

# **IJ's Stomach Book**

by

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# **IJ's Stomach Book**

This is a personal report to myself regarding my experiences with my stomach. I have been actively dealing with problems in my gut since 1956. I have had many up and down situations. My stomach problems are not unique to me; probably 62% of the US population has some type of GI or stomach problem.

Stomach problems are variable, one size does not fit all! Stomach problems, in regard to number of people and intensity of the problem, are probably normally distributed in the population; Stomach pains or pain in our stomachs is a very attention getting phenomena; we all rush to find a way to reduce the pain. I have tried many meds and potions to reduce my "pain in the gut". Meds such as Donnatal, STW5, Zinc-Carnosine, DGL and less computer stress as I slow down a little may be the reason for a more happy stomach.

The material in this book is the record of my stomach adventure, in my roughly ninety years. They are the experiences I have personally encountered and the information I have gathered by reading the literature and listening to the words of knowledgeable individuals.

## **Acknowledgment**

I thank Ann Nicholas for helping me do all the things necessary to get this project done. ijp

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# **A. Introduction: Ancestry and Variation**

## **One Man's (IJ's) Stomach Problems**

### **Introduction**

The stomach is a most important organ. It has many functions that we know about and many other functions that we may not know about.

The stomach is an ancient organ. It provides nutrients to sustain life, commencing ahead of all other activities of the organism.

The stomach is a most restless organ. It is a reservoir, a chemical production unit, a chemical reaction vessel and a mixing container.

### **Stomach Problems of My Ancestors**

I have heard stories about the stomach problems of my immediate relatives, particularly my father's relatives.

My father, Fred L. Pflug, was born in 1880 and died about 1960. He spent his whole life in a rural area as a farmer. He raised grain crops and animals in what was called a general farm. He grew up and lived in a rather self-sufficient manner out in the country at the corner of Gibson County near the corner of Pike, Warrick and Gibson County in Indiana. He farmed in the east corner of Barton Township. In general, I never heard my father talk about his health. After he developed arteriosclerosis (about age 73), he may have talked to my brother Melvin about health problems. My father's basic foods were bread and butter, meat and potatoes, and pie. He raised and butchered his own meat (pork and chicken) and the family ate well even though we were in the Great Depression of 1930 to 1935.

His usual eating habits were to eat five or six times (meals) each day. He was uncomfortable if the midday meal was delayed. My mother prepared good wholesome meals and they were on time, basically breakfast at 6:00 to 7:00 AM, lunch or midday meal about noon, and the evening meal usually about 6:00 PM. I suspect that his ability to have regular meals and to have very little external stress outside of the farm is why he was able to manage his stomach and health in general.

My father had three sons and we all had stomach problems. My brother Raymond had bleeding ulcers. My brother Melvin had a stomach resection and I have had stomach problems all my life. My father's brother Jacob had a stomach resection about 1920.

I have had serious stomach problems since 1955, when I had severe pain and vertigo.

## **My Father Took Care of His Body**

My father, for his whole life, lived a typical rural life. He attended school to the 4th grade, learned how to be a farmer from his father, and progressed in the knowledge of life. I knew him from the time I was four or five years old, 1927-28, until I went to the Army in 1943. He cared for his family, the animals and the land. Like all good parents, his living knowledge, his common sense, and his judgment exceeded mine.

Living and surviving as a farmer, he knew how to take care of himself; he worked hard and long hours. I learned from my father that we must have good judgment and work hard, but never overdo.

Living in rural Gibson County, with dirt roads (no hard surface roads), about four miles from a country town of a few hundred people, in 1930 - 1940, health care was from your parents. What I know today is important today. What we learned was to take care of our body. This idea has not changed in 2019. The system has not changed. They will tell you that the "system" will take care of us, but in reality we still have to take care of ourselves. It is the 100 little things that help us, not the few grand things we hear about.

If we fail to learn the little things, we will have a difficult time because learning late in life is a difficult process.

Some of the things I remember:

Never overdo - do your normal 100%, never try to do 120%.

Take care of the body - keep it warm all day.

The body needs to be cared for - elbows, waists, knees, and also hands and fingers need to be kept warm.

Keep the neck and throat warm.

Listen to the body. We need to listen to pain. What is it saying to us?

## **Sensitivity to My Stomach**

I have a very sensitive stomach. I estimate that only one in 1,000 or one in 10,000 have a stomach as sensitive as mine. Since I am a generally-sensitive person (my biology plus my stomach sensitivity), I am affected by many things; food and my stomach are near number one. I try to relate food and environmental conditions with stomach upsets.

## **Stomach Variation Among Individuals in Our Population**

People come in all sizes and temperaments. In the same way, the behavior of a specific stomach system is unique to that specific organism. In our universe of individuals, we will find a wide range of stomach system characteristics. Names for some of these are: *cast iron, sensitive, nervous, temperamental*.

The sensitivity of an individual to his stomach is variable; I estimate that more than 50% of individuals in our population have little or no stomach problems; we say they have "cast iron stomachs." They can eat anything with no ill effects. For example, I have an 80-year-old friend who can go on a one-week Caribbean cruise, and eat and drink any and all food and drink without any ill effects. The other half of the population has stomach or GI problems of various types and severity.

Considering the average American population, probably 10% have weak stomachs and 1% or 2% of the population, of which I am a member, have an IJ-type or very sensitive stomach and GI system. This sensitivity is normally distributed in that we have average and extreme degrees of sensitivity. I also estimate that about 5% of the population has life-long stomach problems.

## **The Size and Scope of GI Problems**

1. More than 50% of the U.S. population have significant GI problems.
2. At least one-third of the U.S. population now uses some form of complementary and alternative medications (CAM) on a routine basis, while 62% of the U.S. adults have used some form of CAM within the preceding 12 months.
3. There is apparently no unanimity of understanding of GI problems, only hundreds of causes and solutions because people and their bodies are variable.



## **B. Where Stomach Problems Start**

The new baby arrives with the genetic material of the accumulated eons of data bits, the accumulated knowledge of the ages.

In biological life development, producing and delivering food is the first order of business, and having an organized life development system requires measurement and control. In the evolutionary scheme of life development, we will have complete food development and utilization before other parts of the body such as the brain.

The word "stomach" is used to describe the food development and control system. There is not an identified part of the stomach that we can call the brain of the stomach but somewhere there is a structure that carries out all of these measurements and control functions.

Earlier structures of food development and control are all still in place today and continue to carry out these functions. We know them today as our feelings of bodily function including feelings of need for food (hunger pains). Some of these feelings and forces are today called circadian rhythms.

The young baby carries with him/her the blueprint for all that is possible in development which is almost limitless, controlled by the environment, nutrition, and other core factors.

The stomach and GI system evolved as a self control system with its own brain, or control center. Later, the brain system developed in parallel. Today, the original stomach control system is still in place with the brain overriding the stomach at times. The brain usually has the ability to override the stomach most always in the benefit of the stomach. These two systems will, at time, be in conflict. This conflict can lead to illness of the organism.

## **The Stomach (GI) System and Some of its Problems**

In the scientific world, knowing and using the correct terminology is key to understanding the subject. We will use gastrointestinal (GI) system to refer to all or part of the system that extends from the mouth to the anus.

