Open Peer Review on Qeios

Concrete Advices For Longevity From Wholistic Medication in The Light of Modern Molecular Chemistry–Physiology–Nutrition

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Funding: No specific funding was received for this work.

Potential competing interests: No potential competing interests to declare.

Abstract

We adopt the spirit of the traditional Chinese medication (including Chinese cuisine) to the effect that the human body is to be viewed as a whole as it is. By invoking a few universally established principles in biochemistry-physiology-nutrition, i.e., using modern medical principles as a touchstone, we revive the ancient Chinese wisdom of the Wu xin principle (five elements) and Five-storied pagoda principle and we deduce a plausible conclusion that the effect of fire is to be weakened by water: Xiangke of fire (oxygen) and water (antioxidant). Then we go on to show that affinity of water and soil, metal and tree explains the nutrition of the human body by vegetable, metal ions, and fruits. Five-storied pagoda principle tell that water is squeezed by soil and fire, which explains the affinity and conflict of these elements. Wind is to be interpreted to mean oil and cosmos to mean the mind.

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1. Introduction

The gene analysis of mitochondria made it clear that we human beings are direct descendants of the group of our ancient ancestors who used to live in East Africa and to which belonged the **Mitochondria Eve**. It is said it could have been a small group of some **20,000 members** which survived **143,000 years ago**. The group has developed into a bigger one which then got divided into smaller groups which moved to the whole world. Around that time there were Sinanthropus Pekinensis, Pithecanthropus erectus and later Homo sapiens neanderthalensis. All of them extinguished. If we keep our genes exposed to toxication, our species Homo sapiens-sapiens will also extinguish. Thus the established medical principles apply to all humans with slight variations according to living conditions and to attain longevity, we are to avoid all possible sources which damage our genes, typically active oxygen species and acidity of our bodies. Also the sources of these toxins, i.e. polluted food, air, stresses, etc.

The ancient Chinese philosophy–medication interpret the life as the *qi*–which is the core of an entity and radiates *aura* which surrounds the body. The latter is understood as *piao*—the phenomenal form of *qi*. A Shen yi can sense the status of the *qi* through *piao*, which includes checking the pulse to find blood circulation. This is miraculous and if one can meet a shen yi, one's healthy life is assured. But simply they are extremely rare (in India there are more such folk medical doctors). This ancient view coincides with rather modern interpretation of the universe (including life form).

The first passage from Palling [Pauling (1970)] reads

The universe is composed of substances (forms of matter) and radiant energy.

According to the 20th century physics matter and energy are verbatim—fermions and add information (between energies)

—bosons to rephrase it:

The universe is composed of energy and information.

It is truly surprising that the ancient wisdom already reveals the 20th century view point. Our standpoint is to adopt the spirit of traditional Chinese medication to the effect that a human body is to be viewed as a whole entity and what we can do is to find suitable and effective nutrients to enhance its function to protect it from getting ill. We call this approach **wholistic medication**, which is to work as folk medication.

This paper is a starter for research and practice of wholistic medication based on the above-mentioned spirit of traditional Chinese medication (including Chinese cuisine) and modern miracles toward longevity—long life in good health with some basic knowledge from [Li *et al.* (2020), 153-168] and [Weil (1995)]. Although we refer to wholistic medication, it is rather a philosophy for preventive medication and spontaneous healing and no medical treatment will be mentioned. An interested reader can read [Weil (1995)] for practical medical treatment. In the paper, we explore the hidden relations of the human body with other factors from environment—plant, fire, soil, metal (wuxin principle). In five elements principle, we understand the human body is water from its circulation in the body and fire to be oxygen since **oxygen oxidizes objects, i.e. burns**. We think of soil, metal and plant are in affinity with water and interpret soil= vegetables, metal = metal ion, plant = fruits.

In five-storied pagoda principle, we adopt similar interpretation. water= human body, which is squeezed by soil(= vegetables) and fire(= oxygen). Then there is wind which we interpret as oil. Then the cosmos which we interpret as mind.

We examine the commonly accepted medical-biological principles in the light of above two principles. Western modern medication depends on reductionism to the effect that if we decompose an entity into smaller and smaller particles, we arrive at the core of the entity and could synthesize the entity: Genotype determines the phenotype). This has turned out to be impossible. But at each stage what was found are correct on that stage. Modern molecular biology opened a new research areas at molecular level and the known basic principles at molecular level are true and we interpret them in terms of wholistic medication. Wholistic medication relies on the fact that the human body consists of 60% water, 18% protein, 16% lipids and 6% minerals (TCM perceives this as the flow of water inside the body) while reductionism is based on the fact that there are 6 ~ 7 trillion (thousand billion = 10^{12}) cells in the human body.

We examine the effects of some of tonic medicines provided by TCM and other folk medicine recommended in [Weil (1995)] in the light of reductionism, on the ground that they strengthen the function of immune system.

