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*Acidity and alkalinity in the human body: a necessary balance for life*

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## ABSTRACT

Problems concerning to health, are and have been such a controversial issue in the society. Many scientists have supported that most of the illnesses have their cause in the diets people carry on and their lifestyles. The acidity, caused by food or stress, and alkalinity are the two main points for being concerned about because they are the essence of what human beings ingest and they are two extremes that people should make a balance.

It has been proven that there is a relation between health, aging and acidity. It is easy to explain. When people do not have a healthy diet and do not have a relaxed life they tend to produce more toxins that begin to accumulate inside the body. In a near future, damages in the body appear as problems in some processes like the metabolism and respiration because there is not a balance between acidity and alkalinity, there is not something that counteracts the accumulation of acids. That is when the aging's process gets accelerated and people start to “decompose” while living.

Too much of either alkaline or acidic foods is bad for health, but having the correct information and then an immediate spread of it, could improve our lives so this means that somehow, the alkaline diet should become part of the public health policies.

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## I. INTRODUCTION

We are passing an Era, in which science and technology have progressed and have experienced several changes, giving the humanity a whole new lifestyle. Indisputably it has led to changes in food, as in habits.

In recent times, it is talked a lot about how acidity and alkalinity influence in health. There exist doctors and investigators who dedicate their life to study how the excess of acids makes bad to the body. Such is the case of Dr. Robert Young, a recognized microbiologist, who made a document called “Alkaline lifestyle” in which he indicates some guidelines that will help the people to improve the quality of their lives.

When looking around, we can see that almost all the food that surrounds us is acidifying. Drinks like Coke, Red Bull, alcohol and even some food that we did not know that they are harmful because of its acidity quality are causing damages on us; also, if it is considered that the humanity, in general, is breathing polluted air, they have a sedentary lifestyle and they generate a lot of stress. All of these conditions together result to unbalance the pH of the body, which then will make the body to start deteriorating.

Multiple investigations have determined that there exists a relation between the deterioration of the life, the illnesses, aging and acidity. The diseases are the consequences of the imbalance of the pH, generally because of the excess of acids. The body is naturally alkaline, but its functions are acidifying, the human activities generate them, so this means that the body needs alkaline fuels.

The issue of health is a topic that all the people are concerned about because when we do not enjoy of a good life, everything besides of this becomes unimportant. The human beings are designed to be healthy. The illnesses are the result of the mismanaging of the body. Therefore this study aims to determine above all one of the ways we can prevent conditions that keep us from having a healthy balance of our body.

The present generation has the challenge to make this information spread so it could be part of the everyday life of the people and could improve their lives with a highest level of conscience in what it is being drunk, eaten, breathed and how the life is being taken.

Surely, the healthy lifestyles that are already designed and the ones that are upcoming alongside the developments of technology will be part of the public health policies, so in the future a better quality of life can be shared and enjoyed, and a healthy society will emerge.

## II. CHAPTER 1: HISTORICAL BACKGROUND

### 1. Investigations done

Certain historians affirm that the Spanish conqueror Juan Ponce de León found Florida in 1512, in the search of the fountain of youth. The rumors of that time insisted in the existence of this and that it was possibly located in that place in North America.

By the end of the 20<sup>th</sup> century, Japanese scientists found out that by separating the ions of the water (H<sub>2</sub>O) by using an electric current, two different classes of the same kind were obtained. One was very rich in oxygen, and the other with less oxygen but more hydrogen. The first was called alkaline water due to its high pH and the other was called acidic water because of having a low pH. The natural water has a pH of 7, so it is neutral. So, we can say that the alkaline water is rich in oxygen due to its elevated pH above 7 in the scale.

In the development of the investigations, Japanese scientists confirmed that consuming alkaline water helps the body to eliminate acid rubbish, which is produced by the cell combustion. If these wastes are not taken out quickly, the body's pH will get altered and consequently a lot of problems will be created. It was proven that drinking between 5 or 6 glasses of alkaline water a day the body will get stabilized as it slightly preserves its natural condition of alkalinity.

Alkaline water produced with the ionization process requires the usage of water ionizer that was invented by the Japanese and that nowadays it is commercialized all around the world. The water ionizer was developed at the beginning of the 50s and the large-scale development started in 1954. In 1966, the Ministry of health and rehabilitation of Japan enabled the water ionizer as a tool for improving health. By the 70s, these instruments were taken to Korea and in 1985 they were introduced into the American market.

## 2. Blue zones

The blue zones are some places in the world where people live longer, overcoming a hundred years old.

The scientists and demographers Gianni Pes and Michel Poulain (2000), and later Dan Buettner (2008), started up the research around the world trying to find out some sites where people live longer due to their lifestyles.

They found six places around the world that are: **(See Annex #1)**

- Vilcabamba, Ecuador.
- Sardinia, Italy (specifically Province Nuoro and Ogliastra).
- The island of Okinawa, Japan.
- Loma Linda, California.
- Nicoya Peninsula, Costa Rica.
- Icaria, Greece (island near the Turkish coast).

***(SOURCE: National geographic Web page, 2014)***

The centenarian people who live in these special zones have in common some practices, some ways to conceive the world; it is something that goes beyond the culture, geography and the economy.

Dan Buettner (2008) with a team formed by doctors, anthropologists, demographers and epidemiologists identified 9 practices that exist among the long-lived communities and he exposed them in a TED lecture (2009), they are:

- 1. To move naturally:** People of these zones have a different meaning for exercising. They work out their body by the everyday activities like work in the field, chop wood and work in the garden.

