Qeios

How to enjoy your healthy life after 70—suggestions from the science of longevity

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Abstract

We propose practical advice to all those who want to enjoy their long lives in good health. We are lucky to live in an era in which there is still ancient wisdom of protective medications–Chinese and Indian medications. However, the environment in those days and modern times are so drastically different that the diagnosis obtained from Chinese medication needs further elaboration. The main difference is the length of lives and environmental pollution. Therefore, in our times, some new efficient additions are needed to enhance good health in a long life. We have a modern miracle of supplements—multi-vitamin, mixed protein and sometimes Calcium or other minerals in small amounts, although they may be the second-best. As is discussed in [Li *et al.* (2024)], we understand the acidic state of the body to mean that organs are overloaded because of acidic food (all tasty food is acidic!) and the body tends to be under oxidation stress. To liquidate these, we are to take food with plenty of antioxidants, the water (human body) extinguishes the

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fire (oxygen) according to the Yin-Yang principle. In our times, there is one more serious obstacle blocking the way to longevity—obesity and the resulting metabolic syndrome. We provide some practical ways to make an effective diet without being starved by eating lower GI food while feeling full.

1 Introduction and review of [Li *et al.* (2024)]

This is a sequel to [Li *et al.* (2024)] and gives the reader practical advice to enjoy their happy lives after 70. It is stated that wholistic medication relies on the fact that the human body consists of 60% water, 18% protein, 16% lipids and 6% minerals (TCM (Traditional Chinese Medication) perceives this as the flow of water inside the body) while reductionism is based on the fact that there are $6 \sim 7$ trillion (thousand billion= 10^{12}) cells in the human body. All the cells of the human body are replaced by new ones in about three months. Some more numerical data which are related to our main purpose are: 60% of muscles lie in our legs and 60% of sweat comes from our brain. "*The pH of (normal) human bodies is kept weak alkaline* $7.35 \sim 7.45$." (Cf. §1.1).

BMI (Body Mass Index) is defined to be the ratio of the body weight to the square of the height:

$$\text{BMI} = \frac{W}{t^2} \tag{1.1}$$

and over 30 is thought of as obese (fat); under 19 thin (slim) by the world standards.
Japan's standard BMI=22; over 25 obese; under 18.5 thin. China standard: under 18.5 thin, $18.5 \sim 23.9$ normal, $24 \sim 29.9$ overweight, ≥ 28 obese. BMI can be used to check the health condition—obesity in place of the standard body weight. Japan's standard is more severe than the world standard because the Japanese tend to suffer from metabolic syndromes than other nations. In addition to BMI, visceral fats level is important, cf. §1.2 below.

Three major nutrients for a human body are **proteins, carbohydrates and lipids** while five major nutrients are three major nutrients plus vitamins and minerals. The three main problems in agricultural products are **pesticides, fertilizers, and growth hormones**.

There are 9 essential amino acids which are indispensable.

- Histidine helps make histamine, which plays an important role in immune function, digestion, sleep and sexual function. This used to be an essential amino acid for children until 1985 but now this is one of 9 essential amino acids.

- Isoleucine is involved in muscle metabolism and immune function and also helps make hemoglobin and regulate energy.

- Leucine helps the body make protein and growth hormones and also helps grow and repair muscle tissue, heal wounds and regulate blood sugar levels. This is to be studied to cope with MS, cf. §**??**.

- Lysine is involved in the production of hormones and energy and is important for calcium absorption and immune function. This is to be studied for preventing from **osteoporosis**

- Methionine helps with tissue growth, metabolism and detoxification and helps with the absorption of essential minerals, including zinc and selenium. For selenium as an antioxidant mineral, cf. §3.

- Phenylalanine is needed for the production of chemical messengers, including dopamine, epinephrine and norepinephrine and is also important for the production of other amino acids. Cf. §3.

- Threonine plays an important role in collagen and elastin. These proteins provide structure to your skin and connective tissue. They also help with forming blood clots, which help prevent bleeding. Threonine plays an important role in fat metabolism and your immune function, too.

- Tryptophan helps maintain correct nitrogen balance and will be referred to in §4.

- Valine is involved in muscle growth, tissue regeneration and making energy.

It may be better to take blended proteins rather than taking individual ones (as it is not known which protein is more needed).

α-linoleic acids and linolenic acids are **indispensable FAs**.

