibyou-care practices such as diet, exercises, acupuncture, Yoga, meditation, mental stimulation, and others are more or less related to or are targeting these factors.

The Mibyou II conditions are reflected in the disease markers such as blood sugar level, and thus are controllable by certain medical and nutritional intervention targeting these markers in collaboration with clinical stuffs. For example, diabetic condition could be managed by observing blood HBA1c level regularly as a diagnosed marker [8]. The Mibyou II-care practices for diseases prevention, amelioration, and stimulation of recovery include the actions such as remedy, nourishment, self-medication, and the medications assisted by co-medical stuffs such as physician, pharmacist, and nutritionist.

In these Mibyou care practices, the diet plays the most basic and essential part.

4. Food functions

Currently, the food functions are discussed by the following three categories. Those are 1: Nutritional, 2: Sensory, and 3: pharmacological functions [9]. The nutritional function is the basic property of foods functioning as the source of the building block for constructing body architecture (structures) and also the energy required for functioning the structure (activities). Foods usually accompany such sensory properties as taste, flavor, and color as well to stimulate appetite so that the nutrients are smoothly taken. The third category of food function is currently attracting extensive attention since a book of knowledge is getting accumulated that certain components existing in food ingredients often show pharmacological activity and they are called food factors [10]. The food factors are implicated as the very molecules taking part in the observed pharmacological functions of foods, especially of the foods traditionally used as folk medicine and the food for nourishing and astringent purpose [11].

Obviously, the nutritional and sensory roles of foods are playing essential roles in the Mibyou care, especially in Mibyou I care. On the other hand, the third role

of foods contributing to the medicinal functions of foods will take pivotal part in Mibyou II care.

The pharmacological function of foods is historically attracting much attention. “Foods are medicine” is well accepted in both oriental and western countries from ancient. One example is the oldest literature of herbs called “*Shennong bencaojing*” in China, in that 365 natural resources including botanicals, minerals, and animals were collected and classified into three categories according to their nutritional and pharmacological health benefits [12]. The listed first group is edible as food and suggested to eat routinely in the daily meals because of having potentials not only of nourishing and tonic functions but also elongating life span. The second group is not recommended to eat every day because of having a weak pharmacological activity, but is useful to ameliorate certain physiologically distorted conditions. The third group is toxic and is unable to eat, but often used as medicine to treat specific diseases.

These classifications of natural resources are interesting as reflected on the current category of the so called functional foods. The first group is the same as the dietary or nutritional supplements and the second group is overlapped to the so-called functional foods such as HOSHU, nutraceuticals, and pharmafoods. The third group is the medicine, and the resources in this group have been the target for developing clinical medicines or their prototypes [13].

From the view of the Mibyou care, the botanicals listed in the first and second categories of *Shennong bencaojing* are especially interesting, because they will be useful in functional application such as in the form of supplement and functional food.

5. Functional foods

The functional food is denoted as the food with certain health beneficial function given by the pharmacologically active ingredient named “food factor.” The food factors are essentially not nutrient as exemplified by polyphenols and dietary fibers, [14] but some nutrient molecules show pharmacological functions and are thus food factors [15]. For example, vitamin D [16] and omega-3 fatty acids [17] that are nutrients required as structural component of bone and cellular membranes, respectively, have other physiological functions such as immune modulation [18].

There are many types of functional foods currently in the market, which target certain abnormal physiology and disorder such as hyperglycemia, obesity, and even dementia and immune, and the forms are also variable such as fresh fruit and vegetables, processed foods, and even tablet and capsule.

In Japan, FOSHU (foods for specialized health uses) was legally approved that can claim certain health benefit such that the product is recommended to the individuals who have the signs of hyperglycemia and want to manipulate the blood sugar level [19]. FOSHU provided one model of the government regulation for developing functional foods, but there are many types of functional foods that are globally in the market such as the dietary supplements established in US, and other commonly named functional foods such as pharmafoods, nutraceuticals, and fortified foods [20].

Those functional foods distributed in the current society are contributing certain extent to the human health; however, due to the complexity such as found in above-mentioned naming and also in the usage, the social benefits of functional foods are not fully satisfied or often mislead. There are also some discussions left whether the medicinal functions of foods are simply explained by the ligand-receptor theory applied for drug action [21]. It is worthy to renovate the classification of functional foods from the view of Mibyou care.