2. **To reduce the rush:** People in these areas tend not to get stressed and in their work schedule, a moment for relaxation is included.
3. **A life purpose:** Having a reason for waking up every morning, or how the Okinawans call “Ikigai”. The studies reveal that three of the most important characteristics of the long-lived people are that they are happy, they have a clear life purpose and they stop working when they want to retire.
4. **Hara hachi bu:** This is an expression used by the Okinawans that means that we have to eat until we are satisfied, not full.
5. **Diet based in fruits and vegetables:** Almost all the products are fresh and local. The idea of being vegetarian is not applied in these zones; they eat meat around 5 times a month, but meat of animals that have been naturally well fed.
6. **Some wine:** A glass of wine a week is very good because it is full of antioxidants, it relaxes and reactivates us, as well.
7. **Faith:** The long-lived of the world is part of a religious community, as faith has positive effects and promotes longevity according to some scientific researches.
8. **Family:** Most of the centenarians of these zones live with their families and have a good participation with them.
9. **The appropriate tribe:** Dan Buettner (2009) says that it is very important to choose our friends. They are the ones that accompany us every moment and we learn things from them, but imagine if we learn wrong behaviors. That will have long-term repercussions in our lives. So, Dan recommends us to be surrounded by people with healthy habits.



### III. CHAPTER 2: THE pH AND HEALTH

#### 1. Fundamentals of pH

The pH is the representation of the acidic, neutral or basic nature of an aqueous substance. The pH is the acronym for “potential hydrogen”. It is the concentration degree of the hydrogen ions in a solution.

The measurement of pH in any aqueous substance can be made in a variety of ways. The most common way for measuring them involves using a pH sensitive glass electrode, a reference electrode and a pH meter. (See annex #2)

The pH is measured with a scale that goes from 0 to 14. The highest numbers indicate higher alkalinity and higher potential for absorbing hydrogen ions. The minor numbers describe higher acidity and lesser potential for absorbing hydrogen ions. The pH 7 is considered as neutral, being the pH of the blood 7.39. This does not mean that the acidic is “bad” and the alkaline “good” since they need each other and they complement each other in the chemical reactions. Therefore, it is spoken about balance. In the oriental medicine, acidic is classified as “yin” and alkaline as “yang”, being desirable the equilibrium of both extremes. (See Annex #3)

#### 2. Homeostasis and regulation of the pH level in the human body

There are many systems through which our body regulates the levels of acidity or alkalinity inside it:

1. By breathing, that makes the carbon dioxide the body exhales gives the blood an acidic nature.
2. By the kidneys, urine is formed, which is acidic for keeping our body balanced.
3. By the alimentation: if a wrong diet is had, acidosis in our bodies could be caused.

### **3. Acidity and alkalinity in the human body**

The quality of life depends on the balance between acidic and alkaline as the last discoveries of science in Occident and in Orient have confirmed. The medicine department in the University of San Francisco has published various studies of their researchers since 1996, in which it is pointed out the vital importance between the pH and the correct running of our body.

The excess of acidic weakens our body's systems. Too much acidity forces our body to take out minerals –including sodium, calcium, potassium and magnesium- of the organs so it can neutralize the acidic. As a result of this, the body can suffer a severe and prolonged wear because of a high acidity, condition that could not be detected in many years. Acidity is also caused due to our lifestyles, the way we eat, the way of thinking and the environment around us.

#### **3.1. The effects of acid**

The blood's pH balance is one of the most important biochemical balances in all of our body.

The acidic coagulates the blood. So, when there is too much acidic, the blood has big problems to circulate around these fatty acids. The capillaries become clogged and die. The skin, when it stops receiving healthy blood, loses elasticity and begins to wrinkle.

When the body's pH is acidic below 7.39, it loses its capacity to absorb nutrients and minerals and the cell's energy decreases so the capacity to cure sick cells is lost; the ability to detoxify metals diminish, tumor cells get stronger and the body get more likely to illnesses and fatigue.

It is important for our body, to maintain a balanced pH, almost neutral. It means that it should have some bias towards alkalinity. It has been demonstrated that the illnesses and the tumors can proliferate and strengthen in an acid environment, but in an alkaline not. In other words, unless the body is not in a pH of 7.39 it cannot heal itself.

Without an acidic/alkaline balance plan, every part of our body works even stronger for maintaining health, because every system, every organ, the lungs, even the skin, play an important role in the maintenance of a proper pH in the blood.

### **3.2. Acidifying and alkalizing foods**

Our body needs nutrients and needs to eliminate toxins constantly. It needs to be renewed every day. That is why it is recommended that our body receives enough alkaline substances (between 60% and 70%), for having a healthy body; and of course, ingest acidic nourishment as well, but in a lower percentage (between 30% and 40%). That will help to avoid health problems.

Let us see what is meant by acidifying and alkalizing foods. The nutrients have different acidic or alkaline degrees. Basically, all fruits and vegetables are alkalizing. Although the fruit has a low pH (which is acidic), we should avoid the generalized confusion: it is not the same a chemical reaction of food inside than outside the body. When the food gets metabolized, it can generate a reaction totally different from its original features. That is the case of the lemon or honey. Both are acidic, but when inside the body it provokes an alkaline reaction.

Also minerals play an important role in the acidifying and alkalizing behavior of the food and allow us to make a more conscious choice of it. Generally acidic foods are the ones that have a high content of sulfur, phosphorus and chlorine. On the other hand, they are alkaline those that contain a good dose of: calcium, magnesium, sodium and potassium.

