

Acid and Alkaline

by Herman Aihara

George Ohsawa Macrobiotic Foundation
Chico, California

By Herman Aihara

Acid and Alkaline

Basic Macrobiotics

Kaleidoscope

Macrobiotics, A n Invitation to Health and Happiness

Milk: A Myth of Civilization

Natural Healing from Head to Toe

Seven Macrobiotic Principles

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Preface

“East is East and West is West and never the twain shall meet,” said Rudyard Kipling. He lived in the Orient too soon. If he lived there now his opinion would be much different.

Judo, karate, and other martial arts have thousands of students and are important sports in the Western world: they will be practiced even at the elementary level in the near future. They have a different spirit than football or baseball. They are aiming more at spiritual than physical development. The West is learning something from the East.

Japan learned how to make the automobile, camera, transistor, etc., from the West. Its industry was built with Eastern spirit, adding Western technology. Japan’s products are now so superb that one of the largest auto makers in the West is dying.

East and West have met and are creating a tremendous civilization. This will be realized in the 21st century. It is starting already. Judo, Aiki, Zen, Yoga, television, and transistors are the first stage of such a civilization. At the fifth and sixth stages of judgment, East and West will meet at the religious and conceptual levels. This will be very difficult. When they merge, one world will be established.

My purpose in writing this book is to guide the general public of the West to accept the Eastern concept of science and apply it to Western thought in medicine. This will be a great benefit for our health.

Herman Aihara
November 1979

This book is dedicated to my teachers at elementary school, high school, and the University; to George Ohsawa and Lima-san; to my father and mother and my adoptive parents; to my brother-in-law; and to the many authors whose works inspired me to write this book .

Herman Aihara
February 20, 1980

Contents

Preface	iii
1. The importance of acid and alkaline balance	1
1. Why this book was written	1
2. Immortality	3
3. Origin of life: water	5
4. What the study of acid and alkaline will do for you . .	9
2. Acid and alkaline—the Western approach	12
1. Acid and alkaline in the household	12
2. What are acids and alkalies?	14
3. Acid and alkaline in the human body	16
4. The newer theory of acid and alkaline	20
5. Acid and alkaline forming elements	22
3. Acid and alkaline in foods	35
1. Acid and alkaline forming foods	35
2. How to determine acid forming foods and alkaline forming foods	36
3. Fat and acid alkaline balance	47
4. Carbohydrates and acid alkaline balance	48
5. Sugar and acid alkaline balance	49
6. Vitamins and acid alkaline balance	51
7. Conclusion	54

4. Yin and yang—the Eastern approach	57
1. Sagen Ishizuka: founder of Japanese macrobiotic medicine and diet	57
2. George Ohsawa—founder of present-day macrobiotics	62
3. Yin and yang	63
4. Yin and yang foods	72
5. Four wheel balance of foods	87
1. Acid and alkaline / yin and yang classification of foods	87
2. How to read the four-wheel chart	87
3. Balancing meals	89
6. Acid and alkaline in life	95
1. Acidosis	95
2. Alkalosis	97
3. What are the acid drugs?	98
4. Dietary advice to recover from sickness caused by taking drugs	103
5. Fatigue and acidity	106
6. Acid and alkaline and mentality	109
7. Cancer and acid and alkaline	110
8. Conclusion	117
Bibliography	118

Chapter 1

The Importance of Acid and Alkaline Balance

1. Why this Book was Written

From the end of the last century to this century, important concepts of life were brought to the field of physiology. One of them is *milieu interne*, brought forward by Claude Bernard. Another is *homeostasis*, by Walter Cannon. “Claude Bernard, the great nineteenth century physiologist who originated much of our modern physiological thought, called the extracellular fluids that surround the cells the *milieu interne*, ‘the internal environment,’ and Walter Cannon, another great physiologist of the first half of this century, referred to the maintenance of constant conditions in these fluids as *homeostasis*.” (Guyton, *Function of the Human Body*.) In this homeostasis, our body has to maintain many constant conditions. That is to say:

1. The body temperature (98.6°F.)
2. Acidity and alkalinity of the body fluids (pH 7.4)
3. The concentration of certain chemicals dissolved in the body fluids
4. The glucose level in the blood
5. The amount of body fluids
6. The levels of O₂ and CO₂ in the blood
7. The amount of blood...etc.