The mouth, esophagus, stomach, intestines are all parts of the GI system.

How do we as individuals understand and deal with our stomach and GI system? What is normal?

For tens of thousands of years, the mammalian animal has lived with nature and with a successful GI system. Nature has developed a GI system as well as other critical body systems that will operate successfully for the life of the animal.

Now fast forward to the 20th century: we find that a significant family of the human population has severe stomach pain.

In man's long 50,000-year trek from being in nature to being a creature of civilization, he has changed his living patterns and diet. Modern man desires to control the environment to optimize what he believes is the good life. Man has altered the physical environment, disregarded nature in how man lives, and has proceeded to alter food selection and consumption to fit the selected life style. The result is that a GI system designed to operate in a harmonious natural setting, has instead been exposed to stressful living and food selection to man's liking rather than a compatible food supply.

The result is that (1) we have pain in our GI system and (2) we reach for a potion that will cause the pain to go away, all the while continuing our self-guided path to our personal destiny.

We would think that, being highly intelligent, we would study our body systems and learn what we need to do to be in agreement with nature so we do not have GI pain, but most of us - instead of observing the cause and correcting the cause - choose to ignore or hide the pain, and blithely keep doing what we have been doing to meet our personal goals.

## **Stomach Pain: Hunger Pains**

I have, from time to time, many pains and discomforts in my belly area. Hunger pains are the distress that occurs most often. I am surprised that in July 2018, I have suddenly come to realize that hunger pains are normal signals by the body that there is a need for food.

This food-needed signaling system is one of the strongest forces in nature and after eons of time, even when food has become plentiful, it is still part of biology and sensitive individuals still feel its effect.

In terms of biological evolution, the stomach and GI systems developed before our brains. Securing food was an essential part of maintaining life, therefore all biological systems must first have a system to provide food and energy for life to continue.

In times of stress, the need for food on regular intervals becomes more necessary for the good health of the individual.

It is the wise student of our bodies who listen to our bodies' message.

Hunger pains are uncomfortable, constant, noticeable feelings in the pit of my stomach. My hunger pains are more of a distress than a sharp pain. My hunger pains say: I need to find food and eat now! Usually, after I eat, the feeling dissipates. My hunger pains occur whenever my daily food routine of breakfast, lunch, dinner, with a snack mid morning and mid afternoon, is significantly changed.

I usually have my hunger pains in the morning, but they can occur mid-morning if I have eaten an early breakfast, or late afternoon if I have not eaten lunch, or in the evening if it is near 8:00 o'clock and I have not eaten dinner.

In the morning, when I first awake, the pain is usually there. About 10 or 20 minutes later, after vinegar tonic and chamomile tea, it decreases. If I use tea every two to three hours, the sensation of movement disappears for the rest of the day.

Over the years, I have found that sipping on 2 oz. of 1% milk helps me reduce hunger pains.

The hunger feelings appear to be a function of the time I awake in the morning. For example, if I wake at 2:00 AM and I immediately get up and find food, I do not observe the hunger pains. On the other hand, if I stay in bed until 7:00 in the morning and then am slow to get up, the hunger pains are more noticeable. When I awake at 7:00 AM and lounge for a few minutes before I get up, hunger pains start. If I wait, for example, 5 to 10 minutes or 20 minutes, they become more annoying. Finally if I do not eat, they become a very annoying pain. I will usually get up in 5 or 10 minutes and have vinegar tonic and chamomile tea to start the day.

## Stomach Sounds and Noises

A good starting point regarding stomach sounds is that stomach sounds are normal.

The stomach is a chemical-reaction vessel into which food, air, water, HCl and the enzymes of digestion are added. The normal gut movements (peristalsis) cause the contents of the stomach to churn, mix, and react.

During digestion, the action of enzymes and hydrochloric acid (HCl) on the particles of food results in chemical reactions that break down, solubilize, and degrade the food mass into a viscous liquid stream called chyme. Enzymatic chemical reactions produce carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), hydrogen (H<sub>2</sub>), water (H<sub>2</sub>O) and a host of other reaction products. Non-condensable gas is vented up or down, through the mouth or out the GI system.

There is noise when valves open and close to pass liquid and gas; burping is a normal release of air from the stomach through the mouth. (We purposely burp babies and expect that in later life burping will take place when the body senses a pressure build-up in the stomach.) The chemical reactions of digestion will produce CO<sub>2</sub>, H<sub>2</sub>, CH<sub>4</sub>, then the produced gas must be vented to the atmosphere through one opening or the other.

The experienced stomach operator learns to calibrate attention-getting conditions that he/she must live with, and select a lifestyle path that offers a minimum amount of pain with maximum personal satisfaction.

## **C. Living with IJ's Stomach: Healthful Living**

I have made many adjustments to my lifestyle and how I live with my GI system: I have basically followed a trial-and-error approach. All my life I have been looking for a lifestyle where there will be no stomach stress. I have not been successful. I have had to work continuously to adjust how I live to keep my stomach reasonably happy.

I will start with listing two items that I regularly use.

### **Vinegar Tonic (Vinegar Water)**

A few years ago, about 2012, I was searching for ways to improve how I felt in the morning. I experimented with fluids: what I could consume in the morning that made me feel better. I tried several juices and fluids, such as lemon, grape, and vinegar. After several trials, I settled on diluted apple cider vinegar (ACV) in water which I sip first thing in the morning.

After selecting ACV, the next decision was the concentration. After trying several concentrations, I concluded that two tablespoons in a quart of water seemed right for the vinegar tonic (VT).

To use VT daily, the operation must be simple to prepare and easy to use. After several trials, I settled for a 26 oz. glass jar with a 70-mm screw closure (typical spaghetti-sauce jar), to which I added two tablespoons of apple cider vinegar, and filled the jar with water. A 26 ounce jar of VT will last 2 - 3 days.

Apple cider vinegar in the supermarket is 5% acidity (50 grain): 2.0 tablespoons ACV in 26-oz. water will have an acidity of 1.9 grains, which is adequate for short-time microbial control.

My program is: The first thing in the morning I will sip the vinegar tonic water over about a half-hour period, then I will eat breakfast. (Total VT about 0.5 cup).

### **Chamomile Tea**

It has been my practice to take 1/2 to one teaspoon of chamomile tea first thing in the morning and then maybe again by 9 or 10 in the morning. I will repeat during the day as needed. The tea seems to reduce my jitters. Without the tea I feel jittery. After I take a teaspoon of chamomile tea, perhaps by 15 to 30 minutes later, I feel more calm.

I use a chamomile tea bag in a pint Mason jar to make chamomile tea liquid. I place one tea bag in about 10 ounces of boiling water and allow it to steep for about five or six minutes. After the tea has steeped, I put the jar of tea into a refrigerator.

## **Daily Food Consumption Routine for IJ in November, 2012**

The daily food routine has a major effect on my well being. I will describe the routine that I have found to work reasonably well.

1. I tend to wake up early in the morning, 5:00 AM or 6:00 AM, or maybe even earlier. I get up and take a small amount of vinegar tonic first thing in the morning.

I dress for the morning and during that time I drink, over a one-half-hour period, about one fourth to one half cup of vinegar tonic. During this period of vinegar tonic consumption, I listen to stomach noises or rumbles and at some later time, my stomach tells me it is time for food.