There are two big groups of foods which are acidifying and alkaline foods and they are classified according to their pH levels:

#### **❖ Acidifying foods:**

**1. - Refined sugar and all products (worst of all: do not have any protein or fat or vitamins or minerals, only refined carbohydrates that stress the pancreas. Its pH is 2.1, which are highly acidifying.).**

2. - Meat (all)
3. - Cow's milk and all its derivatives
4. - Refined salt
5. - Refined flour and all its derivatives (pastries, cookies, etc.)
6. - Baked goods (most contain saturated fats, margarine, salt, sugar and preservatives)
7. - Margarine
8. - Carbonated Drinks
9. - Caffeine
10. - Alcohol
11. - Snuff
12. - Medicines
13. - Any cooked food (cooking removes oxygen and transformed into acid) including cooked vegetables.
14. - All that contains preservatives, colorants, flavors, stabilizers, etc. All canned foods.  
*(Pérez-Calvo, 2005)*

❖ **Alkalizing Foods:**

1. - All raw vegetables (some are acidic, but within the body has alkalizing reaction) and they provide oxygen when it is raw, not cooked.
2. - Fruit, vegetables like, but for example lemon has a pH of 2.2, but in the body has a highly alkalizing effect. Fruits provide healthy amounts of oxygen.
3. - Seeds: Besides from all the benefits, they are highly alkaline, such as almonds.

4. - Grains: The only wholegrain Millet is alkaline; all others are slightly acidifying but very healthy. All should be eaten cooked.
5. - The honey is highly alkalizing.
6. - The chlorophyll in plants - any planting is highly alkalizing (especially aloe vera).
7. - Alkaline water is important for oxygen. **(See annex #4 and #5)**

*(Pérez-Calvo, 2005)*

## IV. CHAPTER 3: WATER IN THE HUMAN BODY

Water is the reason of every life, including the human. Water is so mysterious that scientists have not discovered everything about it. More than 70% of our body is water. We got to understand the importance of it and to drink the necessary quantity and quality of water to be healthy and to try to be long-lived.

### 1. Water's properties

According to the book “Reverse Aging” by Sang Whang (2000), the blood (It is 90% water) that circulates through all the body carrying nutrients and oxygen, and picking up waste and carbon monoxide. Every substance in our body is taken throughout the blood and can be eliminated by it.

Water has been proven by scientists to have a certain degree of “memory”. When it receives influences from an electric field, properties such as surface tension and structural activities get prolonged for some time. Until the Nuclear Magnetic Resonance appeared, few people believed in this.

Water compared to other liquids has a specific temperature value. This fact helps the body to fit to the changes in the ambience's temperature.

According to Whang, one of the most important of the properties of the water is the ionization. Ionization occurs when an atom or molecule loses or gains electrons of another atom. When a molecule of water,  $H_2O$ , is ionized, the molecule gets divided in two parts: the hydrogen ion  $H^+$  and the hydroxyl ion  $OH$ . When the quantities of  $H^+$  ions are higher than the  $OH$  ions, the solution is acidic. In the opposite case, we get with a basic or alkaline solution. Moreover, when the number of ions is equal, the substance is neutral. Since water produces ionization, without it our body would not have chemical reactions. This would mean death.

## **2. Importance of water in the human body**

The body is formed by more than 70% of water. Water is more important than food for surviving. If it is considered that someone can resist without eating solid food for several weeks, it does not occur the same with the absence of water. The body stores it in huge quantities and needs to recompose it constantly. Water helps in almost all functions of the human body. Considering that our body is almost  $\frac{2}{3}$  water, we have to understand that water's role inside the body can be a source of health.

The importance of water is that it carries all nutrients to the cells, aids the digestion by forming stomach secretions, eliminates waste, maintains the kidneys healthy and provides a constant hydration to the skin, eyes, mouth and nose, lubricates joints, regulates body temperature and metabolism.

When enough water is consumed, aging can be retarded and some illnesses as diabetes, hypoglycemia, arthritis, obesity and dry skin can be prevented. The kidneys are the organs that help the body to eliminate rubbish but they need enough water for realizing their job which is to get rid of waste.

## **3. Antioxidant and alkaline water**

For many decades, cutting-edge doctors in scientific investigations, especially in Japan, have proved the optimal effects of good health in the person that is in an alkaline condition (pH of 7.39).

Alkaline water has much more oxygen than the conventional water, and this makes it more beneficial for our health, since oxygen gives us energy and energy is life and good health.

The ionized water, it was said, is rich in oxygen. It neutralizes the dangerous free radicals, increases the level of energy, corrects the acidic/alkaline balance of the body, hydrates cells and generally it reduces almost all aging symptoms.

The most striking difference between alkaline and neutral water is that the first one is much more basic than the "normal" water, with a pH of 9.5 to 11. **(See Annex #6)**

Even though you cannot buy alkaline water in shops as normal water, there are a lot of enterprises that make some kinds of products for raising the alkalinity of water, including filters and additives for improving it. These water ionizers separate tap water electrically in alkaline water and in acidic. The first one as you know is for drinking and the second one is for using on the skin or for cooking. **(See Annex #7)**

- **Benefits**

Everyone knows that drinking an adequate quantity of water is good for us. But, do we really do that? Generally, not. If we remembered, we could drink one or two glasses of water, but in general we choose to drink coffee, a soda or alcoholic drinks.