The following speculations may explain some of the ingredients in the difference between ALS (Average Life Span) etc.

It turns out that the gastral organs of the Japanese are not as strong as those of the Chinese. Also, Chinese cuisine (CC) is one of the healthiest in the world as often referred to as **Chinese medicinal cooking**. **Tree ear mushroom**s (*Auricularia polytricha*) are one of the representatives. They have an anticoagulant (blood thinning) effect similar to that of aspirin and are recommended on [Weil (1995), p. 257] as an herbal treatment of the cardiovascular system. It is surprising that tree ear mushrooms are one of the very ordinary dishes. Also, there are various kinds of porridges (zhou) which are nourishing and very light. As one gets older, one may rely on CC more.

In spite of their ancestors' herbivorous lives, modern Japanese eat a lot of food full of proteins and nutrients, which are saved as **visceral fat**s and are main causes of **metabolic syndromes, MS** (adult diseases). Indeed, **saving intaken nutrients as visceral fats is a common weak point of all East Asian people**. They *can save visceral fats much more easily than* **subcutaneous fat***s* than other races. It is true that thanks to this change in food after WWII, the Japanese had more nutrients and obtained more active immune systems. This resulted in a drastic decrease in the deaths of the Japanese by tuberculosis, which used to be one of the main causes of death. In conjunction with the fact that Japan is blessed with a lot of excellent alkali and antioxidant food (as is discussed in [Li *et al.* (2024)]), this boosted ALS of the Japanese tremendously, up to 80 years old. But then every year, there is only a slight increase in the life span of the order of the number after the decimal point (0.3, say).

There may be a plausible reason for this phenomenon. In this paper, we speculate that this is caused by earlier deaths of elders who suffer from

metabolic syndromes. According to data, nearly 40% of men in their 40s and 50s are obese. Also in senior generations, men of age 60s resp. of age 70s about 35.4% resp. 28.5% are obese. Also, obesity in the younger generation is increasing. Since obese people carry heavy big bellies, it will give them a lot of burden and if younger people have this, it will show its bad effect in the long run. As stated above, obesity in the Japanese mainly comes from visceral fats, which tend to yield metabolic syndromes.

These two aspects—blessed with food of longevity and saving visceral fats (leading to MS) may be one of the reasons why the Japanese can surpass the wall of 80 years old but then cannot go further than that. As stated above, East Asians save energy as visceral fats lead to MS. This affects the Chinese who surpass the 80-year-old age limit (by taking in much more alkali and antioxidant food) and they may suffer from similar obstacles. It is reported more than half (50.7%) of Chinese adults are overweight, or obese. The over-weight resp. obesity of people of age over 18 is 34.3% resp. 16.4%. For children of age less than 6 resp. between 6-17, their over-weight $\cdot$ obesity is 10.4% resp. 19.4%. We shall give a few concrete ways to prevent obesity,

1.1 Oxidative stress and cancer

In [Li *et al.* (2024)] we discussed **acidosis vs. alkalosis and active oxygens resp. their scavengers** as a conflict between fire (oxygen) and water (human body) rather in parallel, which may give an impression that both are equally essential, where we don't use the terms acidosis resp. alkalosis in medical meaning to the effect that acidosis resp. alkalosis is the pathologic state of the body and pH value ≤ 7 resp. over 7.7 one has coma resp. convulsion. We use them as a symbolic description of the state of the body, i.e., acidosis resp. alkalosis means unhealthy (also being under oxidative stress) resp. healthy. The body regularizes the pH every moment so that it is kept in **the range** $7.35 \sim 7.45$ **in which range of pH, the inside of cells is in neutral and they can work normally; here we have the principle of balance à la Yin Yang**. Western medicine takes it for granted that this kind of regulation is going on all the time without problem just as the wrong belief that a computer can control a machine forever without trouble and one can find a claim that by taken-in food, pH will not change and many people's belief that by taking alkali food, they can neutralize acidity is wrong. [Koike (1976)]. But our **wholistic medicine takes this as a burden on the organs (and indeed, to excrete hydrogen ions, the kidneys must**

work very hard) and suggests taking more alkali food so that altogether the burden of organs will be lighter, again the principle of Yin Yang. This is in conformity with Weil's suggestion to take fewer proteins since they are complicated compounds containing nitrogen and the liver and kidneys must work full and they cannot contribute to the healing system of the body, [Weil (1995), p. 146].