Dr. Cannon realized the importance of balance between acid and alkaline in the body fluids, especially in the blood. Although Western medicine or physiology developed the theory of how our body maintains the balance of acid and alkaline in our blood, which should be maintained slightly on the alkaline side, it didn't develop this concept further into the nutritional field.

Around the same time of Dr. Cannon, a distinguished medical doctor lived in Japan. Dr. Tan Katase, who was a professor at Osaka University, devoted his whole life to the study of calcium, its physiological dietary function and importance in human health. He studied physiology with an eye to human health. One of his conclusions was the same as that of Dr. Cannon's, but since Dr. Katase was interested more in health than in mere physiology, he related the acid and alkaline balance to foods. He recommended highly alkaline foods containing calcium.

A little before Dr. Katase, there lived in Japan an army doctor by the name of Sagen Ishizuka, who concluded after twenty-eight years of experience and study as an army doctor that two alkaline elements in our body fluid serve important functions for health. According to him, the two alkaline elements determine the character of foods, and likewise determine the character in men who eat such foods. Those two elements are potassium and sodium.

His disciple, George Ohsawa, cured his own 'incurable' sickness by Ishizuka's diet. He then developed Ishizuka's theory further and called it the macrobiotic approach. (In Greek, *macro* means great or long, and *bio* means life.) Ohsawa applied Oriental philosophy to the acid and alkaline concept, and called them yin and yang, which are the basic and most popular concepts in Oriental thought.

In my studies, I have found that *foods* can be very well or-

ganized if they are classified by the two pairs of balancing concepts, and yin-yang. In this book I am trying to unite the Western concept of acid and alkaline and the Eastern concept of yin and yang, because when these concepts are combined our health will be benefitted very much. For example, cancer will be better understood using these concepts of acid and alkaline and yin and yang. And these concepts can give a better approach to the cancer-curing diet. The concepts of yin and yang benefit not only our health; they also open vast fields of Oriental thought which will add a deeper psychological and spiritual understanding of life to the Westerner. By the same token, the concepts of acid and alkaline will give the Easterner a better understanding of life and better guide toward health. This book was written with these benefits in mind.

2. Immortality

Since ancient times people have searched for immortality; in Europe, chemistry was developed as the result. In China, medicine was developed.

Theoretically, we are immortal. Egg and sperm combine and create new cells. From these new cells, new life develops. This new life makes egg and sperm, again forming new life. In other words, germ cells never die. Parents live on and on in new life.

Eggs and sperm are germ cells. According to modern physiology (*Man and the Living World*), germ cells do not show signs of age, and carry the potential of life from generation to generation. However, we have other kinds of cells which are body cells or somatic cells. As they grow, these cells turn into specialized tissue such as nerve, muscle, connective tissue, tendon, cartilage,

skin, bone, fatty tissue, etc. These tissues grow further to become specialized organs. These specialized cells of tissues and organs unfortunately reach old age and die. What makes these cells die?

A famous French physiologist, Alexis Carrel, found the cause. He kept a chicken heart alive for about twenty-eight years. He incubated a chicken egg. The heart of the developing young chick was taken out and cut in pieces. These, consisting of many cells, were transferred into a saline solution which contained minerals in the same proportion as chicken blood. He changed this solution every day, and kept the chick's heart alive about twenty-eight years. When he stopped changing this solution, the heart died. What made the chick's heart stay alive?

The secret of why Carrel's chick heart survived twenty-eight years lies in the fact that he changed the fluid in which the chick's heart was kept, every day. Carrel's experiment brought us to modern physiology, which says:

For the cells of the body to continue living, there is one major requirement: the composition of the body fluids that bathe the outside of the cells must be controlled very exactly from moment to moment and day to day, with no single important constituent ever varying more than a few percent. Indeed, cells can live even after being removed from the body if they are placed in a fluid bath that contains the same constituents and has the same physical conditions as those of the body fluids. Claude Bernard... called the extracellular fluids that surround the cells the *milieu interne*, 'the internal environment,' and Walter Cannon...referred to the maintenance of constant conditions in these fluids as *homeostasis*.

(Guyton, *Function of the Human Body*.)

Then why does the environmental fluid have to be kept in a constant condition? What kind of relation is there between cells, organs, and body fluids? In order to answer these questions we have to go back billions of years to the origin of life.