2. During this early morning time, I have what I will call the first breakfast which may be one slice of Catherine Clark bread, one shredded wheat biscuit, 3 or 4 ounces of milk (1%). I may also have a banana, an orange, or an apple.

3. About one to two hours later, my stomach tells me it is time to eat again and I will have a second breakfast. The second breakfast is variable; I may repeat the shredded wheat and toast and have fruit and milk.

4. I try to have some type of mid-morning food; this may be yogurt, cottage cheese, and soda crackers or fruit.

5. Lunch: I try to have a small lunch at around noon. Many times it seems desirable to have the midday food at around 11:30, but as long as it is around 11:30 to 12:30 it seems to work.

6. Mid-afternoon snack: It is best if I have something in the middle of the afternoon; however, I sometimes miss that. Usually though, if I can have a banana or something else like a slice of bread or soda crackers or yogurt. All help to keep the stomach happy until the evening meal.

7. I like to have the evening meal around 5:00 PM, although, anytime between 4:30 PM and 6:00 PM seems to be all right as far as my stomach is concerned. My objective is to have a light evening meal, maybe a fish sandwich plus some vegetables.

8. I often like to have fruit after dinner. This might be a part of a pear or apple or some kind of canned fruit.

## **IJ Healthful Living: Food Consumption Routine**

### **IJ's Morning Ritual: 2013-2017.**

For more than five years, I have generally followed the same early morning ritual.

My usual practice has been to awake early, about 4:00 to 6:00 AM. When I am up, I start the morning by sipping Vinegar Tonic (VT) about a half cup over a 20- to 30-minute period. During that time, I will usually consume 1/2 to 1 teaspoon of Chamomile tea. After about 20 to 30 minutes, I have my first breakfast.

I believe that the consumption of VT has an effect on all my stomach processes. It is possible that the VT helps to strengthen the gastric juices and causes more complete reaction of processes to break down the entities in the stomach as evidenced by gas production. Gas production in the stomach is considered by many to be bad, but it is an essential part of food digestion.

I do not know if my morning routine is a habit or is brought about by circadian rhythms. I do know that missing the early morning routine, I do not feel well during the rest of the day.

### **Some of IJ's Food Choices**

When I eat one slice of Catherine Clark bread and one shredded wheat biscuit, I get the benefit of a cereal with natural nutrients in the bran (the outer layer of the grain).

I usually eat at least one additional slice of Catherine Clark bread in the morning. Two slices of Catherine Clark bread and one shredded wheat biscuit will go a long way towards meeting my daily requirements.

On several days each week, I eat raw lettuce, celery, cauliflower, cabbage, apples, dates. I usually eat either fruit or fruit juice each day. I almost never add sugar to the food at my meals.

### **It Takes a Month!**

Observations: over the past couple of years I have concluded that whenever there are chronic types of problems similar to those of my stomach, it takes at least one month for the healing process to take place. In other words, it is possible and necessary to carry out the health practice for a whole month or more without seeing very much result; that only after more than a month using the new procedure will I begin to see measurable results.

## Bread and Cereal

All my life I have enjoyed bread, and for my father before me, bread was a very important food. My father used to say nothing was a more satisfying way to end the meal than a slice of fresh homemade bread and fresh butter. I have found that I do well if I start the day with cereal and bread. It may not be very exciting, but it helps the gut system when I start the day with shredded wheat cereal and a slice of Catherine Clark bread. For both of these products, the first listed ingredient in their list of ingredients is whole grain. In the USDA Standards of Identity, there is a major difference between a flour product and a whole- grain product.

I try to look at the list of ingredients: listed below are a few cereal products and their first ingredients:

Kroger Oat Squares - Ingredients: whole grain oat flour, whole grain wheat flour, brown sugar...

Great Harvest bread - Ingredients: fresh ground 100% wheat flour, whole-wheat flour, water, honey.

Kroger English Muffins - Ingredients: whole wheat flour, water, yeast...

Brownberry Natural Wheat Bread - Ingredients: cracked wheat, water, unbleached wheat flour...

Post Shredded Wheat - Ingredients: whole grain wheat.

Millville Crispy Rice - Ingredients: rice, sugar, corn syrup, salt...

## Health Benefits of Whole Grain Foods

There is a great difference, from a nutritional standpoint, between a "flour" and a "whole-grain" product which includes the bran. Both shredded wheat and Catherine Clark bread are wheat grain cereals made from whole grains. I believe it is important to eat breads and cereals made from whole grains. Sometimes it doesn't seem important to use the outside or the bran of the grain, but I believe it makes a major difference. The outside or bran of the grain contains important nutrients and fiber which is important to the health of the gut.

## **Shredded Wheat Cereal**

### **100% Whole Grain Wheat Cereal**

In recent years the original large shredded wheat biscuits have been formed in smaller biscuits and in some variations of sugar and flavoring added.

On page C.5, C.6, C.7 and C.8 is further information on present day use of shredded wheat.

### **Origin of Shredded Wheat**

Denver attorney Henry Perky invented shredded wheat cereal in 1890 after observing a dyspeptic diner blending wheat with cream. He developed a machine that could shred boiled wheat into threads, then press the threads into strips that were then formed into pillow-like biscuits. Perky premiered his cereal to the public at Chicago's World Columbian Exposition in 1893, and began to distribute shredded wheat cereal manufactured by The Natural Food Company in Niagara Falls, NY. The Natural Food Company became the Shredded Wheat Company in 1908 and was bought by Nabisco in 1930.

### **How Whole Grain Shredded Wheat is Made**

Whole grain wheat is cooked in boiling water to allow moisture to fully penetrate the grain. The cooked grain is cooled and allowed to temper. It is then rolled between two metal rollers; one roller is smooth and the other is grooved. A metal comb is positioned against the grooved roll with a tooth inside each groove. The cooked grain is shredded by the teeth of the comb and drops off the rollers in a continuous ribbon. A conveyor belt catches the ribbons from several pairs of rollers and piles them up in layers. The layers of shredded wheat are cut to the proper size, then baked to the desired color and dryness. (Retrieved from <http://www.madehow.com/volume-3/cereal.html>)

## Making Shredded Wheat Breakfast Cereal:

Shredded wheat breakfast cereal is made from processed whole wheat formed into pillow-like biscuits. It is commonly available in three forms - the original big biscuit (23.5g, 2 biscuit serving 47g), bite sized (3/4x1 in, serving size 1 cup 55g), miniature (serving size 21 biscuits, 60g). Smaller sizes are available in a frosted variety, which has one side coated with sugar and usually gelatin.