We partially follow [Li *et al.* (2024), §2.2] and [Nagata (1996), pp, 124-161] to state that the active oxygens give oxidative stress to the body, i.e., they are **pro-oxidant**s and as a result, the body is under **oxidative stress**, yielding possible cancer in the long run. As one of the living organisms that make use of oxygen (fire) as energy, we cannot live without being attacked by active oxygens. From the argument, it will become clear that we need to detoxify active oxygens by taking in antioxidant food to draw back their oxidation, so that **antioxidant food** is essential (as well as natural scavengers—Vitamin C, E, A etc.). Cf. [Li *et al.* (2024), §2.2].

Natural scavengers of active oxygen in the body include Superoxide dismutase SOD which annihilates superoxide O_2^-. Catalase, Glutathione peroxidase, and Cytochrome c peroxide enzyme annihilate hydrogen peroxide H_2O_2.

There is no natural enzyme which annihilates of hydroxyl radical $^\bullet HO$ (it is detoxificated by anti-oxidant including Glutathione, $(R)-\alpha$ lipoic acid, co-enzyme Q10. etc. Also hydrogen atoms can work as its scavengers [Li *et al.* (2020), §5.8]).

There are enormous kinds of carcinogens which are classified into two categories. Exogenous sources: inflammation, stress, environmental pollution, radiation, sunlight, medical treatment, hormones, carcinogenic substances (e.g., asbestos), cigarettes, alcohol, food, and nutrition. Endogenous sources: energy metabolism, bactericidal effect sterilization (white blood cells, macrophage), enzyme reaction.

The two-stage model of a cancer: initiation and promotion. **Initiation** process is the first stage in which carcinogens disturb the hereditary information in DNA to yield mutation by changing its primary structure (arrangement of 4 nucleotides). This occurs rather quickly—one day and then the cells become in the **dormant state**, which is neither normal cells nor cancer cells. Then the **promotion** process occurs which affects the functions of cells without changing their primary structure (this is done by promotors and takes a long time). Active oxygens such as hydroxyl radicals work as promotors attacking the cell membranes, protein, and nucleic acid to put

them under oxidative stress. Sufficiently promoted cells become cancer cells and start growing indefinitely, the process being called progression.

The number C of cases of cancer increases exponentially to the power N in the age y: $C = y^N$ and it is said that $N = 5 \sim 6$. Let's find out how much a person at age 60 resp. 65 can get cancer than a person of 40 (beginning of the cancer period) with N 6. $\left(\frac{60}{40}\right)^6 = 11.3$, $\left(\frac{65}{40}\right)^6 = 18.4$.

1.2 How to prevent obesity and enhancing calcium absorption

To reduce the number of meals is rather difficult as enjoying tasty food is one of the biggest joys of our lives. Those who are obese are usually strong and enjoy living. There are some incorrect ways of losing weight prevailing on the Internet. Obesity comes from the surplus of in-taken calories over spent calories. Then we arrive at the simple principle. **It's simple to lose weight: Just reduce the taken-in calories**. **Fasting** (Ramadan) is too hard for most people. Moreover, if one is too starved, one's body can absorb more nutrients and get more calories. There is an illustrative example of sumo wrestlers. They start training at 4:00 in the morning and after that heavy training, they eat a lot as they are starved and their bodies absorb all nutrients, and they become very fat. But one difference from ordinary obesity is that they have a lot of muscles. It's true that there are some wrestlers who suffer from MS but many of them live healthy lives after retirement. For ordinary people, skipping meals may be very hard and there is the possibility of **regaining weight** and sometimes becoming more obese.

There are some remedies suggesting low fat and low sugar and high protein and high dietary fibre and a substantial amount of aerobatic exercise. However, low fat and high protein may result in weakening of the body function and immune system as discussed in [Li *et al.* (2024)] and [Weil (1995)]. Unfortunately, Weil does not seem to write about how to reduce obesity but rather how to make your body healthy and we must think out our own way. If you make it a rule to walk for some 45 min a day, you may not suffer too much from obesity. If you find it hard to exercise or reduce the number of meals, then the only way is to eat food that gives you satisfaction and fullness, yet of low calories, based on the principle above. There is not so much food that satisfies these two ambivalent requirements. But there are some. In general eating food which keeps you full longer, such as vegetables,

seaweed and beans. It is wise to combine such food with alkali food with an antioxidant effect.