3. Origin of Life—Water

No living thing, whether living in water or on land, can live without water. No single body cell can sustain life without water. Therefore, the most accepted biological theory of creation is that life started in the ocean. It is interesting to note that the Chinese ideogram for the sea (海) is made up of three parts:

Water (氵) Man (人) and Mother (母).

This ideogram means that the sea is the mother of man. In the beginning, unicellular structures emerged from an ocean which nourished them—probably about three billion years ago.

This ocean was a perfect environment for the primitive unicellular organisms because the specific heat of water is very great. This means that the ocean temperature is only minutely affected by weather, climate, and location. Furthermore, water is a strong solvent. Therefore, it can contain almost all the nutrients that living creatures require.

Then, due to the change of weather and foods eaten, some single-celled creatures transformed into more complicated multicellular organisms. When this happened, the organisms had to carry the ocean between the cells and inside the cells, because some of the cells were not in contact with the outside ocean; that means they had no foods to get, and no waste to throw out. By

bringing the ocean inside, the multicellular organisms could live in the ocean in the same way the unicellular organism lived, because the 'internal ocean' was the same composition as the outside ocean. Today, however, the ocean is much saltier than our extracellular fluid because ocean water became saltier during billions of years of evaporation. The present ocean is so salty that we cannot even use it for drinking water. If we drink this ocean water, it will increase the osmotic pressure until we lose our inside liquid, dehydrate, and die. Osmotic pressure is very important for keeping the amount of water constant in our body. This osmotic pressure is due to the fact that water has a strong soluble power.

The next important chemical characteristic of water is ionization. Ionization happens when an atom loses its electrons or gains electrons from another atom. This happens in a water solution. For example, when salt (sodium chloride, NaCl) dissolves in water, chlorine (Cl) acquires electrons from the sodium (Na) atom and becomes a negatively charged atom. [This is called minus (-) or negative ionization.] On the other hand, when Na loses its electron it becomes a positively charged atom. This is called positive ionization.

Since ionized elements activate reactions, elements which cause chemical reactions are generally considered ionized. Since water causes ionization, without water our body ceases its chemical reactions. This means death.

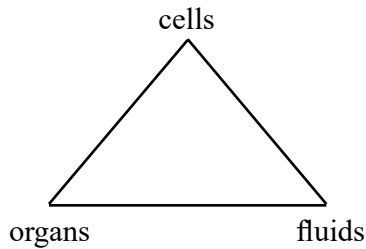
The transformation to multicellular organisms was a big change in life, because in multicellular organisms individual cells began to specialize. Some became sterile and functioned only through locomotion and food acquisition, while others retained the primitive condition of the reproductive cell. Some of the reproductive cells became highly specialized (egg and sperm)

while others merely retained their initial capacity to reproduce by simple fission. In other words, a differentiation of function took place among the cells of the aggregate, definitely distinguishing it from the isolated single cells, and at the same time creating the first step in the organization of a complex animal through the loss of reproductive power. Once this step was taken, differentiation of the soma cells continued in various directions toward greater and greater complexity, and then up the long trail to a highly intricate form such as man.

Another important change that resulted in multicellular organisms was that they began to carry the outside environment (the ocean) inside of their bodies, as I said in a previous paragraph. These multicellular cells were shut off from any chance of directly obtaining food, water, and oxygen from the distant larger environment or from discharging into it the waste materials which result from activity. The conveniences for getting supplies and eliminating debris were provided by the development of moving streams within the body itself: the blood and tissue fluids. By building circulatory systems, living creatures acquired much more freedom than single-celled organisms and developed into the more complicated creatures known as fish.

Some of the more yang (I will explain this word later) fish developed the ability to utilize oxygen from the air and not from the water. They became amphibians. Emerging from water to land was the second biggest change in animal life. As the new environment changed its temperature, moisture, and oxygen contents, food conditions changed qualitatively and quantitatively. The variation of environmental conditions and foods developed the complexity of the body structure and function of specialized animal cells, resulting in highly developed muscles, organs, coordi-

nating nervous and glandular systems including digestive organs, circulatory organs, respiratory organs, and poison eliminating and waste control organs. As a result, animals could maintain steadier inner conditions than before; they were provided with coordinated nervous and glandular systems.