Well, here is a list of 10 reasons why you should drink more water, especially, the antioxidant alkaline water, due to its additional benefits. **(Vasey, 2006)**

1. **Detoxification:** Staying well hydrated helps the body to eliminate toxins. One of the most important filters in our body is the kidneys. They need water for a good performance because as we start getting old, we need to drink more water since the kidneys gradually filter less.
2. **More resistance to diseases:** There is a condition that is presented constantly if we do not drink enough water. It is known as chronic cellular dehydration. In that condition, our body is in a constant state of dehydration in each cell. That leaves us in vulnerability and make that illnesses weaken our immune system when they attack. Although, water prevents that the blood's PH gets down to 6.95 which will almost lead us to a coma.
3. **Increase in energy:** Water is fundamental in the body for a best circulation of blood. The oxygen level in the bloodstream gets increased when the body is well hydrated. So, it exists more oxygen for burning fat, which is a critical ingredient in the production of energy.



4. **Antiaging:** The antioxidants of the alkaline water destroy the harmful free radicals that are the principal cause of the aging and degenerative diseases.
5. **Help out with digestion:** Drinking water during the meals helps your body to absorb and digest better the food. Everything starts in the mouth. Water aids producing more saliva and helps transporting the food throughout all the digestive tract. Also, water works very closely with fibers to help cleaning waste and to improve the metabolism in our body.
6. **Headache:** One of the principal causes of the headaches is dehydration. This is one of the areas where alkaline water shines. The alkaline water, with its smaller groups of molecules, increases the hydration of the body.
7. **Weight reduction:** Drinking water is good for reducing weight, due to a couple of reasons. Water, especially alkaline water, is an excellent suppressor of hunger and, as mentioned before, it increases your metabolism, which helps you to burn calories.
8. **Increasing in concentration:** The brain consists in 90% of water. So, most of the people that do not drink enough alkaline water, are depriving their brains of what they need the most, water. Drinking more water, you improve your capacity to concentrate, to process information and your alertness.
9. **Look younger:** When you drink adequate quantities of alkaline water, your skin gets more hydrated because this water is made up of smaller clusters of molecules that penetrate cells easier and they hydrate up to 6 times faster than the molecules of normal water.

## V. CHAPTER 4: LIFESTYLES AND QUALITY OF LIFE IN RELATION TO ACIDITY AND ALKALINITY

The world's environment we have been living on has transformed into an industrial environment full of pollution. People lifestyles produce on them a lot of stress and their alimentation has gone anti natural, with and acidic diet based in fast foods and “garbage” foods. In consequence, people lose baking soda in the blood and according to the medical society; the reduction of them in the blood is one of the most determinant factors of aging.

The world we live on is too competitive. There is always something to do. In general, people stay up late and wake up early in the morning since there is always something to do. Most of the people do not know how to relax, they just cannot stay relaxed. Researches state that practicing sports is good for health, but even in that, people compete and get stressed.

Physical as mental stress produce acidity. A good example is an ulcer. When there is a lot of pressure or tension, more nutrients are burned faster and a lot of wastes that the body cannot deal with are created. Also, because of this the aging process gets accelerated.

This process can be reversed if we take some necessary correctives like changing our diet into an alkaline one or drinking alkalizing products. Besides this, learning to relax and learning to take some breaks in the everyday life will avoid the feeling of stress and acidity, that more in the future could take you to live any kind of illness.

### **1. Repercussions of the acidity in the human body: illnesses**

Japanese scientists classified illnesses in the ones that are contagious and the ones that people acquire as they grow older. The first group is the ones that get spread by many viruses. The second group is the group of many degenerative diseases like cancer, osteoporosis, cardiac problems, atherosclerosis, asthma, allergies, dental diseases, etc.

## 2. Common causes of adult diseases

The Japanese hold that the causes of these diseases are: the accumulation of acids in the body, poor blood circulation and the reduced activity of cells.

*"Chronic dehydration is the major stressor of the body and the root of most degenerative diseases." (Fereydoon, 1989)*

Since penicillin was discovered by Alexander Fleming (1928) to put end to the infections caused by viruses and bacteria, doctors and scientists have kept searching for the cure of several illnesses but the problem is that the medicine they have brought to the world, do not reduce the acidity; instead of that, the medicines increase it since they are acidic as well. So, therein is in what medicine is failing nowadays because the “cure” they are providing just make in people a transient recovery and do not eliminate the acids in the body, which are the real cause of every illness of this type.

The Dr. Theodore A. Baroody says in his book "Alkalize or Die" (1991). *"It does not matter the number of names that are given to diseases. What matters is that they all come from the same cause ... many waste acids in the body!"*

## VI. CHAPTER 5: THE ACIDITY AND AGING

### 1. The onset of aging

Aging starts when we are babies, since we are in the womb of our moms. Although there are not wastes in the blood of our mothers, we produce them. The metabolism and the oxidation, caused by digesting food for generating energy, produce rubbish that the body must remove and the ones that we cannot eliminate are stored somewhere.

The aging process, which gets started since the first moment of life, is not other thing than the accumulation of wastes in our body. Even if there are no toxins in the food, there are always wastes to take out; but if there are toxins in food, they become poisons. The body should detoxify itself and get rid of these poisons produced by many of the food we normally eat, like junk foods or fast foods.