We take it for granted that Chinese cuisine (CC) is partially based on TCM and we point out some of the excellent aspects of CC. Once there was a bad fame of Chinese restaurants mainly in the US to the effect that one feels Chinese restaurant syndrome. But this was proven to be the result of using **monosodium glutamate**—MSG.

We also understand that TCM is based on the **Yin-Yang principle (conflicting cosmic dual forces)**. Or **nyu-he vs. fuyi**.

E.g. acidity and alkali are in Yin-Yang and the interface is 7—neutral. We understand this as conflict of fire and water, Cf. §2. Active oxygen species and their scavengers are in Yin-Yang and they control homeostasis, §2.3.

One of our motivations is to examine the notable difference of ages in Table 1. In China TCM is still widely spread, but its effects are not very visible probably because there are very few real Grandmasters—Shenyi. On the other hand, in Japan TCM is long forgotten and instead Chinese-like medication is going on plus modern medication. Bearing in mind that other living conditions are not so much different, we are to search for reasons of longer lives. We suspect that it heavily depends on soft water and ergonomically comfortable facilities in Japan. For our bodies consist of 60% water and comfortable conditions give good influence on the state of mind. We elaborate on these in what follows.

country	Average	M	F
China	HOA	67.2	70.0
China	ALS	74.7	80.53
Japan	HOA	72.68	75.38
Japan	ALS	81.64	87.74
Italy	HOA	71.2	72.6
Italy	ALS	80.9	84.9

Table 1. Table of HOA and ALS of Chinese and Japanese

HOA=Healthy Old Age

ALS=Average Life Span

Average healthy old age is 72 resp. 75 for males resp. females in Japan while average life span is at least10 years longer than the healthy old age. This implies that some of old people suffer from some diseases or other in the last 10 or more years. Few people would like to live such an agonizable old life. In the case of the Chinese, it is urgent to prolong HOA by wholistic medication. Also what one can see from the table is how difficult it is to prolong the life after 80 years. Comparing this with previous data, it is clear that there is a small increase up to decimal points. Thus we need to take a different strategy once we overcome 80 years old barrier. Cf. [Wada (2022)]. Also longevity of the Italian can be partially explained by their food material, esp. extra virgin olive oil and polyphenol in red wine. Cf. §3.

Strong points of Chinese cuisine.

There is a proverb that someone or something is as cool as a cucumber. This implies that a cucumber is to be cool. This comes from the understanding in TCM that if you eat cucumbers raw, you may have diarrhea (loose bowels). Then cucumbers are thought to cool your bowels. Although this understanding is not totally correct since loose bowels are due to **oxalic acid** which is contained in raw cucumbers. But we get a lesson that we are supposed not to eat raw cucumbers. Oxalic acid is a common protector of many vegetables. The principle is that vegetables don't want to be eaten while fruits want to be eaten (so that the eaters will carry their seeds to far places). One of the strong points of CC is that all

vegetables are (lightly-) boiled, which removes oxalic acid. In modern times there are some vegetables which contain less oxalic acid which can be eaten raw.

Strong point No.2 is that the Chinese don't drink too much cold drinks in summer time. In Japan there is a symptom called *summer heat fatigue*, which is a result of drinking too much cold drinks. This dilutes the digestive liquids and after some time, one feels fatigue.

We extract the wisdom of ancient CTM as empirical knowledge as above.

We are only concerned with harmless tonic medicines as recommended by Weil [Weil (1995)], cf. §7. There are many effective medicines prescribed by CTM. One example is huanglian, which works to remove swelling as **diuretic** medicine. But we exclude such a **symptomatic treatment**. In this case there may be some danger of**dehydration**. There is understanding that dehydration is that the body loses too much water, but the point is that some essential metal ions are lost as well as water. Metal ions are carriers of information and if they are lost, the body will lose control. E.g. after a heavy exercise, one is to take electrolytic water and supply metal ions.

On the other hand, if you have high blood pressure and go to a medical doctor. If the doctor prescribes a diuretic medicine, then it would be better not start taking it if the blood pressure is not lethal level. For such a medicine has the same effect as TCM, to accelerate excretion of sodium ions together with other ions and water. If your blood pressure is kept normal by such a medicine, you cannot stop taking it since it will go up when you stop taking it, leading to a fatal state.

Our standpoint is to give advices which are harmless but will show effects on long terms so that one can avoid chronic diseases. If one gets an acute disease, one is to go to a hospital. It is important for you to take all as part of your habits.