6. Mibyou-care functional food

Whatever the types or appearances of functional food products, the functional foods can be classified into following four groups according to the objectives of usage. (1) The first group is used for sustaining health and preventing diseases; thus, individuals who are not ill and healthy will intake. (2) The second is used by the individuals who feel ill or uneasiness but clinical test does not show significant change or abnormality in disease markers (Mibyou I). (3) The third group is used by the individuals who shows certain abnormal level in disease markers or physical inspections such as CT but can spend normal daily life (Mibyou II). (4) The fourth group is used by the hospitalized patients to ameliorate or to help recovery of diseases under medication, or to assist the therapy as an adjuvant such as in cancer therapy, and thus used in the integrate medicine. Except this 4th group, all other functional foods are able to define as the Mibyou-Care functional food.

These Mibyou-Care functional foods are basically grouped into two types as shown in **Figure 2**. One is the Mibyou-Care functional food-1 that is used mainly for sustaining health and preventing diseases. Therefore, the foods in the groups 1 and 2 of above classification of usage are included. Another group of functional foods denoted as Mibyou-Care functional food-2 is used for keeping well-being, and amelioration and recovery of the Mibyou condition assessed by diseases markers. Therefore, the Mibyou-Care functional foods-2 essentially have certain pharmacological function, which can manipulate the Mibyou condition evaluated by the changes of respective diseases marker.

6.1 Targets of Mibyou-Care functional food-1

Oxidative stress and inflammation are the commonly encountered cell-damaging factors during normal life activity. It is known that the system or the respective component devices working in the metabolism as life process are damaged even under normal condition by the oxidative stress [22] and the associated inflammation [23]. It is implicated that the accumulation of such damages is the major cause of aging [24]. Therefore, the protection against these abuses is exclusively important to maintain the health and also prevent the diseases.