### 2. The process of aging

Cells and tissues of young people have 10 times more enzymes than older people and that the acidic environment notably damages the enzymes work (they are specialized protein molecules that accelerate the biochemical reactions of each cell). Without these vital substances, the chemical reactions that are necessary for life, would not take place (regulation of body temperature, the use of oxygen by cells, the digestive process, etc.). Moreover, our enzymes get inactivated if the cellular pH deviates beyond some narrow limit; and, if the level of enzymes diminishes, the process of cellular reparation and defense will not make a good performance, thus the cellular process of aging accelerates, as well.

To all of these, it must be added that there are many effects of free radicals on our body and also that nowadays it is recognized to be an influence in aging. The normal processes of the body –like the metabolism of food, breathing or exercises- produce free radicals that are unstable and highly reactive molecules. Their “mission in life” is to remove the electron they need of the molecules that are surrounding it, so they get stable. The problem is that the “attacked” molecule transforms into a free radical. And so on a chain of reactions gets started

and it begins to damage cells by decomposing their membranes until they get destroyed and mutates its genetic information, making a path to develop different kinds of illnesses and finally causing a faster aging.

### **3. Organic wastes**

Now that it is understood how the process of aging and deterioration of cells work, which is simply the accumulation of toxic wastes, it should be known certain organic wastes, which acids quantities are higher than acid or alkaline waste created by inorganic minerals in foods. Because of that, even though you only consume alkaline foods, your urine will still remain acidic as sweat. Some of these organic rubbishes are:

- Acetic acid
- Ammonia
- Dairy acid
- Uric acid
- Cholesterol
- Fatty acid
- Carbonic acid

*(Whang, 2000)*

Within these wastes, Ammonia is in urine and the Carbonic acid becomes water when expelling the CO<sub>2</sub> through the lungs. **(See Annex #8)**

#### **4. Ways to counteract and reverse aging**

Well, the balance of the body is provided by the antioxidants, which are substances that have the capacity to abstain the oxidation caused by the free radicals. Some of them act intracellularly and others in the membrane of the cells, but always in groups so that they protect different organs and systems. The problem for the antioxidants comes when their job becomes affected when, in addition to natural radicals, they have to deal with those from external sources such as industrial pollution, snuff, radiation, drugs, pesticides and chemical additives in food, just to name the most common ones that massively invade us.

Obviously, the danger of the oxidation caused by the free radicals is counteracted by giving the body antioxidants (magnesium, calcium, sodium and potassium) for neutralizing them so they prevent us from the damaging actions of free radicals. There are some vitamins that free their electrons in the blood and when the free radicals capture them, they become stable molecules.

However, alkaline water can be even the best solution because it provides a lot of free electrons that can block the alteration of all normal cells, and this occurs because this water is a substance of low molecular weight and great dynamism so it can reach all tissues of the body in a very short time.

## VII. CONCLUSION

The important part that we should know is that human beings are accelerating their process of aging because a lot of acids are accumulated inside the body and they produce a good quantity of wastes.

The problem is that the aging process is slow and our body gets used to that, so we do not notice the fact that we are getting older. As time passes, we start to notice the slow effect of the lack of oxygen, but people think they feel good with them because there is no pain. People adjust to a slow lifestyle, very content, until the deficiency of oxygen manifests with catastrophic illnesses. At this moment, you feel pain because of all the acids and wastes accumulated. The damage is severe. It is frequently irreversible.

The process of reducing the acid wastes should start before pain begins to be felt. Diets and exercises work well for a short time, but nowadays there are special equipments developed by the Japanese that will help us to eliminate the accumulation of toxins easier and with less effort. This is the case of the water ionizer. It has such a good technology that it filters different water that is the alkaline water, which brings us more oxygen.

Each person controls its destiny. After all it has been presented; everything is up to you, if you want to live good or not. The amount of money that people spend in cars and valuable things are expensive and they do not worry about their health. A water ionizer is expensive as well, but in the long run it will help the health of your body. The problem is that few people believe in it. Our closed minds are our own nemesis.

The point of this investigation is that if your mind is not up to understand this, nothing could be done. The people that really put in practice some of the things that have been mentioned might “revert” the aging and will live longer and healthier lives, and there would be the ones that will stay in nothing and their bodies will continue deteriorating. It depends on you. Acidity is the cause of almost every pain, related to illnesses, the human beings feel. Every “cure” the doctors have created, is the one that kill us slowly.

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## IX. ANNEXATION

### ANNEX #1

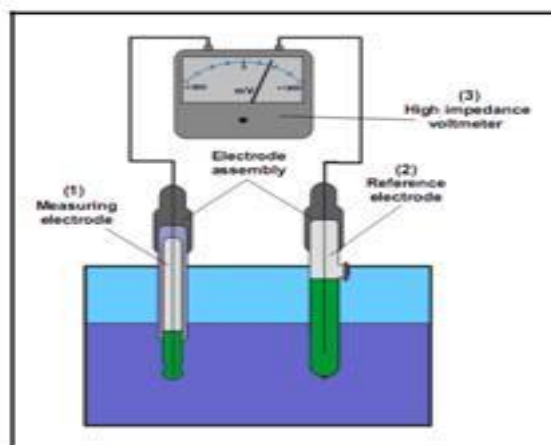


“Here are the six places where the most long-lived of the entire world live and their four main habits they have.”