1.1. Modern living conditions and longer lives

Most people start taking Chinese medicine when they start feeling weak at some age. But it will take a long time before the medicine starts working and till then the health conditions will be worsened and would need to appeal to modern medication. Traditional Chinese or Ayur Vedic medicine is for preventing from getting ill. We are very lucky to have these **protective medications in use today. But the ancient people lived much shorter lives in totally different and much milder conditions and diagnosis may not be fully taken for granted. But the medicine they prescribe are harmless and they surely give good indications and we could enhance the effect by adding modern miracles—supplements of multi-vitamins, mixed proteins and alkali water, etc.**, which may create a situation that chronical diseases (adult diseases) are kept at the same stage as it started and the patient can live a normal happy life. We will state basic differences between living conditions of the past and the present and point out the modern menace.

The most serious defects of the present living conditions compared with those before IR (industrial Revolution) is that all are polluted more or less. Air is polluted, water is polluted, the soil is polluted, so that all food products coming from the soil are polluted—the plants, meats, milk products, etc. Especially, animal meat and milk products are in highly

concentrated pollution because of circulation: air → water → soil → poultry. Therefore, *trying to avoid as much as toxicated food* is one of the most essential addition to Chinese medication and applies to all generations. Our bodies have annihilators of some kind of objects taken in, but many of them remain in the body and may get accumulated. Disorder caused by pollution is the result of a **cumulative effect**.

Note. Global warming will continue and in the near future, even traditional food may not be available. It may be even too late to study variant vegetable plants which can grow in higher temperature and drier climate, etc.

2. Conflict of fire and water

In this section we shall examine the conflict of water and fire from two aspects—acidosis and AO's (active oxygen species) and give practical remedies for them from five elements philosophy. I.e., we give the elements of affinity: electrolyzed reduced water, alkali food, and antioxidant food.

2.2. Alkalosis

This section is a precursor of §2.2, where we discuss more serious conflict between fire and water. Here 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 unhealth (also mean under oxidative stress) resp. healthy.

We confirm that the commonly accepted medical principle

*"The pH of (normal) human bodies is kept weak alkaline*7.35 ∼ 7.45*"* is described as one of two conflicting elements: fire ↔ water. Recalling that the oxygen oxidize (i.e. burns) objects, we find that it creates**inflammation in our bodies**. On the other hand, water which occupies 60% of our body is to be peaceful, so that weak alkalosis represents a stable state of the body. The body regularizes the pH every moment so that it is kept in the above range (at this pH, the inside of cells are in neutral and they can work normally; here we have the principle of balance à la Yin Yang). The 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. 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 suggest to take more alkali food so that altogether the burden of organs will be lighter, again the principle of Yin Yang.

Acidic food does not necessarily taste sour. Wheat, barley, sweet bread, pasta are strong acidic while (unpolished) rice, corn, rye, oats are middle acidic. Beef, pork, shells, lobster, crab are all strongly acidic, while (skinned) chicken, mutton, eggs are middle acidic. It is difficult to avoid acidic food as they taste too good, What we can do is to buy untoxicated food from farmers who are to be paid to provide safe food. The more you eat acidic food, the more you take alkali food and water, making bakance.

We state some alkali food which are not plenty.

Strong alkali: conjac powder, benija ginger, wakame, kombu (kelp) (both being seaweed). Rather strong alkali; kidney beans, spinach, shiitake (mushroom), soybeans, knob. Weak alkali (used in CC): milk, cabbage, cucumber, carrotte, pumpkin, lotus root (these three are antioxidant food), eggplant, onion, lettuce, sweet potato, turnip, potato, banana, apple (these two are antioxidant food), pear, water melon, strawberries, etc.

One of the best ways to keep good health is to take good weak-alkaline water, which is not easy to find (cf. [Hayakawa (2000)] and brands below). Equally important is the low degree of **oxidation-deoxidation potential**, which we refer to as **reduced** water or **ODP** for brevity. If ODP is higher, then it weakens the functions of both enzymes and anti-oxidation substances in the body, so that it creates more **active oxygen** (sometimes referred to activated oxygen, reactive oxygen) which is the **main cause of cancer and aging**. Cf. [Li et al. (2020), §5.7].

We are led to produce **reduced and weak alkaline water**. This is realized as **alkaline water with antioxidant potential** known as **electrolyzed reduced water** by chemists. Some water ionizers can attain an oxidation reduction potential of over −900 mV, which can neutralize the oxidative charge of AO's. The water contains free hydrogen that have antioxidant properties, suppressing free radicals (hydroxyl radicals), [Li et al. (2020)]. As the second best, this kind of water will help to remove harmful effect of fire from water: acidosis and detoxifying AO's in §2.2.

2.2. Detoxifing active oxygen species

We contend that the commonly accepted medical principle

“Detoxification of active oxygen species is a key to quick cure and the resulting longevity”

is also interpreted as the conflicting elements fire vs. water.

Toxicity of oxygen to living organisms are mainly due to its reductive products **superoxide** O_2^-, **peroxide** O_2^{2-}, **hydroxyl radical** ^1HO etc, see below. The peroxide has higher *acidifying activity* than the superoxide, and exists in the neutral acidity range as the conjugate acid—hydrogen peroxide. The superoxide has pK_a 4.8, which is almost the same as **acetic acid** $HOOCCH_3$ (CH_3COO^-) and exists in the neutral acidity range as O_2^-.