Organs, the fluid inner environment, and cells were dependent on each other. For the multicellular organisms and higher living creatures, it seems to me these three are dependent on each other. If one of them malfunctions or becomes rotten, the others will die. However, for the simplest creatures, unicellular organisms, fluids were originally outside, and that was the origin of cells. The condition and constitution of fluid produced the first cell. (This is not an orthodox biological theory today; only a few biologists believe this, including Dr. K. Chishima.)

Therefore, in my opinion, the condition and constitution of body fluid, especially blood, is the most important factor in our life: that is to say, for our health. In man, organs such as the kidneys, liver, and especially the large intestine eliminate waste and toxins and maintain our internal environment in as ideal a condition as possible. However, there is limitation for this. If we eat too many poison-producing foods, or not enough materials which are needed to clear out poisons, then our internal environment

becomes beyond control, and away from the correct condition in which our cells can live. The cells become sick and die. Many sicknesses are a function of the body's attempt to clean up this internal environment. Cancer is a condition in which body cells become abnormal due to the abnormal condition of body fluids.

Then what should be the condition of body fluids, including the blood? That is to say, what should be the balance of acidity and alkalinity? The body fluid should be slightly alkaline, as Dr. Walter Cannon pointed out: "It is of the greatest importance to the existence and proper action of the cells that the blood shall not vary to a noteworthy degree either in the acid or the alkaline direction." This applies also to the extracellular fluids.

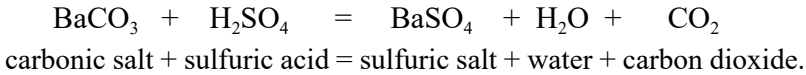
Now I will discuss acid and alkaline.

4. What the Study of Acid and Alkaline Will Do for You

When they are metabolized, carbohydrates, proteins, and fats produce inorganic and organic acids. Protein produces sulfuric acid and phosphoric acid. Carbohydrates and fats produce acetic acid and lactic acid. These acids are all poisonous. We have to eliminate them from our bodies as quickly as possible. However, if these acidic substances were eliminated through the kidneys and large intestine, those organs would suffer damage from the acid. Luckily, however, in our body those acids are neutralized by mineral compounds. Together, the mineral compounds and acids produce substances which are no longer poisonous to us and which can be safely eliminated.

The family of mineral compounds which neutralize acids are the carbonic salts, symbolized as BaCO_3 where the Ba stands for any one of the four basic or alkaline elements: Na, Ca, K, and Mg.

When carbonic salts meet with strong acids such as sulfuric acid, phosphoric acid, acetic acid, and lactic acid, the alkaline minerals making up the carbonic salt leave the salt and combine with the acids to make new salts. For example:



In the result, carbonic salt changes sulfuric acid, which is a strong acid, to sulfuric salt, which can be eliminated through the kidneys without any harm. In the same way, some other acid may be changed to another salt and be eliminated through the wall of the large intestine. In short, the acids which are the end product of metabolism can be eliminated *only* after they are changed to neutral salts. Then they are no longer harmful to the kidneys and to the wall of the intestine.

The result of this change, that is to say, from acid to neutral salt is to reduce the concentration of alkaline elements such as Na, Ca, Mg, and K in the blood and then in the extracellular fluid. It is this lowered concentration of alkaline elements which is referred to as the acidic condition of the body fluid. Since in order for us to be healthy our body fluid must be kept at an alkaline level (pH 7.4), we must re-supply the lost alkaline elements through the foods we eat.

This is one of the reasons that we have to eat enough alkaline forming foods to make body fluids alkaline all the time. Another reason that we have to eat alkaline forming foods is that a shortage of the alkaline forming elements Na and Ca in the extracellular fluids causes a lowering of the other alkaline forming elements, K and Mg, in the intracellular fluids of the body. If the intracellular

fluids in question are in nerve cells, then the nerves will not function; that is to say, the nerves will not transmit messages. The result is that we go into a coma. Therefore, it is imperative to keep enough alkaline forming elements in our body fluids to maintain an alkalinity level of pH 7.4.

Furthermore, one of the important causes of cancer—and other degenerative diseases—is the cumulative effect of the acidic condition of body fluid. Therefore if you study acid and alkaline balance as taught in this book, you can prevent almost all sicknesses, including cancer, heart disease, heart attack, and AIDS.