**Source:** Retrieved from <http://www.jdroth.com/images/bluezonesmap.jpg>

## ANNEX #2

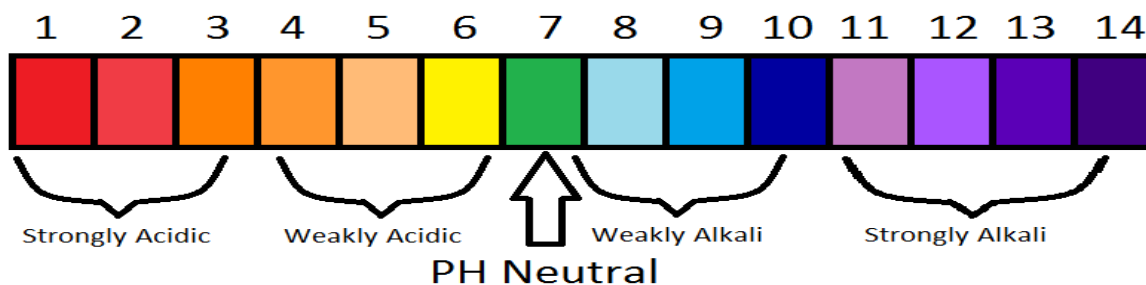
### The pH Measuring System



“A basic pH measuring system consists of the measuring electrode, a pH sensitive electrode, the reference electrode and a high impedance voltmeter.”

**Source:** Retrieved from [http://intranet.tdmu.edu.ua/data/kafedra/internal/zag\\_him/metod\\_rozrobky/en/med/lik/ptn/medical%20chemistry/1%20course/lesson%2005.%20Chemical%20thermodynamics.%20Electrode%20%20processes.files/image022.jpg](http://intranet.tdmu.edu.ua/data/kafedra/internal/zag_him/metod_rozrobky/en/med/lik/ptn/medical%20chemistry/1%20course/lesson%2005.%20Chemical%20thermodynamics.%20Electrode%20%20processes.files/image022.jpg)

## ANNEX #3

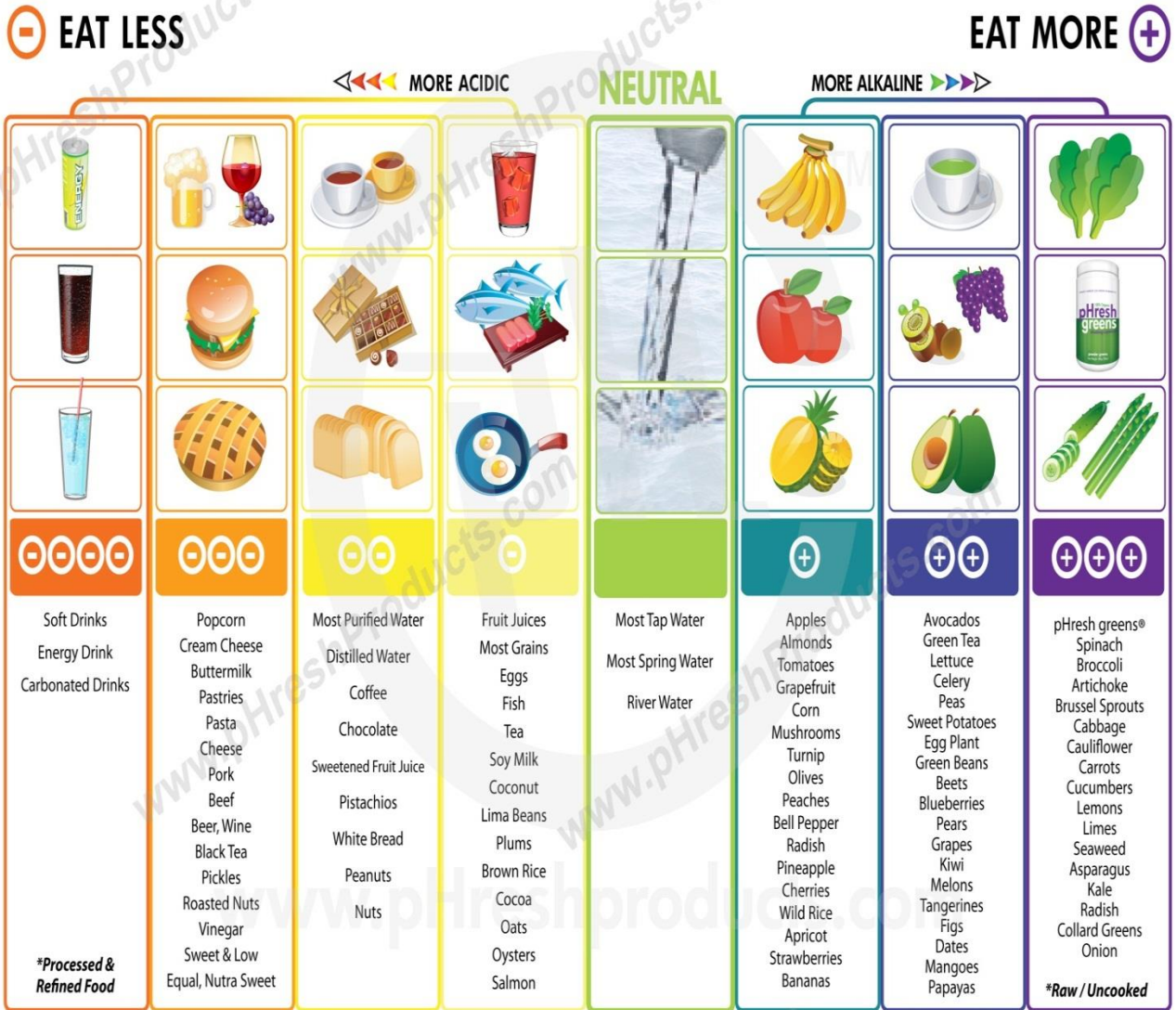


“The pH levels of substances can be measured with a scale of colors. Special liquids are put in the aqueous substance and depending on the color that appears a comparison with this scale should be done so that the acidity or alkalinity of the solution could be known.”