## Shredded Wheat Equivalents

### Original Big Biscuit

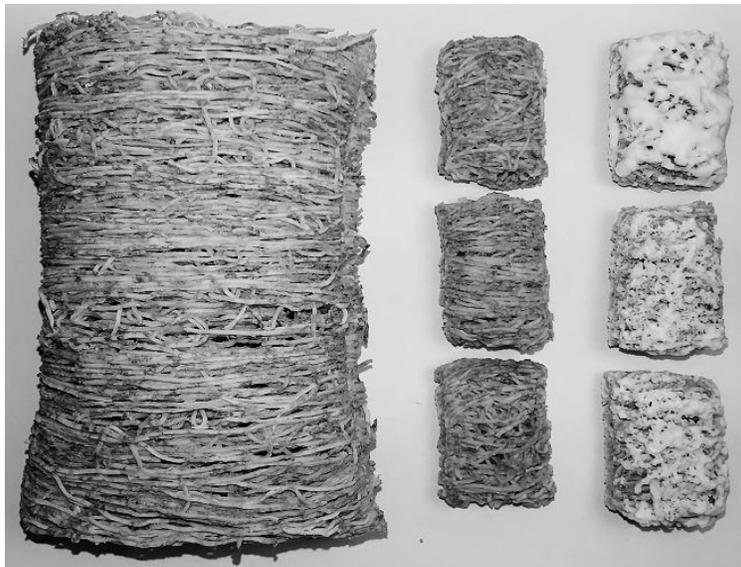
Serving Size: 2 biscuits (47g), 100% whole grain wheat  
160 calories, 6g fiber per serving, 0g sugar  
Big Biscuit: 2-1/2 inch x 3-3/4 inch x 1-1/4 inch

### Original Shredded Wheat Bite or Spoon-Sized

Serving Size: 1 cup (55g), 100% whole grain wheat  
200 calories, 7g fiber per serving, 0g sugar  
Bite Size: 3/4 inch x 1 inch

### Frosted Bite-Size Shredded Wheat

Serving Size: 21 biscuits (60g, or 2.86g per biscuit),  
190 calories, 6g fiber per serving, 11 g sugar  
Bite Size: 3/4 inch x 1 inch



## Shredded Wheat Breakfast Cereal

### Weight and Size of Shredded Wheat Biscuits

On page C.7 are described shredded wheat cereal in many configurations. In the USDA standards, they use 1-cup as the usual serving size. In the table below, we relate shredded wheat weight and account for the size biscuits.

In November 2018, I used three characteristic sizes of shredded wheat biscuits: (1) original; (2) original with sugar; and (3) small biscuit by Kroger.

### Big Biscuits

<u>Description</u>	<u>Serving Size (USDA)</u>	<u>Calories/Serving</u>
Big Biscuit (Post)	2 Biscuits (47g)	160 cal.

### Bite or Spoon Size Natural Shredded Wheat Biscuits

<u>Description</u>	<u>Serving Size (USDA)</u>	<u>Calories/Serving</u>
Bite Size, Plain (Essential Everyday)	22 Biscuits (60g)	200 cal.
Bite Size, Plain (Kroger)	1-1/4 cup (50g)	170 cal.
Bite Size, Plain (Post)	1 cup (55g) 3/4 inch x 1 inch	210 cal.
Original Spoon Size (Post)	1 cup (49g)	170 cal.
Original Spoon Size (Simply Nature)	1 cup (55g) 3/4 inch x 1 inch	200 cal.

### Shredded Wheat Biscuits Weight and Count

<u>Description</u>	<u>Serving Size (1-cup)</u>	<u>Calories/cup</u>	<u>g/1 unit</u>
Original Shredded Wheat (Simply Nature)	1 cup (55g)	190 cal.	2.6g
Original Shredded Wheat (Millville)	1 cup (55g)	210 cal.	2.88g
Original Shredded Wheat (New Kroger)	1.25 cup (50g)		1.25g

## Bite or Spoon Size Flavored Shredded Wheat Biscuits

<b><u>Description</u></b>	<b><u>Serving Size (USDA)</u></b>	<b><u>Calories/Serving</u></b>
Bite Size, Frosted (Kroger)	1 cup (55g)	190 cal.
Bite Size, Frosted (Millville)	1 cup (60g)	210 cal.
Bite Size, Frosted (Post)	1 cup (55g)	190 cal.
Blueberry Frosted (Kroger)	1 cup (55g)	190 cal.
Chocolat Noir (Post)	1 cup (50g)	180 cal.
Chocolate & Strawberry (Post)	19 biscuits (55g)	200 cal.
Chocolate Frosted (Kroger)	1 cup (55g)	210 cal.
Frosted Cinnamon Roll (Post)	22 biscuits (60g)	220 cal.
Frosted Maple Brown Sugar (Kellogg)	1 cup (55g), 25 biscuits	190 cal.
Frosted Mini Spooners (Malt-O-Meal)	1 cup (55g)	190 cal.
Frosted Strawberry (Post)	1 cup (55g)	170 cal.
Honey Nut (Post)	1 cup (59g)	220 cal.
Shredded Wheat & Bran (Post)	1 cup (47g)	170 cal.
Shredded Wheat Crunch! (Post)	1 cup (55g)	210 cal.
Strawberry Cream Frosted (Kroger)	1 cup (55g)	190 cal.

## **The Nutritional Characteristics of Shredded Wheat Cereal**

Shredded wheat cereal has widely been established as a vital item in a healthy diet. However the healthiest choices are the low sugar, low fat variety. Shredded wheat cereal is one of the best available to meet your nutritional needs. This is a good low calorie, zero cholesterol choice. It is produced from shredded whole wheat that is made into small squares. The food is a good source of protein and fiber. It also provides good amounts of vitamins B1 and B3. Mineral content includes iron, magnesium, copper and zinc. Health benefits are given below.

### **Protein**

One cup of shredded wheat cereal provides about 6 grams of protein. Proteins are required for various growth and development functions in the body. They help to build skin, hair, and muscles and cartilage. Proteins help in the repair of tissues and mucous membranes. Together with carbohydrates, proteins supply the body with energy. Proteins also help to fight infections and support the immune system. Inadequate protein in the diet hinders many of the body's functions. It can also result in anemia.

### **Fiber**

You get 5 grams of fiber from one cup of shredded wheat cereal. This fiber plays a role in the reduction of low density lipoprotein cholesterol. This helps to prevent plaque build-up in the arteries. It reduces the risk of stroke and heart attack. Fiber has also been established as vital for proper functioning of the digestive system. Insoluble fiber increases stool bulk and enables faster elimination. Regular bowel movements help eliminate constipation.

### **B Vitamins**

One cup of cereal supplies about 10 percent of the recommended daily value for vitamin B1 and 15 percent for B3. These vitamins play a vital role in metabolism of protein, fats and carbohydrates. This facilitates energy production. The B vitamins sustain muscle contractions which improve muscular functions. They also support activities of the nervous system. Research has established that the B vitamins also play a role in the body's ability to tolerate stress.

### **Iron**

This mineral plays a vital role in the production of hemoglobin and certain enzymes. Hemoglobin occurs in red blood cells and distributes oxygen throughout the body. Almost all activities in the body are dependent on enzymes. Metabolism, growth and repair functions all involve enzymes. Iron helps to convert blood sugar into energy. Inadequate iron intake can lead to anemia, fatigue, breathlessness and headaches. A cup of shredded wheat cereal for breakfast is an excellent way to build up on iron supplies for the day. It provides 5 percent of the recommended daily value.

### **Magnesium**

One cup of the cereal provides 15 percent of the daily recommended value for magnesium. This mineral supports the activities of enzymes and contributes to overall good health. Muscles and nerves also require magnesium for optimal performance. Inadequate magnesium can result in muscle weakness, depression, anxiety, irritability and confusion. Research has established that adequate intake of magnesium can help to counter stress. Along with calcium, magnesium helps to sustain strong bones. It also normalizes heart rhythm and helps to reduce the risk of stroke.