AOs oxidize lipids to make them **lipoperoxide** (peroxidized lipids) As on [Ikeda (1993), p.97] the resultant lipoperoxide may attach to the inner membranes of articular vessels to be a cause for worsening of and also as one of main causes for liver inflammation.

There are natural detoxificators, called **scavenger**s, of active oxygen in the body. **Superoxide dismutase** SOD annihilates superoxide O_2^-. **Catalase**, **Glutathione peroxidase**, **Cytochrome c peroxide enzyme** annihilate hydrogen peroxide H_2O_2.

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

§5.8]). Indeed, in radiative treatment of cancer, the therapy consists in creating hydroxyl radicals in the body by beaming radiation. They cause apoptosis of the normal cells as well as cancer cells. This is why one feels unwell with radiative treatment. Hydrogen is (an artificial) annihilator of hydroxyl radical.

As one gets older, one has less scavengers and AOs start to show their bad effect on the body function.

Remark 1. 3% hydrogen peroxide water solution is used as **fungicide** under the name of Oxydol. It used to be used for bleaching but when it was found that it has **carcinogenecity**, it was prohibited to use for bleaching food material. pK_a is the negative base10 logarithm of the acid dissociation constant K_a of a solution. pH and pK_a are equal when half of the acid has been dissociated. As is stated in §2, if one takes a lot of unreduced water, then the functions of detoxifiers is weakened and more AOs arise. AOs are originally supportive killers ([Supp (2008), p.41]) which white blood cells produce in order to protect the body from the invading bacteria and viruses. It is remarked ([Sena and Ohta (2007)]) that **another essential source of AOs is mitochondria. It is inevitable for mitochondria to leak electrons, being a high voltage electric plant. It is said that** 95% **of oxygen is used by mitochondria to produce energy and** $1 \sim 2\%$ **of oxygen is transformed into superoxide.**

Another plausible source of AOs are stresses, cf. §4.1. When a living organism is exposed to stress, the sympathetic nerves get tense and a signal is sent from hypothalamus to adrenal medulla, which secrete hormones including adrenalin. When the organism gets excited, the regulation system works to make the status to the original and adrenalin is degraded. With the work of degrading enzymes, AOs are produced, which give damages to DNA of the neighboring cells. [Murofushi (2005), pp. 63-64].

Possible countermeasures.
The best way is to take food plenty of antioxidant. One easy way to find such food is to find **brightly colored** vegetables and fruits: blue berries (anthocyanin, VC), green tea (catechin, VE, VC), tomato (β-carotene, lycopene, quercetin), salmons (astaxanthin), paprika (VE, VC), acai (polyphenol, V, Mineral), broccolis (β-carotene, VE,VC), pumpkin (β-carotene, VE), apples (apple polyphenol), bananas (tannin, β-carotene, VC)

lotus roots (tannin–polyphenol, VC), sesame (lignan, selenium), carrots (β-carotene, VC), ginger (shogaol), soba (rutin), almond (flavanon, VE), chocolate (cacaopolyphenol), avocado (VE etc.), fermented soy beans (isoflavone), brown rice (V, mineral, dietary fibre). Among them, all sprout vegetables (including broccoli) are a bit controversial since from the point of view of their strategy for preservation of the species, they contain higher levels of alkaloids from the third to the sixth day of their lives. Therefore, eating ripe sprouts not too often does not give any problem.

Among these, acai, avocado, sesame are thought of as miracle food material.

There are many supplements which contain antioxidant ingredients. We turn to this at another occasion. For reducing inflammatory changes in the body, taking enough Omega-3 FAs is highly recommended, cf. §3.

It is calculated that there are $6 \sim 7$ **trillion (thousand billion** $= 10^{12}$**) cells in the human body. All the cells of a human body are replaced by new ones in about three months**. Since the cells are made up of ingredients that are

taken in as food, water, etc., it is essential to **take-in untoxicated food, water etc. and annihilate the toxicated ingredients** as much as possible. Cf. §5.1 for the problem of similarity.

2.3. Are active oxygens just bad guys? Homeostasis

One may think active oxygens do only harm to our body but it is the balance that is important. Here again the principle of balance appears. The problem is that active oxygens are produced too excessively by simple breathing and there are many other sources of them.

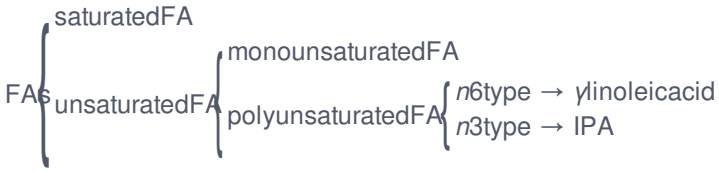
Homeostasis may be defined to be chemo-dynamical stability of cells (whence body functions) in a variable environment, [Carbone and Gromov (2001), p.44]. *Homeostasis w.r.t. the amount of AOs is preserved by the balance of AOs and their scavengers*.