- **Konjac** . Konjac has very low calories: 5kcal per 100g and is one of the most alkalis foods. E.g., konjac noodles in various sauces, which is tasty, and very low in calorie and moreover glucomannan will clean your bowels. Cooking is simple. You can just use konjac noodles for other noodles and add a lot of sesame. There are many recipes which are easy to prepare and give you satisfaction. Konjac jelly is a low-calorie sweet.

- **Ostrich meat**. If you want to eat meat, ostrich meat is recommendable which has $\frac{1}{5}$ calorie, $\frac{1}{60}$ lipids, and $\frac{2}{3}$ cholesterol of beef. It contains creatine and l-carnitine which are effective for diet and increasing muscles. Ostrich meat steak in olive oil with assorted boiled vegetables—kidney beans, spinach, shiitake, carrots, and stir-fried garlic is one of the healthiest dishes.

- **Broccoli**. [Weil (1995), pp. 151-152] recommends two broccoli dishes. One is boiled broccoli with garlic and olive oil etc. The other is boiled broccoli with garlic and ginger in black bean sauce. The latter is an ideal combination of antioxidant food material.

- **Lentil beans**. These are some of the first food material that was cultivated by humans. It is low-calorie and nutritious.

- **Agar**. Agar is made of a seaweed. Sold in powder or in dried solid form. It is to be heated in water to dissolve. Then after adding some material, keep it in the refrigerator to solidify. The finish looks like jelly, but the contents are totally different. It has the lowest calorie: 3kcal per 100g. There are many recipes for this. Add squeezed ginger juice and lemon juice with some sugar (better use brown sugar) and let it solidify. Then it's a delicious healthy dessert. Agar with lentil bean paste is another delicious sweet with fewer calories than agar with red bean paste.

- nemacystusdecipiens (seaweed, mozuku) 4kcal per 100g
- gelidium jelly (tokoroten) 3kcal per 100g
- Hijiki seaweed. Simmered Hijiki seaweed 139kcal per 100g
- Tempura (Japanese cooking of dipping material in batter (wheat powder) and deep-frying). If one uses whole wheat powder and olive oil, remove any extra oil that dips from the food. Then this gives a big variety of dishes. E.g., broccolis, lotus roots, kidney beans, etc. can be eaten with pleasure.

It may be a good idea to set a **body composition analyzer** (BCA) at home and check the amount of visceral fats. Visceral fats level. $1 \sim 9.5$ normal, ≤ 10 slightly high, ≤ 15 high. Level 10 means that the surface area of visceral fats is 100cm^2. ≤ 15 is considered to be dangerous and is to be improved by exercise and dieting.

Not only calorie but GI (**Glycemic Index**) value must be considered. Glucose=100.
Higher GI value food ≥ 70. superfine sugar=99, chocolate=95, baguette=93, white bread=91, potato=90, rice cracker=91, rice vermicelli (mifen) and pho=88, rice cake, udon (thick Japanese noodles), French fries=85, **(polished) rice=84**, rolled bread=83, carrot=80, cookie=77, bagel, cornflake=75, maple syrup, instantaneous lamen=73.
Moderate GI value food $55 \sim 69$. croissant, vermicelli (Japanese thin wheat noodles, somenn)=68, **wasanbon (refined Japanese sugar)**, barley, pasta, pineapple=65, water melon=60, rye bread=58.
Low GI value food ≤ 55. **brown rice, soba, banana=55, whole wheat bread=50**, jelly, pork, ham=46, beef, chicken, all bran=45, apple=44, tofu, pure orange juice=44, kiwi=35, tangerine, fermented soy beans=33, pear 32, cellophane noodles (bean-starch vermicelli, harusama=liang fen), butter=30, strawberry=29, shiitake=28, broccoli, milk, yogurt=25, maitake, konjac=24, Konjac noodles, lettuce=23, mirin (sweet cooking sake), spinach=15, nemacystusdecipiens (seaweed, mozuku)=12, gelidium jelly (tokoroten)=11.

For cooking, mirin is the best and for sugar, maple syrup or wasanbon is the best choice. Brown sugar (GI=90) may be also good as an alkali food.

The principle is that the less processed food material, the less GI. Brown rice and whole wheat bread have a much lower glycemic index (GI) compared to polished rice and white bread, respectively. Rice vermicelli is indispensable to those who have an allergy to wheat, but it has a rather high GI and could be replaced by cellophane noodles. One also sees that most healthy food with antioxidant function has low GI values.