### **Zinc**

Wounds heal faster when zinc intakes are high. It boosts the immune system and supports healthy skeletal growth. A serving of one cup of shredded wheat cereal supplies about 10 percent of your daily recommended value.

(Copied from <http://www.fitday.com/fitness-articles/nutrition/health-eating/the-nutrition-of-shredded-wheat-cereal.html>)

## **IJ Healthful Living**

### **Health Considerations, Health Comments**

The need for food is our primal instinct. The body feeling the need for food causes the body to cry (for food). Processing food satisfies the need until the next time the body needs/wants food. The body gets attention by crying and food is provided ending the cycle; this is then repeated.

We speak about training the baby. Who is training who? Maybe the new infant trains the adults. Do the adults try to change nature rather than wanting to work with the forces of nature?

Our present-day society is all about changing the nature of the animal. Is group thinking stronger than nature? Is not the lesson of life that nature will persevere? Should we all be teaching that we must be in harmony with nature, that we need to listen to nature and to our bodies?

Our "body clock" (circadian rhythm) controls our gut processes. Our body clock tell us it is time to start the day, for chemical processes in the gut to start the digestion processes. The result of this activity is hunger pains, feeling that it is time to eat, feeling that we are hungry. Providing food for our gut is satisfying, so we proceed happily through the day. This series of events is repeated at 4- to 6-hour-intervals throughout the day.

When we listen to our bodies, all is well, but when we do not listen and supply food, bad things can happen. When we habitually ignore our body signs either by mental actions or by using Tums or Roloids, we act to turn off our feelings. We try to mask our feelings instead of providing the food for the body machinery.

## Herbals for Stomach Health

I believe there is another way to stomach health! It is to carry out activities to strengthen the stomach walls. Our health is a function of our diet. A quality diet will help promote a healthy stomach. Also it has been found that certain chemicals will improve stomach functions.

I concluded, sometime early in 2013, that I needed to carry out some type of healing process. In 2015, I started using four herbal products. I have been using these herbal preparations that are reported to heal and strengthen the walls of the stomach.

1. IGB STW 5

German herbal Iberogast, STW 5: I started taking the Iberogast, STW 5, at the rate of 17 drops in the morning (the recommended dose was 20 drops three times per day).

2. Gastro Relief

Zinc L-Carnosine had been found by the Japanese be helpful in treating stomach ulcers. It works by strengthening the stomach mucosa, sticking to the stomach wall and acting as a buffer to gastric acid, serving as an antioxidant, and controlling the inflammatory responses to stomach injury.

3. DGL Licorice

Deglycyrrhizinated (DGL) licorice extract is good for simply healing the stomach.

4. Turmeric (Curcumin)

A dietary constituent that is safe and well tolerated. Turmeric is widely used for dyspepsia and other inflammatory conditions. It has powerful anti-inflammatory effects; it can reduce pain and fever and is a very strong antioxidant.

More information on these herbal remedies are found in Part H.

It is my belief that as we improve the stomach functions and the health of the stomach, general health improves. At the same time, this condition may cause the chemicals in the small intestines to be more active and we may get more gas production, more noises, and other manifestations that sometimes we conclude are bad. They may be, in reality, good! We want an active stomach that churns, pumps, and grinds our food rather than a stomach fluid that is quiet, nonactive, and has a high pH. This may allow microorganisms to survive and pass into the small intestines.



## **D. Stomach Physiology**

### **General Stomach Conditions**

How do we as individuals understand and deal with our stomach, our GI system? What is normal?

The stomach is the work-horse of the human body; it is the body's organ that prepares the food stock, fuel, and repair parts for use of our bodily systems.

When we eat food, we put all kinds of biological material in our mouths. The intake from the esophagus contains all kinds of food particles, a wide variety of microorganisms (some of these are good microorganisms, others are bad microorganisms), viruses, chitin, and other plant and animal fragments.

The food we put in our mouths is not sterile (with the exception of heat-preserved canned foods that have been opened aseptically), so we can expect this food will be well inoculated as it moves into the stomach.

The stomach digests everything supplied by the mouth (the resulting product is called chyme). In this operation, the stomach has done its job and by the time the chyme has reached the small intestine, most biological critters will have been killed.

The chemical engineer will probably describe the stomach as an automated biological reactor vessel that is self controlled other than its inside (from the mouth) and the out flow by the ileum. There is a stomach control system that is probably unknown and the stomach control system has its own system of discerning how it is going to operate.

External factors such as physical activity, physiological stress, and the type and quantity of food input can have a major effect on the stomach system.

Since we cannot mentally control our stomachs or even talk to our stomachs, what are we to do? In general, the stomach of an organism just does its own thing, that is, to do what the stomach of the organism is programmed to do by nature. One author writes that, in the organism, there is a second brain that controls the GI system. Obviously if there is a second brain, the second brain is somewhat secretive to our primary mental-control system.

Proceeding on the basis that somewhere in the organism is a rudimentary second brain, we must proceed to communicate with that brain as best we can.

The experienced stomach operator learns to calibrate attention-getting conditions that he/she must live with and select a life style path that offers a minimum amount of pain with maximum personal satisfaction.

## History

For tens of thousands of years, the mammalian animal has lived with nature and with a successful GI system. Nature has developed a GI system as well as other critical body systems that will operate more or less successfully for the life of the animal. We will use gastro-intestinal (GI) system to refer to all or part of the system that extends from the mouth to the anus (mouth, esophagus, stomach, intestines).

If we now fast forward to the 20th century, we find that a significant number of the human animal population has severe stomach pain.

In man's long 50,000-year trek to being a creature of civilization, he has changed his living patterns and diet. Modern man desires to control his environment to optimize what he believes is the good life. He has altered his physical environment, he disregards nature in how he lives, and he has proceeded to alter his food selection and consumption to fit his selected life-style. The result is a GI system, originally designed to operate in harmony with nature, is a system in conflict with nature. We have now introduced stressful living patterns into our daily life and manufactured food items that are from chemicals rather than grown naturally.

The result is (1) we have pain in our GI system and (2) we reach for a potion that will cause the pain to go away. All the while, we continue our self-guided path to our personal destiny. We would think, being highly intelligent, we would study our body systems and learn what we need to do to be in agreement with nature and avoid GI pain. However, the great majority of us choose to ignore or treat the pain with pills and blithely keep doing what we have been doing.

*The body is unique in the microbial-control area. It is able to inactivate harmful biological entities, bacteria and viruses, in the stomach and keep separate the chemical digestion system. It allows beneficial microorganisms to make homes in the large intestines and colon where they synthesize vital micro nutrients.*

## Unique Stomach Attributes

We do not know all the paths in the GI system. We know that in the new infant, the mouth to anus is just one long tube. Changes take place in time. In the growing infant this long tube grows and evolves quickly into thick and thin walled structures with ability to expand and contract as required to accept food material.

We know that by about 3 years of age, this long tube has evolved into our present-day GI system and the stomach is now a compartmentalized reaction vessel. The system has evolved into four major parts: (1) mouth to stomach; (2) stomach; (3) microorganism-free area from the duodenum to the end of the small intestines, and (4) large intestines and colon, home of the gut microbiota.