Also we are to note the following. *The balance between the amount of* NO *or* $NO^{\cdot}$ *and superoxide* O_2^- *controls the blood pressure*. Thus for people with higher blood pressure may absorb NO to reduce the blood pressure: *Say yes to* NO *program*, [Ignalo (2007)]. Thus to keep homeostasis we need a good balance of two ambivalent entities.

3. Affinity of water and wind = fatty acids: indispensable ones and monounsaturated one

In this section we examine affinity of wind= oil with water. Especially we find out the secret of longevity of the Italian. Cf. also §5.1.

Lipids are composed of fatty acids which are complexes of carbon, hydrogen and oxygen atoms and are classified into three classes according to the existence of double bonding (of carbon atoms). Those without double bonding are called **saturated fatty acids** and those with double bonding are called **unsaturated fatty acids**, which are then classified into two subclasses depending on the number of double bondings. Those with one are called **monounsaturated fatty acids** and those with more than two are called **polyunsaturated fatty acids**.



We are motivated by [Weil (1995)] and others to improve the quality of meals by the use of monounsaturated and Omega-3 FA's.

Saturated FA's exist in plenty in animal meat including beef, pork, lamb, (unskinned) chicken, duck, etc. and they have the property that they are in solid in room temperature. This comes from the fact that those live-stocks (poultry) have *higher body temperature than humans* and their fat gets solidified at lower temperature. We must keep in mind that *animal fat has tendency to get solidified and therefore may get stuck in blood vessels , resulting in a cause of cardiovascular diseases*.

Lying in the opposite side of saturated ones in the chemical spectrum of fats are polyunsaturated fats, which are in liquid state at room temperature. Corn, soy, sesame, sunflower and safflower oils are typical examples of polyunsaturated FA's. They are all of vegetable origin and in view of our imprinted common sense, we tend to believe that vegetable fats are healthier than animal fats. Thus once margarine drove off butter from the throne of pasting oil on bread on this ground.

However, margarine is a saturated FA by partially hydrogenating the unsaturated oils. As is discussed on [Li et al. (2020), pp. 156-159], when processed chemically, unsaturated FAs become TFA which are much more harmful than saturated FAs. Thus margarine is more harmful to heart disease or some degenerative changes to the body than butter. A strategy is to remove margarine and solid vegetable shortening and products made from them from the diet. "Crisp" feeling of cookies or biscuits is the result of shortening. Thus homemade cookies are healthier. Polyunsaturated FA's are "α-linoleic acids (n3-type) consisting of 18 carbon atoms with 2 double bonds" and "linolenic acids (n6-type) consisting of 18 carbon atoms with 3 double bonds". Neither α-linoleic acids nor linolenic acids are synthesized in the human body and should be taken in through food; thus they are **indispensable FAs**. What is important is their ratio, the ideal ratio being 4:1. However, modernization and Westernization of meals makes the ratio quite bad 14:1.

From these indispensable FAs, the body synthesizes **prostaglandin** (*PG*) which is a physiology-activating substance and is responsible for regulating inflammation and immune system.

It is emphasized in [Weil (1995), pp.178-179] that Omega-3 FAs should be taken, where Omega-3 and n3 are almost synonyms but the former is contained only in some limited kinds of fish and plants indicated below. It is asserted that Omega-3 FAs seem to reduce inflammatory changes in the body, protect against the abnormal blood clotting, and possibly against cancer and degenerative changes in cells and tissues and that optimal diets should include these hard-to-find compounds. They are contained in the **oily cold sea fish—sardines, herring, mackerel, bluefish, salmon, and lesser extent albacore tunas**.

Japan is blessed with rich supply of these fish. For Japanese tables, the traditional fish including **sardines, mackerels, saurels, salmon** are good and cheap supplies of Omega-3 FAs.

Omega-3 FAs are also highly contained in plant fats—flax and hemp. **Flax** oil is becoming famous as a rich supply of Omega-3.

Although it may become persistent weed in your garden, **purslane** could be used as another supply of Omega-3. In Mediterranean meals, this is often used.

Monounsaturated FAs are "the oleic acids" which are plenty in olive oil etc. have the double bond at the 9th position from the methyl-base at the left end in its structure formula and are called n9-type.

On [Weil (1995), pp.174], mention is made on the degeneration of unsaturated FAs into TFA referred to in §5.1 under **heating or treating with chemical resolvents and bleaches** From our simple common sense, it can be perceived that the less the double bond in unsaturated FAs is, the less the damage to them. Thus it seems true that **monounsaturated**

FAs are most resistant to heating and other treatment. The main resources of supply of these FAs are olive oil, canola oil, peanut oil and avocado oil. Canola oil is extracted from rape seeds. Canola oil which are sold at low prices are all extracted by deforming the FAs and also rape seeds may be contaminated by pesticides. Only the costly one which is **organic expeller-pressed** canola oil is recommendable. Olive oil is far safer as there is no need of pesticide and has been used safely for thousands of years.