We state the following, which applies to all ages and in particular is relevant to §3.
Enhancing absorption of Calcium. It is better to take an absorption enhancer together with food material with plenty of Calcium.

- **Vitamin C, D** help to carry Calcium from bowels to the vessel whence to bones. Vitamin D not only accelerates the production of proteins that are necessary for the absorption of Calcium but also helps Calcium to pigment to bones.

- **Citric acid** changes Calcium into a form that is more easily absorbed.

- **Amino acids**, especially Lysine. Cf. §1.

- **Magnesium** is also to be taken with Calcium at the ratio of 1:2. It has the effect of helping bones and teeth to grow. Cf. §5.

2 Classification and adolescence $10 \sim 20$

We recall the rough classification stated in [Li *et al.* (2024)].

- $20 \sim 40(45)$. This is the period in which one has to make the greatest effort not to get cancer. For this, the most useful way is to keep the immune system at its full strength. According to [Li *et al.* (2024)], one had better suppress the amount of taken-in protein (save for indispensable ones). Also, it is better to be keen on the health check data and keep the values within allowance.

- $40 \sim 50(55)$. This is the period in which one must prepare for healthy old age and also for the shock caused by preparation for old age by the body. This period is the busiest in one's life and one is often too much exhausted. Taking a holiday for recovery of vigor and health is very necessary. It would be suitable to start taking multivitamins and proteins as supplements. Don't carry heavy big bellies as they may invite acute diseases.

- $50 \sim 60$. Old age starts and if one does not get prepared well beforehand, some people can get aged very quickly. From around this age, one cannot absorb full nutrition from food and had better take supplements. For females, as with the decrease of estrogen from around this time to the end, special attention is to be paid to **osteoporosis** (after some time of menopause—average 50, the decrease of estrogen starts). Take enough Ca from food and take supplements, too. On [Weil (1995), p. 149] there is a mention that chemicals contained in soybeans food material called phytoestrogens may offer significant protection against prostate cancer for men and estrogen-driven diseases for women, but no mention of osteoporosis is made. Shikwasa (Citrus depressa Hay) may help to absorb more Calcium. Needs more research about this as well as the role of lycine.

- $60 \sim 70$. This period determines whether your later old life is happy or not. For details, cf. §3 and §4 below.

- $70 \sim 80$. Congratulations! You surpassed the average lifespan. This is an important period to get prepared for a real old age after 80. After this period, Weil's book [Weil (2007)] does not apply so well and we appeal to the books of H. Wada [Wada (2022)]. [Weil (1995)] still works as the best reference.

This is too rough, and we elaborate on it.

Indeed, there is a period of adolescence $10 \sim 20$. The first half of the period depends on the wisdom of the mother. There is some critical advice for the mother in bringing up her child beneficially. E.g., there are a lot of

research results about the danger of indulging in a smartphone which will then turn out to be an evil phone. There are warnings about possibly losing eyesight after some time. Locking oneself in a virtual world is also dangerous because it will dilute human contact and one may lose relationships with humans. Since the real damage will come as a cumulative effect, it is wise to restrict the time of use of a smartphone to the minimum. Once it used to be the case that parents told children not to watch TV too long as they will damage their eyes. TV screens were safer but modern screens are not the analogue one but a collection of lots of picture cells which give the impression that what one sees is a continuous image.

In the last half, when they start living separately, taking proper food is essential. It may be the case that youth may eat only limited kinds of fast food, which will accumulate damage to their bodies. If they start carrying big bellies, our advice will not reach them. We must leave the wise treatment of this juvenile age to their parents. Then for the period of $20 \sim 55$, enough information and advice are given in [Li *et al.* (2024)].

3 Pre-retirement age: $55 \sim 65$

We shall elaborate on the descriptions of advice for the period $55 \sim 65$. Both the Chinese and the Japanese retire from their work in this period, which will bring about a drastic change in their ways of living. If one can still work, it would be better to keep working till one feels really exhausted. We dwell on the case when one retires from the work. Then if one stays home, one may have difficulties in killing time. A day is very long if one does not work. If one has some hobby or other things that one wants to continue, then this will be the prime time. If one is a serious researcher, one will be happy to have an infinite amount of time to do research. But if one does not have such a thing, then it is advisable to start some hobbies which one can enjoy all through one's life.