The throat, stomach and colon are three locations in our body where we have the unique ability for our body to handle gas, liquid, and solid material in the same area. We have learned how to successfully live with these several body streams.

The stomach is a unique organ, it is not an empty structure like a box but is more like our mouth. A thick walled muscular structure that sort of closes on itself with only a few ml (milliliters) of fluid but after a large meal can expand to hold more than a gallon.

We do not know all the changes that will take place in the next 10, 20, 30, or 50 years. It is possible that many changes will take place as we stress the body in one way or another. Long term effects of diet, lifestyle, and medication may alter, in major ways, the stomach and GI system.

The stomach operation is controlled by the sympathetic nervous system that is further under the control of the system controlling body functions. It is not a steady-state system, but varies with the body needs and body conditions (circadian rhythms). We control our food input and can only observe the system in operation by feelings and sounds of the operation.

# Digestion

## **Chemistry is the Critical Science Operation in the Stomach.**

The stomach is a mechanically-actuated, chemical-reaction vessel, carrying out a mixing and transport function. In the stomach, food particles from the esophagus are broken down into molecular-sized fragments.

In a healthy stomach, as soon as food enters the stomach hydrochloric acid and enzymes go to work digesting the food. Movement, noise, and CO<sub>2</sub> are normal in the healthy gut. Mechanically, in a wave action from the stomach walls, the food particles combine with chemicals secreted from the stomach walls, are kneaded, mixed and liquefied (digested) into what is now called *chyme*. The chyme moves by a wave action from the stomach wall and gravity toward the duodenum.

The digestion process needs to be very aggressive to free the critical compounds from the proteins, fats and carbohydrates that will be used as neurological and immunological building blocks.

We rely on the hydrochloric acid and gastric enzymes to raise the acidity of the chyme to a level where microorganisms are killed. The chemistry of the stomach is such that when the chyme arrives at the duodenum, the necessary microbiologically-sterile chyme conditions have been met. When the chyme reaches the duodenum it is, for practical purposes, microbiologically sterile. This is a critical part of microbial control and good health.

In this discussion, we will assume that the chyme moves through the stomach as a series of packets; each packet will see the same series of effects as it moves from the entrance of the stomach until the end of the stomach, the duodenum.

The stomach, as a reactive digestion vessel, generates a significant quantity of heat and gases such as carbon dioxide (CO<sub>2</sub>) which we expel by burping and shunted to the colon.

In the chemical digestion process the chyme, plus hydrochloric acid and gastric enzymes are kneaded, mixed, digested and separated into liquid and gaseous fraction. The digestion action in the stomach produces a lot of gaseous material: in my GI system after about 30 minutes post meal, about 75% of the gas from the digested food finds its way to my colon.

## Final Digestion and Absorption

The first part of the small intestine, called the duodenum, is part of the digestive system and has its own set of digestive juices including:

- alkaline fluid from the pancreas that has special enzymes (called *amylases*) to digest carbohydrates;
- bile from the liver and gallbladder that acts as an emulsifier (a compound that enables fats to mix with water);
- pancreatic and intestinal enzymes that complete the digestion and separation of proteins into amino acids; and
- more contractions shove the chyme along the intestines while specialized cells in the intestinal walls absorb sugars, amino acids, fatty acids, vitamins, and minerals, which then enter the blood-stream to use as energy and building blocks for new tissue.



## **E. Severe Stomach Pain / Discomfort in the GI System**

The material in the next few paragraphs treats problems of pain and discomfort in my GI system. I have spent many hours trying to understand pain in my GI system; the result is that I have obtained stories that are not the same, but also not different. Today, I am not able to combine all into one story, so I have decided to simply tell the several stories as I have experienced them. If parts of these stories sound similar, they are!

### **Below are listed GI conditions I have experienced:**

1. No pain, no notice that the stomach exists.
2. The stomach is noticeable, but no pain.
3. Awareness of my stomach with some discomfort (unable to distinguish if pain or hunger need).
4. My stomach has my attention, but no significant pain or discomfort.
5. My stomach is unhappy! I need to find a way to eliminate discomfort.

### **Pain in the Gut**

We all, 100% of the population, must eat to live; however, it is our choice as to *what* and *how much* we eat. We do not take care of our bodies, but grossly abuse them by poor food choices and excessive food intake! Our excesses give us gut pains!

A severe pain in the gut is an attention-getting action; few can resist the call for help! Universally, we reach out for a person or potion that will ameliorate our pain. Over time, we have become addicted to all kinds of drugs and potions to eliminate gut pain.

There are many types of stomach pains: pain from eating too much, pain from eating too much of the wrong food; pain from eating spoiled food; hunger pains in the gut from not having enough of the right food in the stomach.

Since stomach pain occurs in most of the population at some time or other, a large industry has developed dedicated to medicines, drugs, and supplements dedicated to reducing or eliminating stomach pain.

### **Stomach Pain / Distress: General Location**

Stomach pains are often difficult to characterization both in location and intensity. It is often difficult to pinpoint the location and the intensity of the hurt. When I experience pain in my gut, I immediately look for a way to reduce or eliminate the pain. Some times the pain seems everywhere and I just want to stop the pain, other times it is just a low-grade gnawing feeling and I have time to examine my feelings.

## **Stomach Pain / Distress: Upper-GI Conditions (Stomach and the Esophagus) Gastroesophageal Reflux Disease (GERD)**

Gastroesophageal Reflux Disease or GERD, the common heartburn, is a common disorder of the stomach and the esophagus.

*Reflux Disease* refers to the back-flow of acidic or non-acidic stomach contents into the esophagus. GERD symptoms result from repeated or prolonged exposure of the lining of the esophagus to contents of the stomach. Symptoms vary from person to person. Common GERD symptoms are heartburn and regurgitation (refluxed material into the mouth). Sometimes there are no obvious symptoms.

## **Stomach Pain / Distress: Stomach and Hands**

From time to time I am aware of a general shaking, a type of nervous shakes, that may occur any time of day. When I feel nervous, I consume 1/2 to 1 teaspoon of chamomile tea solution, and the nervous effects become quiet and disappear after 20 to 30 minutes. In the morning, when I follow a vinegar-tonic and chamomile-tea regimen, I may not notice the nervous feelings at all.

## **Stomach Pain / Distress: In My Lower Stomach**

I have learned through experimentation that most of my stomach pain/distress can be characterized as being in the lower-stomach area. Considering my lower-stomach pains, not all lower-stomach pains are the same; they may vary both in location and intensity.

For the most part, I have hurt/distress down in the lower stomach. I seldom have sour stomach or acid indigestion and certain drinks and food will relieve the problem. My stomach is in charge. I have learned that there are certain things that I can do to make my stomach happy. In general, consuming food about every three to five hours throughout the day tends to produce less stomach stress.

## **Stomach Pain / Functional Gastrointestinal (GI) Disorders (FGIDs):**

Functional dyspepsia is characterized by chronic or recurrent pain or discomfort centered in the upper abdomen. Unlike IBS, symptoms are not related to the process of defecation.

Functional gastrointestinal disorders (FGIDs) are common disorders that are characterized by persistent and recurring GI symptoms. Common names are indigestion and acid indigestion. These occur as a result of *abnormal functioning* of the GI tract. They are not caused by structural (tumors or masses) or biochemical abnormalities. As a result, many routine medical tests attempting to diagnose an FGID -- such as x-rays, CT scans, blood tests, and endoscopic exams -- can have essentially normal/negative (non-disease) results.