Olive oil of good quality—**extra virgin olive oil**—has become available easily at reasonable price and it is highly recommendable to use it for frying in deep oil. Especially, in Chinese and Japanese cooking, frying food material in deep oil is very common and if you use olive oil for it, you'll be freed from sour stomach after eating.

4. Affinity of water and cosmos = mind

In this section, continuing on Remark 1, we list up possible sources of stresses which one receives from the environment as pollution. Stresses can be a cause of cancer since they give rise to the situation in which active oxygens can be produced, which then damage DNA of neighboring cells to make them cancerous. As a possible remedy, we describe modern comforts which are based on ergonomics and give very relaxing conditions for the human bodies and brains. This may help to liquidate the damage of stresses.

4.2. Stresses and brain functions—missing ingredients in TCM

In this section, we state the best working conditions for brains, meant for brain workers. The fundamental established fact is that **the brain cannot forget what it experienced, where experience includes signals that the brain receives from various senses**. Here pollutions of all kinds are serious. The**noise-pollution** is a serious obstacle to concentrative work. If one hears a shrieking noise, one's **auditory sense** sends a signal to the brain. It is true that majority of people would think they ignore the noise. But according to the above bare fact, their brains receive the signals and remember it as a bad stimulant. They may be kept in subconsciousness and may not float to the surface of consciousness. And as with other harmful things, the stimuli accumulate to give some serious problems with brain function, audibility, etc. Another point is that one's senses become numbed if one is exposed to various pollutions. If one is exposed to big noise, one may suffer from worse audibility and one tends to speak rather loudly. This happens with old people who cannot hear well and they speak very loudly.

The dog barking is a serious noise pollution since 5m apart, it makes 90 phone noise which is bigger than the noise of Bullet Train (limited to 70 phones in Japan).

Not only noise-pollution, but also smell pollution is annoying. If one feels bad smell, it is the sign to avoid the source of smell because the **sense of smell** is the oldest sense which is chemical and works as the detector of danger. Humans lost their once keen sense of smell as other senses developed. This oldest sense is incorporated in our system and works as a detector of other people of opposite gender.

It is a good news that the life span of the Chinese has been prolonging. It may be partly because there are a drastically smaller number of smokers and in public places, totally non-smoking, and one can avoid the most harmful secondary fumes.

4.2. Ergonomics, missing ingredients in TCM

Here we understand **Ergonomics** to mean any facilities which make human bodies feel comfortable. Examples are plenty.

- Comfortable (reclining) chairs which have backrest and armrests with properly cushioned seat. It is preferable to have an ottoman. The reason is that if one keeps one's legs in lower positions, the blood circulation in one's legs is disturbed and one tends to cross one's legs. With an ottoman, blood circulation is kept well. To avoid *economy class syndrome*, some air-planes have foot-rests. The point is to keep the legs in higher position than the heart. All fluid flows to a lower place and stay there (to create blood cots in the case of blood). Another point is that the chair can be movable without making shrieking noise. For noise pollution, we will come back later.
- A comfortable toilet which has a comfortable backrest and armrests (which can be folded) with properly soft seat.
- A proper in-sole which fit exactly to your feet. The arches of one's foot must be held up properly. A company in Japan produces a perfectly fit in-soles (with the name BMZ). Once you wear the shoes with their in-soles, you feel you are walking on clouds.
- If one works at the desk, the balance of the height of the chair and the desk is crucial. Here ergonomics comes in. If you work, it is better to have two lights, indirect and direct. With a direct light on the opposite side of your dominant hand, you can enjoy working better for hours. If the views from windows is consoling, it'd be ideal. But in the work room, noise must be shut out. A recommended way is to build a house in concrete with widows having two paired-glasses (the outside window having two glasses and the inside window having two glasses, squeezing a layer of air). Noise proof is crucial if you go into the depth of your thought. If this is not practical, then one may better use a noise-canceller, which produces the wave of the inverse phase of the detected noise from outside, cancelling it.
- When you itchy at your back and your body is not flexible enough to scratch the spot, use grandson's hand. Apply this principle and carry all possible tools which give you more comfort. E.g., if you expect to sit on a hard chair, take a cushion with you. If you feel hot, use an air-conditioner but avoid direct wind from it (you may suffer from neuralgia). There are infinitely many possible ways to give yourself comfort.
- To reduce stress, meditation may be recommended in a totally noise-proof room for some time. Cf. [Weil (1995)].