It turns out that almost everybody likes singing and singing at a karaoke house can be an ideal hobby. There are good reasons: Singing can **train your respiratory organs** and can be a good aerobatic exercise. It is advisable to sing songs *a cappella* because then this will help **training your brain**. It may be a good chance to start learning a foreign language by remembering songs in the language you like. We suggest you should try to aim at the level of a professional. You can notice how high pitch they sing. We are all

beginners in the beginning, and we had better follow good examples. If you can sing at a high pitch, you feel more satisfied. In every art, beauty is the essence which will move other people.

Likewise, a.a. people like music and if some of you want to play a musical instrument, this is a good chance. It is rather a painful process until you master how to play an instrument but it's worth it. Moreover, as most play-on instruments must use fingers, this is an ideal exercise for training your peripheral nerves. By training them, your nervous system will be activated.

Calligraphy and painting are also very recommendable hobbies. Or other artwork, making potteries, dolls, etc. Whatever you choose, you had better keep your spirit high enough to aim at a professional level. First, you start by mimicking old grandmasters. Then after some time, you can deviate from it and create your own style. This is simply the traditional way of apprenticeship.

Travelling is also effective in many ways, reducing stress from everyday life, refreshing the mind, satisfying your curiosity, etc. If you travel abroad, it would be more interesting to stay in one place for some time and watch exotic views and the ways of living of foreign people. You can be in a reflexive mood and can relax your nerves, away from your home. But this needs some amount of money, and you are supposed to be rich enough. Travelling includes the pleasure of tasting exotic food.

If you are on good terms with the neighbors and the neighbor union or other organizations need volunteers, you may be one. This is non-profitable, and you are to be of altruistic spirit.

In this period, you must keep your spirit high enough to be ready for the next step. For this, it is important not to endure inconvenience or discomfort. E.g., if you feel an itch on your back and you cannot reach the spot, why not use your grandson's hand? Try to reduce any discomfort from your daily life and spare some time for meditation.

Now about the health side. Although the time varies from person to person, at times, one cannot absorb all the nutrition that one eats, the immune system functions work less effectively, and one can get infected more easily. Also, one must be careful about one's steps. At some age, one has **less muscle spindles** in one's legs and then one is not sure about one's steps. Most care must be taken when one climbs down the stairs.

- **Infection**. General advice is to the effect of helping the healing system fight against infections by giving more rest to the body, less eating,

increasing fluid intake, and sweating (in a steam room or sauna).

This is the same as wild animals healing their wound or infections—complete rest, no eating (cf. the description of the work of liver and kidneys in §1.1). This applies perfectly well to a cold. When you get a cold and have a fever, the best healing way is to stay calm for a few days, less eating and take more electrolytes, and if you can sweat, the fever will usually be gone, and you can get more quickly cured. Indeed, fever is a weapon of the healing system of the body to kill bacteria and viruses. While young, you can get a higher fever (of course, there can be a serious case, in which case you need to go to hospital) and can kill invading microorganisms. When older, high fever will not come and slightly higher fever continues, which is rather common with the case of pneumonia. The main cause of death is pneumonia. In case of cold or other less severe infections, you must take a complete rest in the first few days. This is necessary to avoid secondary infections, **opportunistic infections** by normally non-infectious bacteria. If you get a secondary infection by such bacteria, you may need to take antibiotics and in a more serious case, steroids (according to the doctor's advice). For elder people, antibiotics have less effect, and they could die of pneumonia. Also, if you take antibiotics frequently, then they will show less effect in serious cases.

If you want to get cured more quickly, then you can follow the advice of Weil, i.e., you take plenty of doses of Vitamin C (which is water soluble and if you take too much, the surplus will be excreted as urine). Also, it is suggested to take antioxidant vitamins and minerals. As is explained on [Weil (1995), pp. 159-160], Vitamin E is a second powerful, untoxic antioxidant. It is fat-soluble and should be taken with food. Natural Vitamin E (d-tocopherol) and synthesized one (dl-d-tocopherol) are in semi-chirality, cf. below. The natural one is far better than the synthesized one, especially when combined with other tocopherols. However, unlike Vitamin C, this cannot be taken too much. On [Weil (1995), p. 160] **selenium**, a trace mineral, is recommended which has antioxidant and anti-cancer properties. Selenium and Vitamin E help each other's absorption and should be taken together, but not with Vitamin C.