**Source:** Retrieved from [http://acidsandbasesassignment.weebly.com/uploads/2/4/6/5/24658807/5356367\\_orig.png](http://acidsandbasesassignment.weebly.com/uploads/2/4/6/5/24658807/5356367_orig.png)

ANNEX #4

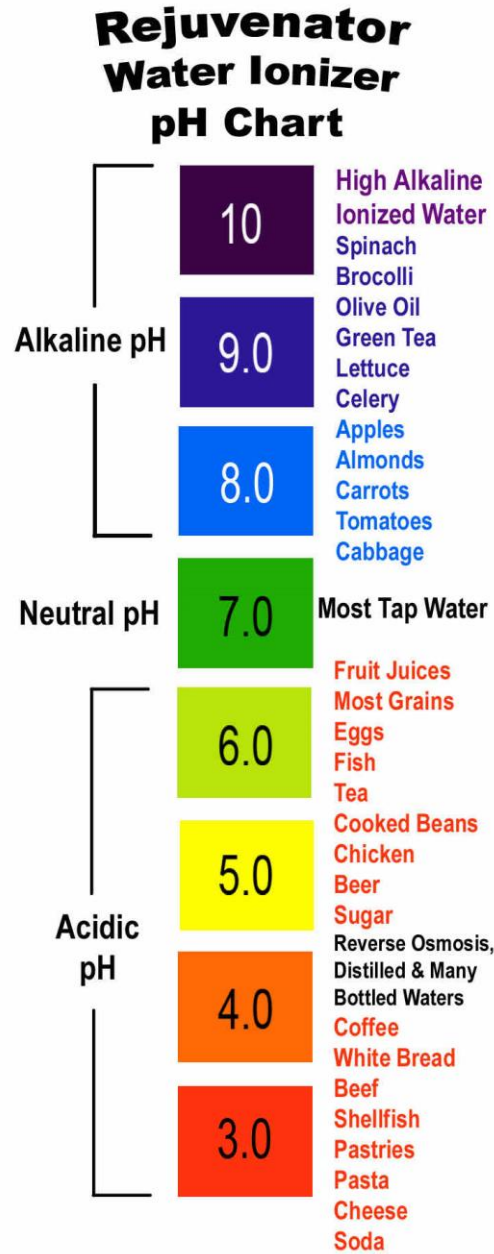
**ACID / ALKALINE FOOD COMPARISON CHART**



“Some of the foods people should eat less and some of which they should eat more are in this chart, For example, foods like limes, broccoli or cabbage should be eaten more instead of chocolates, junk foods or fast foods .”

**Source:** Retrieved from <http://www.phreshproducts.com/wp-content/gallery/charts/alkaline-food-chart-wm.jpg>

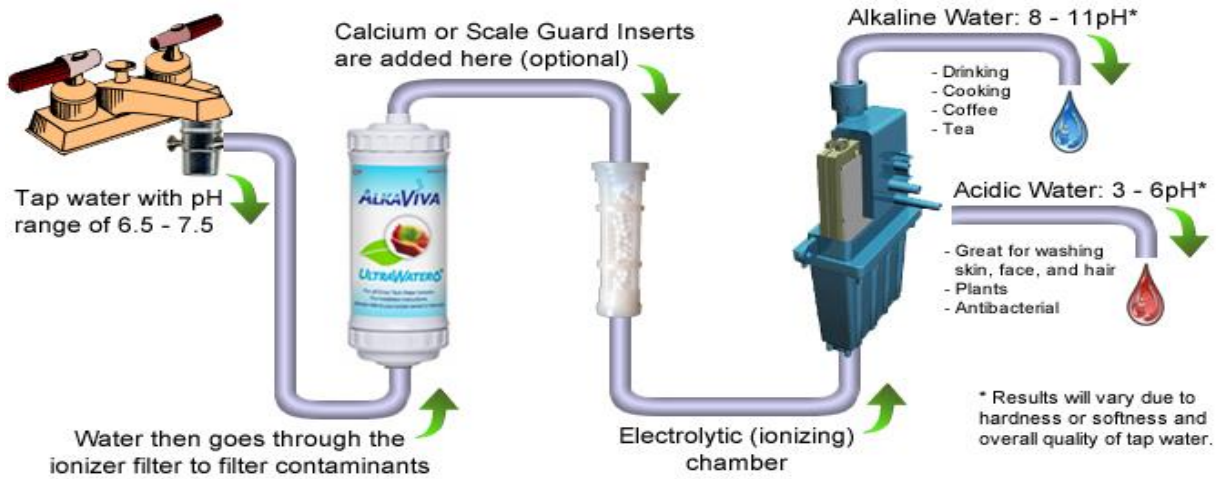
ANNEX #5



“As it can be seen, alkaline water is in the top with a pH of 10 or higher, and the water that people in general drink, is in the neutral point 7.”