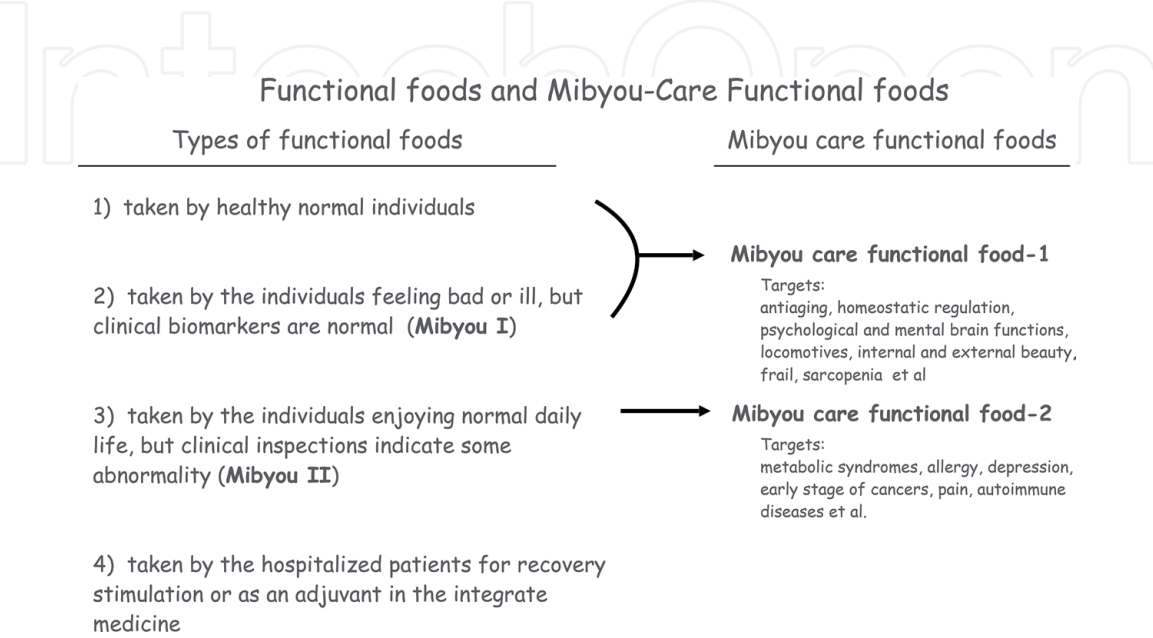


Figure 2.
Targets of functional foods and Mibyou-Care functional foods

On the other hand, healthy condition is often described by the potential to maintain the homeostatic balance that is reflected in the ability how extent the system can tolerate against the stimuli that distort the dynamic equilibrium of metabolism. The Mibyou was often described as the condition that the homeostatic potential is decreased or is hardly sustainable. It is known that neural, endocrine, and immune functions are the physiological factors controlling the homeostasis, and nutritions are exclusively necessary to support these systems to function [25], both the major nutrients (protein, lipid, and sugar) that are essentially needed for the maintenance of the system and also micronutrients that are the catalyst for driving the system. Therefore, it is evident that appropriate daily meals are essential to supply these necessary nutrients. Moreover, it became apparent that certain non-nutrient-edible molecules including food factors and also natural products as xenobiotics are playing a pivotal role in manipulating homeostatic factors, especially immune system [26, 27].

Natural products, especially botanical ingredients, are the treasure source of antioxidant and anti-inflammatory functions [28, 29] and thus used as attractive resources to develop the Mibyou-Care functional food-1. Currently, the vegetables and fruits with enriched health beneficial ingredients are in the market; therefore, there are many types and appearances of functional foods are possible from such fortified fresh vegetables and fruits, processed foods, restaurant menus, take-out menus such as Bento (take-out pack), and even tablet or capsule. The Mibyou-Care functional food-1 will cover the target area related to anti-aging, homeostatic regulation, *Qi* modulation, locomotive functions, internal and external beauty, mental and psychological brain activities including stress tolerance, and some area of age-related symptoms such as frail and sarcopenia.

6.2 Targets of Mibyou-Care functional food-2

On the other hand, the second group of Mibyou-Care functional foods (Mibyou-Care functional food-2) targets the specific disorders or abnormality assigned by the biochemical or physical examinations from the respective disease markers or nidus imaged, for example, blood sugar for diabetics, transaminases for liver damage, and echo image for fatty liver. Therefore, the presently distributed functional foods such as FOSHU are included in this category. The Mibyou-Care functional foods-2 carry medicinal functions mediated by the food factors in addition to the basic functions usually associated with foods such as nutritional, antioxidant, and anti-inflammation activities, with which the amelioration of distorted conditions or the prevention of disease progression is anticipated. They are used to manage the variety of distorted physiological states such as related to the metabolic syndromes (hyperglycemia, hypertension, and hyperlipidemia), early stage of cancer, depression, allergy, and pains, so as to prevent the progression of early stage of disorders into the serious diseases such as heart attack, stroke, cancer, and dementia. The functional food application in integrative medicine will be another promised field and is also covered by the Mibyou-Care functional food-2 category. Specially designed foods for adjuvant use are such example to enhance the efficacy of medication such as in cancer chemo- and radiotherapies.

These functional foods are usually taken as tablet- or capsule-type supplements but many other forms of food products are also possible such as granule, drink, gel, candy, other processed and fortified foods, and served or ready-to eat foods such as restaurant menus and Bentou (take-out pack), so that they are beneficially used in the self-medication strategy.

New category of functional foods proposed from the view of Mibyou care not only helps the effective usage of functional foods in the Mibyou care practices but also stimulates further basic studies such as the search of appropriate Mibyou markers and functional food design and development.

7. Conclusion

Current development of functional foods is obviously contributing to the human health. Elongation of life span reminds us the importance of healthy life expenditure and well-being demands. Western medicines are not sufficiently effective against the age-related complex diseases in the longevity society, so that the disease prevention becomes primary concern. Mibyou was a classical concept but is recognized more important in the current preventive medicine and thus renovated. In the newly defined Mibyou concept, the condition where individuals are able to spend normal daily life even if clinical inspection indicates certain ills was distinguished from the diseases which need medications in the hospital, and is covered by the newly defined Mibyou.

As the term Mibyou was defined more clearly, the Mibyou care became a target for the healthy life expenditure. Mibyou care practices will be important daily routines such as exercise, diet, and mental and psychological activities of the brain. Among them, the diet shares the most basic and essential part. The functional foods are thus one of the beneficial tools playing a pivotal role in the Mibyou care practices. The new definition of Mibyou care functional foods category will be helpful to use and develop the functional foods in Mibyou care.

Conflict of interest

There is no conflict of interest.

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