4.3. Disused atrophy

Any organs of the human body gets degenerated if not used properly. A typical case is an old person lying in bed for some time and when he wants to walk, he couldn't. This is because his muscles in the feet (Hamstring muscles) gets weakened.

Since 60% of muscles are those of feet, it is essential to use them in a proper way. It is said that if one walks at rather high pace, for 6000 steps, or about one hour daily, it has a visible effect on health.

This implies that at old age, one needs to be careful not to fall down. If one falls down, one tends to hit one's head or break one's legs. Then one has to stay in bed and disused atrophy results. One should master **how to take a fall**.

5. How to improve the quality of meals

Human body consists of 60% water, 18% protein, 16% lipids and 6% minerals. Three major nutrients for a human body are **proteins, carbo-hydrate and lipids** while five major nutrients are three major nutrients plus vitamin and mineral.

Of these, lipids are most feasible of getting damages by oxidization and we discuss about the FA's to be taken in §3. Regarding carbo-hydrate, we just say that unprocessed grains are to be taken; unpolished rice (better brown rice), unbleached wheat, etc. About proteins, we state some basics in §5.2.

5.1. Problem of similarity

We have always been exposed to toxins including pesticides and environmental pollution. After the Fukushima, one more factor is added, i.e. that of the radiation. As is presented in [Kondo (1993)], the 3-4 typical radiative substances–Cesium 137, Strontium 90, Plutonium (in the beginning there was also Iodine which are much less now because of its short half-life). Half-lives of Cesium 137, Strontium 90 are about 30 years and even in 30 years, there still remains half of the amount. In the case of Plutonium, the half life is 25,000 years and it will continue to release radiation.

Strontium 90 is absorbed in bones because **it resembles Calcium** Ca while cesium 137 is absorbed in muscles because **it resembles Potassium** K.

A possible misuse of TFA as Cis-FA in membranes is exactly the same as the case with radio-active substances, where **FA** is a short-hand for fatty acids.

The plausible danger of TFA has been recognized and after a purging campaign, it's much less used. TFA are unnatural FA that do not exist in nature and it is not known how the human bodies use them. If the body use them in the same way as it uses cis-FA, then it may result in damaging cell membranes and hormones. Here a study is necessary of cis-configuration, skew, and trans- configuration. They may coexist chemically. Here arises the **problem of similarity: Human bodies can absorb those toxic (mainly artificial) materials which resemble natural ones**.

On [Weil (1995), p. 223] we find passages. **The human body constructs cell membranes from cis FAs and also uses them as metabolic pathways for hormones**. Unsaturated FA are feasible to undergo transformation from natural cis-configuration into unnatural trans-configuration when they are processed by heating, chemical solvent or perching, thus creating TFA—trans-fatty acid. cis is a Latin word meaning 'this side', and trans means 'that side'. The plausible danger of TFA has been recognized and there is much less food containing TFAS. TFA are unnatural FA that do not exist in nature and it is not known how the human bodies use them. If the body use them in the same way as it uses cis-FA, then it may result in damaging the human body since cell membranes and hormones play essential roles in maintaining life.

We refer to [Li et al. (2020), pp. 153-168] for detailed account on FA's and take the results in §3 for grated.

5.2. Proteins and nitrogen

Nitrogen is plenty, occupying more than 3/4 of the atmospheric gases (about 78%). On [Li et al. (2020), pp. 167-168] nitrogen circulation is discussed as one of the three essential ingredients in fertilizers, **Nitrogen, Phosphoric acid, and Potassium** and the importance of nitrogen as one of the three food ingredients–proteins. Protein is a long chain of amino-acids. Although there are indispensable amino acids which must be taken in as food, excessive ingestion of protein results in weakened function of immune system. This follows from the decomposing reaction of amino acids in the body. Protein molecules are big and complicated, and digesting them gives a burden on digestive organs. If one takes more proteins than necessary (60*g* per day), then the digestive system must do more work than in the case of other nutrients, carbohydrate and lipids. In the process of metabolism, protein degrades to **highly toxic nitrogenous residues**. The liver being responsible for detoxifying taken-in material, it has to deal with these nitrogenous residues into **urea** $CO(NH_2)_2$ which is a simple compound and is also highly toxic to the body. Then kidneys transform them into **uric acid** $C_5H_4N_4O_3$ which is excreted as urine through urethrae. However, these organs **(liver and kidneys) also work as strong allies of the immune system, so that if they are too much engaged with treating proteins, then their function as immune allies will be limited.** Therefore living on proteins is not a healthy way at all.

Nitrogenous-breakdown products of protein metabolism irritate the immune system, increasing the risk of allergy and auto-immunity. Cf. [Weil (1995), pp. 180-182].

The three main problems in agricultural products are **pesticides, fertilizers, growth hormones**. To avoid these, we need to buy products from farmers who are not using them and do organic or natural agriculture as is sated in §2.