**Source:** Retrieved from <http://adrianasassoon.files.wordpress.com/2009/10/ph-scale1.jpg?w=615>

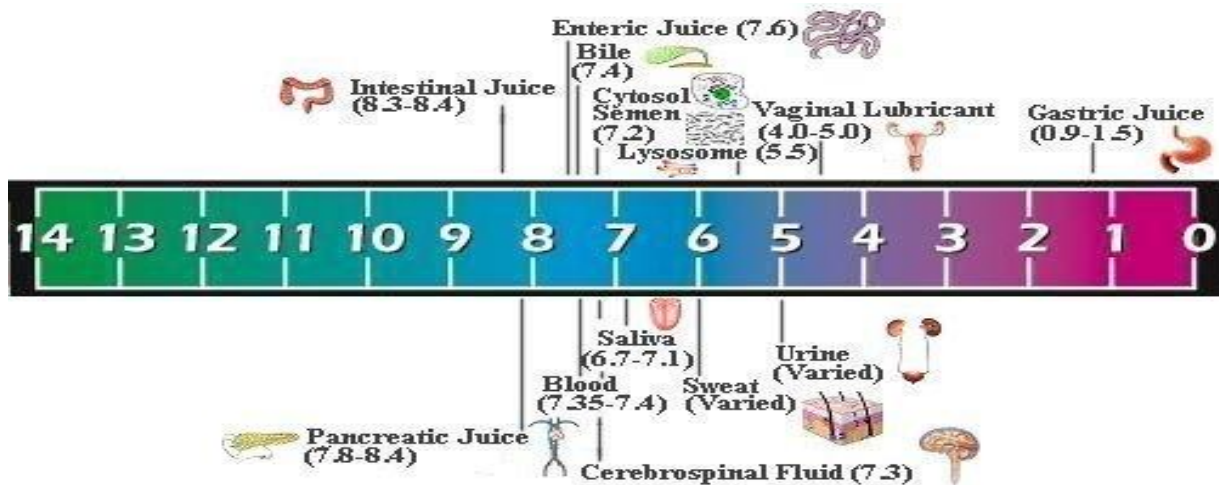
### ANNEX # 6



“Here is the process of electrolysis that separates the water in alkaline and in acidic. Alkaline water is for drinking and acidic water is for cooking or for hygienic care.”

**Source:** Retrieved from <https://www.alkalinewaterplus.com/store/water-ionizer/jupiter-athena-water-ionizer/>

### ANNEX #7



“Some of the liquids in our body are acidic as it can be seen in the picture, because of that an alkaline diet and a healthy lifestyle should be carried.”

**Source:** Retrieved from <http://universe-review.ca/I11-16-pH2.jpg>



## APPROVABLE LETTER

### SOLICITUD Y PLAN DE MONOGRAFÍA

Guayaquil, 21 de Julio de 2014

Señora  
Mg. Cinthya Monard  
Director Académico (E)  
Unidad Educativa Javier  
Presente.-

Yo **José Francisco Balda Fuentes** estudiante de III de B.G.U “D”, me dirijo a usted para solicitarle muy comedidamente se digne autorizar la elaboración de la monografía titulada “**Acidity and alkalinity in the human body: a necessary balance for life**”, que hace parte de los requisitos para la obtención del título de bachiller y cuyo plan se encuentra adjunto a la presente.

Además, solicito la designación de un educador ignaciano que realice las funciones de docente tutor lector de la mencionada monografía.

Declaro conocer el instructivo emitido por el Ministerio de Educación, el cronograma de desarrollo emitido por la Unidad Educativa Javier y las normas de probidad académica cuyas faltas se encuentran tipificadas en el Código de Convivencia; disposiciones que espero cumplirlas adecuadamente en la realización de este trabajo de investigación.

Por la atención que usted dé a la presente, le anticipo mis más sinceros agradecimientos.

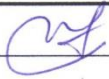
Atentamente,

José Fro. Balda F.

José Francisco Balda Fuentes

C.I N°: 092722085-5

(Espacio llenado por Directora Académica o Coordinador General de Monografías)

Aprobación: \_\_\_\_\_ 

Observaciones del Directora Académica: \_\_\_\_\_

Docente tutor Designado: Pedro Jalcedo

**PLAN DE VISITAS PARA TUTORÍA**

Yo José Francisco Balda Fuentes estudiante de III de Bachillerato, paralelo "D", me comprometo a establecer reuniones continuas con mi tutor el/la Docente: Arg. Pedro Salcedo quien ha sido designad@ por la Unidad Educativa para que monitoree mi trabajo monográfico cuyo título es: "Acidity and Alkalinity in the human body: a necessary balance", y lo desarrolle bajo las normativas establecidas por la LOEI y por la INSTITUCIÓN.

MES	FECHA Nº1	FECHA Nº2	HORA Y LUGAR
JULIO			
OBSERVACIONES			

MES	FECHA Nº1	FECHA Nº2	HORA Y LUGAR
AGOSTO			
OBSERVACIONES			

MES	FECHA Nº1	FECHA Nº2	HORA Y LUGAR
SEPTIEMBRE			
OBSERVACIONES			

MES	FECHA Nº1	FECHA Nº2	HORA Y LUGAR
OCTUBRE	28/Octubre		En el aula en clases de inglés a las 12:00
OBSERVACIONES: Que no use contracciones y que haga más referencias			

MES	FECHA Nº1	FECHA Nº2	HORA Y LUGAR
NOVIEMBRE	21/Noviembre	28/Noviembre	En el aula en clases de inglés a las 12:00
OBSERVACIONES: Que no escriba en 1ª persona			

MES	FECHA Nº1	FECHA Nº2	HORA Y LUGAR
DICIEMBRE	1/Noviembre		En la sala de Inglés a las 11:30
OBSERVACIONES: Entrega del borrador de la monografía			

TUTOR [Signature]

ESTUDIANTE José Francisco Balda Fuentes