For chronic and recurrent infections, [Weil (1995), pp. 245-260] **echinacea** (*echinacea purpurea*) is recommended, which is a native Amer-

ican herb having antibiotic and immune-enhancing properties. For chronic and viral infections, Astragalus is recommended. For unserious infections, one can also appeal to various TCM which has plenty of medicinal plants having anti-viral, anti-bacterial and immunomodulating properties.

- **Anxiety, insomnia**. This kind of disorder is common to all generations. [Weil (1995), p. 191, 261] states that all sedative drugs depress functions in the central nervous system, are addictive, and all suppress REM (rapid-eye-movement) sleep which is essential to recover from the fatigue of the brain. Instead, he recommends **valerian**, a natural remedy from the root of a European plant *Valeriana officinalis*, which is a strong sedative for insomnia and shouldn't be taken regularly. Melatonin (§4) and DLPA (dl-phenylalanine) are recommended too. **Phenylalanine** is one of essential amino acids (cf. §1) and has antidepressant function.

For prevention of osteoporosis, cf. "Enhancing absorption of Calcium" in §1.2.

Chirality is an important research topic and we state a glimpse of it. Some molecules cannot overlap on their mirror images, in which case they are said to have **chirality**. There exist two enantiomers—l-body and d-body (l-body has **levorotation** (left rotation) and d-body has **dextrorotation** (right rotation)). There are l-body and d-body of amino acids—but bodies of living organisms consist of l-body amino acids only. This is called the **homo-chirality**. Why homo-chirality is chosen, i.e., why l-body is chosen to build up the body of a living organism is an unsolved important problem. **Racemic body=dl-body** is the mixture of l-body and d-body in equal amounts. **Asymmetric synthesis** is an important method for producing only one of two bodies.

There are many examples of synthesized products. dl-body of thalidomide brought about very serious results in newborn babies. Only l-body of perfume menthol gives a fresh smell. Only the l-body of monosodium glutamate gives a good taste.

4 Preparation for old age: $65 \sim 75$ and further

This period used to be considered as real old age, but it is not old age for you, but a preliminary step toward longevity. We must pay attention to the fact that we may get cancer 18 times more easily than our 40s, cf. §1.1. But at the same time, we may not be so much interested in our health and probably mental care and passion for a creative life would be more appropriate.

We may follow advice from [Wada (2022)]. One of the main advice is to stop dieting. If you want to eat meat for breakfast, why not enjoy it? From around our 50s, we absorb nutrients from food not as much as we eat but some portion of it. But recall the data: in their 60s, males 35.4%, females 28.1%, and over 70, males 29.5%, females 26.4% are obese in the case of the Japanese.

Meat contains **tryptophan** (cf. §1), which is one of the essential amino acids and works as a precursor of important serotonin, melatonin, and niacin. **Serotonin** sends signals to nerves of joy and pleasure and suppresses noradrenaline which enhances anxiety and fear. **Niacin** also called Vitamin B_3 is a water-soluble vitamin B group and the collective name of nicotinic acid and nicotinamide having an anti-inflammatory function of skin and mucous membrane as well as promoting blood circulation. Cf. §6. **Melatonin** is a hormone that is produced by the pineal gland of the brain and controls the biorhythm of the human body. It increases as the body feels darkness and decreases as the body is exposed to the sunlight and has a **sleep-inducing function**.

It is essential to keep enjoying the hobbies that you have started in your $55 \sim 65$ period. If you don't have any, then this is a good and last chance to start. Anything that you can indulge in and have a creative life. Or else, if you are blessed with grandchildren, then you may enjoy the time with them until they become independent.

As regards the age over 76, not only the body but the mental state contributes a lot, and we shall come back to this in the subsequent paper.

5 How to cope with MS

As is discussed in §1, East Asian people tend to become obese by saving visceral fats leading to MS. This section tries to give some practical hints for people who suffer from early symptoms of MS how to cope with them.

The principle is "to keep the present status and let it not worsen or lead to extra diseases". E.g., diabetes itself is not lethal but residual illness from it is serious. To do it, one can simply follow the prescriptions for the prevention of obesity and walking.

There is much practical advice for different diseases in [Weil (1995), pp. 253-266] and one can consult it. We stated infection, anxiety, and insomnia §3. We add two more.