6. Further study: Health in bowels

Our question is that

"*increasing the amount and enhancing function of* **intestinal bacteria lactobacillus, bifidobacteria, butyric acid bacteria** *to keep good health and longevity*"

is to be important in wholistic medication.

Lactobacillus and bifidobacteria can be taken rather easily from yogurt, kimchi, etc. But it is said that the best yogurt is the one from Gruzia. It is known that butyric acid bacteria are contained in very small number of fermented food including **rice bran pickles and skinky tofu–chou doufu** and it is difficult to take it as food. The bacterio-therapy may be partially included in TCM. There is a report about the excellent intestinal flora implying healthy longevity. Research in progress.

7. Affinity of water with soil = Tonic medicines of TCM

In this section, we examine the effectivity of tonic medicines prescribed by TCM and [Weil (1995)] to see how they strengthen the body and the spirit and as a result, enhance the function of immune systems.

There are many other tonic medicines in **folk medication** in the world. We quote from [Weil (1995), 171-186]. All that are recommended are non-toxic.

Astragalus (Huangqi) is confirmed by pharmacological studies in the West to enhance immune function, to increase activity of several kinds of white blood cells and to produce antibodies and interfelons. These properties come from the root's content of polysaccharides, which are large molecules consisting of chains of sugar subunits. Weil recommends this to many patients and to those who are feeling feeble, lacking energy or vitality, or feeling vulnerable to stress.

Dang kuei is a root of *Angelica sinensis* is known as blood-building tonic that improves circulation. Western herbalists prescribe it for female reproductive systems and Chinese doctors regard its function to tone the uterus and balance female hormonal chemistry, but the latter thinks it to be beneficial to both sexes and often includes it in tonic formulas with ginseng and ho shou wu. Dang kuei is non-toxic and does not have estrogenic activity against most people's understanding.

Ho shou wu (Polygonum multiflorum). The root of this plant is a Chinese blood tonic, believed to clean the blood, increase the energy and nourish the hair and teeth. It lowers the elevated cholesterol and is believed to be a strong sexual tonic.

Siberian ginseng (Eleuthero ginseng, spiny ginseng). The root of a large shrub native to northern China and Siberia. Eleutherococcus is a genus in the ginseng family, but different from Panax (ginseng). Active components of Siberin ginseng are polysaccharides and eleutherosides. Much animal and human test revealed its protective property and enhance immunity.

Ginseng (Panax) is so famous, very expensive and effective. There are two species, P. ginseng and P. quinquefolium. There is no need to mention on this. One ca find all information easily. Can this be replaced by Siberian ginseng to some extent?

Cordyceps sinensis—mushroom organism is equally well-known and we do not refer to it.
There are some food material are listed
Garlic, Ginger, Green tea, Maitake mushroom
Milk thistle (Sylibum mariaanum). The seeds of this plant gives an extract—sylmarin, which enhances the metabolism of liver cells. This is recommended by Weil to all patients that have chronic hepalitis and abnormal liver function.

8. Practical suggestions to longevity

We shall give advices to both generation-wise and common to all generations. Rough classification is as follows.

- 20 ~ 40(45). This is the period in which one has to make greatest efforts not to get cancer. For this the most useful way is to keep the immune system at its full strength. According to §5.2, one had better suppress the amount of taken-

in protein (save for indispensable ones). Also it is better to be keen to the health check data and keep the values within allowance.

- 40 ~ 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 multi-vitamins and proteins as supplements. Don't carry heavy big bellies as they may invite acute diseases.
- 50 ~ 60. The 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.
- 60 ~ 70. This period determines whether your later old life is happy or not.
- 70 ~ 80. Congratulations! You surpassed the average life span. 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)] and we continue on the second paper. More detailed and concrete suggestions will be made in Paper II [Li et al. (2024)].

There are many numerical data about health check. But they are the average of younger generation, such as 20~ 40 and may not apply to more senior people.

Body Mass index (BMI) is defined to be the ratio of the body weight to the square of the height: $\mathrm{BMI}=\frac{W}{t^2}$.
over 30 is thought of as fat; under 19 thin (slim)
Japan standard BMI=22; over 25 fat; under 18.5 thin. BMI can be used to check the health condition–fatness in place of the standard body weight. However, such a data may apply to a certain range of ages.

8.1. Conjectural conclusion

To neutralize acidosis in the body and make it weak alkalosis is the key. As has been made clear in §2, longevity of the Japanese depends on their natural water and this part in China can be improved by Xiangke shui, which partly helps to decrease AOs. As is stated at the end of §2.2, those antioxidant food material—brightly colored vegetables and fruits—are very common in Japanese dishes but not so plenty in CC. This part can be improved by adding these food material in CC. If needed, one can take supplements. Also sea fish containing omega3 FA's and olive oil may be added to CC as indicated in §3. Ergonomic consideration is missing and when one gets older, one needs comfort, which can be attained with little expense and with big effect.

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