### **More Than 20 FGIDs Have Been Identified.**

Functional disorders can affect any part of the GI tract, including the esophagus, stomach, bile duct, and/or intestines. The most common and best researched FGID is Irritable Bowel Syndrome (IBS) -- abdominal pain associated with altered bowel habits of diarrhea, constipation, or alternating between both. Other common FGIDs include functional dyspepsia (pain or discomfort in the upper abdominal area, feeling of fullness, bloating or nausea), functional vomiting, functional abdominal pain, and functional constipation or diarrhea. It is important to understand that these are *not* psychiatric disorders, although stress and psychological difficulties can make FGID worse. Approximately 25 million Americans have functional GI disorders. 50-80% of people with FGID symptoms do not consult a physician, although they may take over-the-counter medications and report significantly more job absenteeism and disability than people without symptoms. It has been reported that IBS is the second leading cause, after the common cold, for missing work or school.

**There are three primary features of FGIDs -- motility, sensation, and brain-gut dysfunction.**

*Motility* is the muscular activity of the GI tract, which is essentially a hollow, muscular tube. Normal motility (e.g., peristalsis) is an orderly sequence of muscular spasms that cause pain and the contractions can be very rapid, very slow or disorganized. *Sensation* is how the nerves of the GI tract respond to stimuli (e.g., digesting a meal). In functional GI disorders, the nerves are sometimes so sensitive that even normal contractions can bring pain or discomfort. *Brain-gut dysfunction* is the disharmony in the way that the brain and GI system communicate. With FGIDs, the regulatory conduit between brain and gut function may be impaired.

**Symptoms**

Functional dyspepsia can be divided into three categories: ulcer-like dyspepsia, dysmotility-like dyspepsia, and unspecified. Ulcer-like dyspepsia has upper abdominal pain as its predominant symptom. This pain is accompanied by several other symptoms, including hunger pain that is sometimes relieved by eating, pain relieved by antacids, night pain, periodic pain, and pain which may be very localized in the upper middle region of the abdomen.

Dysmotility-like dyspepsia has upper abdominal discomfort, not pain, as its predominant symptom. It is accompanied by several other symptoms, including: early feeling of having enough to eat, fullness after a meal, nausea, recurrent retching and/or vomiting, upper abdominal bloating, and upper abdominal discomfort aggravated by food.

**Incidence and Treatment**

In general, dyspepsia occurs in approximately 30% of adults. About one-half of that number, or 15% overall, can be classified as having functional dyspepsia.

Functional dyspepsia may be treated with changes in diet or with medications. Although studies have not proven that dietary changes help, individual dietary experimentation may prove helpful for some. Avoiding spicy and fatty food may reduce symptoms of fullness after eating. Eating six small, low-fat meals per day may reduce early feelings of fullness, bloating after a meal, or nausea. Avoidance of caffeine, alcohol or smoking may also help.

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Comments adapted from IFFGD publication "Functional Dyspepsia and IBS: Incidence and Characteristics"  
by John Kellow, M.D. and Douglas A Drossman, M.D.

## **Pain / Distress in the Lower-GI System**

### **(Small Intestines and Colon)**

#### **Irritable Bowel Syndrome (IBS)**

Irritable Bowel Syndrome (IBS) is a common gastrointestinal disorder. It involves the way nerves and muscles of the GI system work and affects the normal function of the GI system, causing recurrent abdominal pain and discomfort. People with IBS have GI systems that are more sensitive and react to things that might not bother other people, such as stress, anxiety, depression, large meals, certain foods, caffeine, and alcohol.

IBS is not classified as a true disease. Instead it is known as a 'functional disorder.' This means that the symptoms do not have an identifiable cause. Other examples of functional disorders include tension headaches and chronic fatigue syndrome (CFS).

IBS is extremely common. The International Foundation for Functional Gastrointestinal Disorders (IFFGD) estimates that it affects up to 15% of the American population. It is also the most common reason why patients seek out a gastroenterologist.

The symptoms of IBS are not associated with structural findings such as ulcers or other abnormalities as found with blood studies. Instead, IBS is considered a disorder of regulation of GI function, which produces dysmotility (increased or irregular movements of the muscles of the gut) and increased sensitivity to intestinal sensations (visceral hypersensitivity).

Contrary to popular belief, IBS is not a psychological condition. IBS has physical symptoms but there is no known cause.

Irritable bowel syndrome (IBS) is a disorder characterized by a combination of abdominal pain, cramps, constipation, diarrhea. It is one of more than twenty functional gastrointestinal disorders (FGID). These are disorders in which the gastrointestinal (GI) tract is not functioning normally with a combination of persistent and recurrent abdominal pain. In the doctor's office, nothing abnormal is seen on tests. The bowels look fine. Yet there is pain, discomfort, and other symptoms that will not go away or keep coming back.

It is hard to get a clear picture of IBS; however, one notable difference is that IBS is almost always calibrated by stress.

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These comments were abstracted from: [IBS vs. IBD: What's the Difference?](#) from healthline.com.

## **Inflammatory Bowel Diseases (IBD)**

Inflammatory Bowel Disease (IBD) is a broad term that refers to chronic swelling (inflammation) of the intestines. It is often confused with the non-inflammatory condition called Irritable Bowel Syndrome (IBS).

Since the inflammation of intestines is absent in people with IBS, it is difficult for researchers to understand the precise causes of the latter condition. One notable difference is that *IBS is almost always exacerbated by stress*. Stress reduction techniques may help.

IBD comes in several forms:

- Crohn's disease,
- Ulcerative colitis,
- Indeterminate colitis.

The actual cause of the inflammatory bowel diseases (IBD) remains elusive. It is likely, however, that these chronically recurring episodes of inflammation in the human bowel are related to a complex interaction between various environmental factors and a hereditary predisposition for these diseases. It is very unlikely that IBD is due to an underlying infectious disease - hence, infecting other persons with the disease is not possible.

## F. Stomach Problems, Stomach Acid, Acid Indigestion

The stomach is one of the most important organs in our bodies. It is a vital multi-functional system that is essentially automatic, just add food and it takes care of itself. About half of the population at one time or the other have stomach pains. In general, stomach pains are unique attention-getters. When I have a severe stomach pain, the whole body is at attention looking for help.

Stomach pains are unique in that they get our attention. Stomach pains and stomach problems are about as old as civilization; early on, it was found that certain foods ameliorated the pain.

Along with pain, in some cases an acid taste in the mouth occurred. Over time the term acid indigestion came into use. With the event of the drug industry, drugs to heal stomach hurts arrived. Acid became the villain and the object was to slay the evil stomach acid dragon.

Dr. Jonathan Wright and Dr. Lane Lenard, in the Preface to their book [Why Stomach Acid is Good for You](#), point out that "The conventional medical establishment in the United States, thanks in large part to hundreds of millions of advertising, research, and 'educational' dollars spent by the pharmaceutical industry each year, has learned to fear the evil stomach acid dragon.