Cardiovascular diseases including high blood pressure [Weil (1995), pp. 156-157]. It often happens that one may suffer from the early symptoms of high blood pressure and heart disorder including cardiac arrhythmia. It is recommended to take Magnesium (Mg) in citrate, gluconate or chelate form and calcium (Ca) in citrate in equal amounts. In all supplements with Mg and Ca, these are contained in a 1:2 ratio.

Allergy is one of the modern diseases whose symptoms vary from serious to unpleasant. We restrict to the latter type. Allergies are learned responses of the immune system against environmental stimuli (not necessarily harmful). Since the learned patterns of response of the immune system are not fixed, what it learned can be unlearned. As a dietary modification, low-protein food, especially the elimination of cow milk is recommended. But milk is an important source of many nutrients, and this may be hard to attain. Instead, we appeal to preventive herbal treatment: quercetin, and stinging nettles. Quercetin is a natural product obtained from buckwheat, citrus fruits, skin of onions, etc. For seasonal allergies, it is better to start taking quercetin several weeks before the expected period. Stinging nettles can be taken against hay fever. The safest conventional medicine is cromolyn sodium (Intal)

Our general advice is: To keep any diseases at the present stage, i.e., keep them in a dormant state. For this, you are to take as much food plenty of antioxidants (brightly colored is a criterion) and other nutrients as suggested above. Also, if one can afford to, one may try some miracle fruits including acai, grapes, lingonberries, shikwasa, etc. (non-polluted) and fermented food including butyric acid bacteria, choutoufu, rice bran pickles.

6 Resveratrol, a double edge sword

Part of the results of this section arose from a discussion with Ms. H. -M. Wang to whom we would like to express our thanks for drawing our atten-

tion to this topic. It is mainly about the supplement **NMN (Nicotinamide mononucleotide)**, which is said to increase the amount of **NAD (Nicotinamide di-nucleotide)**. NAD is thought to activate **sirtuin gene**s (there are 7 sirtuin genes, 1∼7 and sir1 is thought of as the most essential). It has been known that hard exercise and extreme restriction of calories activate them by increasing the amount of NAD. Around 2006 it was found that **resveratrol** (Phytochemical contained in Lingonberries, grapes, almond, cocoa etc.) also activates them. But it is also said that resveratrol is a double-edged sword, cf. e.g., [Salehi *et al.* (2018)]. Along with hard exercise and calorie restriction, taking NMN supplements is also prevailing in anticipation of an increase in NAD. Regarding this, there are some reservations. Nicotinic acid is produced by oxidizing nicotine $C_{10}H_{14}N_2$ and the latter is very toxic. In the body, nicotine acid exists as nicotinic acid amide (niacin). When the latter makes phosphoric bonding with adenosine, it becomes NAD. If one more phosphoric acid binds to the ribose on the adenosine side, it becomes NADH (Nicotinamide adenine dinucleotide). The body produces hydrogens after a complicated process and saves them in the form of NADH, cf. [Ikai (2003), pp. 82-83]. As is discussed in §4, niacin plays an important role and Tryptophan is its precursor, whence Dr. Wada's speculation that **old people who eat more meat live longer** would follow.

As one can see, NMN and NAD are quite similar, and we are reminded of the **similarity principle** to the effect that the body uses similar stuff as the necessary material, cf. [Li *et al.* (2024), §5.1]. If the objective of NMN is to supply similar particles to increase the amount of NAD, then we must have reservations until this will do no harm to the human body and have better wait for some time. If NMN increases the amount of NAD, then the mechanism should be made clear, and safety must be guaranteed for a long period. As is stated briefly in[Li *et al.* (2020), pp. 166-167] and more in detail in [Li *et al.* (2025)], NAD or rather NAD^+ plays the essential role in the **glycolytic pathway** (GP), i.e., it works as an oxidant in the only oxidative step in it. If NAD^+ falls short, then the glycolytic pathway stops, producing no ATP (Adenosine Triphosphate) and the body will die. There is a pathway called **citric acid cycle (CAC)**, tricarboxylic acid cycle (TCA), Krebs citric acid cycle, succeeding GP which produces 36 ATPs from acetyl-Co A (acetyl-coenzyme A) produced by GP.

Thus, even though resveratrol is being thought of as a double-edged sword, we had better keep some reservations. From our point of view of ancient Chinese wisdom, we cannot recommend such undetermined stuff as

NMN. Instead, one can take **Lingonberries, grapes**, etc. without harm, although it is known that one must take an enormous amount of them if one wants to be active sirs.

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