"Acid-suppressing drugs are a more than seven-billion-dollar-a-year industry in the United States. Yet, this unimaginably large franchise is built on a convenient deception: that virtually eliminating acid from the stomach can only be good for us, and that it will have no consequences today, or tomorrow, or twenty or thirty years from now, when we're still popping potent acid-suppressing pills to control our symptoms of 'hyperacidity.'

"In this book, we emphasize some of the important, even essential, roles that stomach acid plays in digestion. We describe how hydrochloric acid, secreted by special cells in the stomach's lining in response to a meal, is a key upstream link in a complex chain of events that culminates in the absorption of vital nutrients that make a long, healthy life possible. Break that chain - by severing the acid link - and the downstream cascade of events required for proper digestion and the continuing health of the gastrointestinal (GI) system - as well as the rest of the body - will be severely impeded.

"If you or someone you love suffers from heartburn or other symptoms of gastric upset, we urge you to ignore the constant barrage of advertising that leads most people - including most doctors - to believe that the only way to treat these disorders is by suppressing acid secretion. More than a century's worth of scientific research confirms that this simply isn't so. What has come to be called - incorrectly - 'acid indigestion' is almost always associated, not with too much stomach acid, but with too *little*."

## Discussion of Stomach Acid: What is reality?

"Acid Indigestion" - what is it? It is not one small problem but is a syndrome of many stomach problems.

Theoretically, the acid in "Acid Indigestion" is the cause of stomach problems. Therefore we jump to the conclusion that stomach acid is bad. If we reduce the stomach acid level, stomach distress will be eliminated. The cure is anti-acids. For more than fifty years that has been the song "Sour Stomach? Reach for an anti-acid." In response, the health and pharmaceutical industries have been busy manufacturing anti-acid fixes.

Jonathan Wright M.D. and Lane Lenard Ph.D, discuss the myth of acid indigestion, in their book, Why Stomach Acid is Good for You. An excerpt is printed below:

"Heartburn, indigestion, dyspepsia, and acid indigestion are extremely common afflictions. Thanks mostly to diet and lifestyle, and sometimes because genetics, pregnancy, anatomy, or simple aging, it seems that sooner or later, almost everyone gets an upset stomach in one form or another. Who hasn't felt the acute burning in the back of the throat and upper chest after eating certain foods? Who hasn't popped a Tums or gulped a bicarb to extinguish the acidic flames that seem to roar up from the stomach during a heartburn attack? If we are to believe what we see in the media, the American populace is awash in indigestion-causing stomach acid. We can't watch TV without seeing dozens of slick commercials for expensive, high-tech drugs like Prilosec, Prevacid, Tagamet, Zantac and others. The myth that underlies the conventional treatment of acid indigestion and the implied message in all the commercials - - although they rarely come right out and say it - - is that heartburn happens because we've got *too much acid* in our stomachs. As a result, some of that acid flows back - - or *refluxes* - - into the esophagus, the muscular tube that carries food from the back of the mouth into the stomach. Since acid does not belong in the esophagus, its presence irritates the delicate tissue that lines the inside of the tube. Heartburn pain is a symptom of that irritation."

## **Stomach Acid: Conventional View**

The widely-accepted idea (by at least half of health professionals) is that stomach acid is bad and it needs to be reduced. That stomach pain and other distress is due to stomach acid that is too high and that if we reduce the stomach acid level, stomach distress will be eliminated.

*The marketplace has voted for PPIs.* The pharmaceutical solution is to use proton pump inhibitor-type (PPI) chemicals, which will effectively reduce the acidity in the stomach fluids.

These strong and expensive chemicals have many adverse effects on the organism.

The PPI-type of chemicals will effectively reduce the acidity in the stomach fluids, which will reduce the digestive action of stomach acid and pepsin and retard the breakdown of fat, protein, carbohydrates and other critical molecules. The result is that the stomach digestive process will not be as complete.

When the acid in the stomach is reduced using PPIs such as the "Purple Pill," the pH in the chyme is less acidic, reducing the microbial kill so there will be a higher probability of microorganisms surviving into the duodenum.

Unintended consequences of a reduced stomach-acid environment: it will affect the immune system; it can affect micro-nutrient levels of B12, calcium, iron and magnesium; it may result in increased risk of kidney and cardiovascular issues; and it can produce negative effects on cognitive functions and brain health.

The use of the PPI chemicals not only reduces the acidity in the stomach, but may reduce the acid level in cells throughout the organism.

## **Stomach Acid: IJ's Approach to Stomach Acid**

I try to maintain stomach health through lifestyle and natural processes. My health is a function of my lifestyle. A quality diet will help promote a healthy stomach and develop a lifestyle that is more agreeable with nature. Desirable lifestyle aspects are: choosing quality nutritious food and following a diet that will promote a healthy stomach; staying away from the harms to health such as smoking and general excesses of harmful drugs; and developing a lifestyle that avoids or minimizes stress.

## **A Few Conclusions**

I believe that when we improve the health of the stomach by increasing the strength of the hydrochloric acid and enzyme activity, the pH of the chyme will be more acid (the pH will be a smaller number). This will improve stomach function and the whole digestion process and will cause the chemicals in the stomach to be more active and may produce more vital molecular fragments available to the small intestines. That will, in turn, benefit the immune system.

We want an active stomach that churns, pumps, and grinds our food, and there will be a smaller probability of a microorganism surviving into the duodenum, making for a more healthy individual.

A more acid stomach will be beneficial to the organism, but may also produce more intestinal movement, more intestinal noises, more gas production, and other manifestations that society concludes are bad. It is possible that the things we do and chemicals we use to make our stomach feel good are bad, as far as having a good stomach operation.

It is my belief that as we improve the stomach functions, we improve the well-being of the individual. Our health is a function of our diet; a quality diet will help promote a healthy stomach. I will list below three herbals that I am using that I have found appear to improve the health of my stomach and the digestion process.

1. The German herbal Iberogast, STW 5; I started taking the Iberogast, STW 5, at the rate of 12 drops morning and evening (the recommended dose was 20 drops three times per day).  
I now take 18 drops each morning.
2. Zinc L-Carnosine; had been found by the Japanese be helpful in treating stomach ulcers.
3. Deglycyrrhizinated (DGL) licorice extract; was good for just simply healing the stomach.

## **2018 Comment**

I have satisfied my hunger pains by eating every 4 to 10 hours. It is my opinion that many in our society use PPIs as a crutch to satisfy their hunger pains. If I can use a PPI to satisfy my gut pain -- why not? Using a PPI one time is one thing, but developing a habit of using a PPI each time I have a gut ache may satisfy the discomfort but can do bad things to my gut.

There are many situations where we as individuals have a choice as to which road to take. One area is in this gut pain area. We can use PPIs, they will ease our pain or we can find food that also will eliminate the pain. I do not believe that the two roads are equal in outcome. Is it possible that the initial choice will be, in the long term, the wrong choice?

## Acid, Acidity and pH

**Acid and Acidity:** Acids are compounds which release one or more hydrogen ions ( $H^*$ ) to some extent in solution. This can be illustrated as follows:



The undissociated acid is not charged. It dissociates into a positively charged hydrogen ion [ $H^+$ ] and a negatively charged anion [ $A^-$ ]. Acidity refers to the total amount of acid present in solution. This is routinely measured by titration of all the available [ $H^+$ ] with a compound known as a base. The titratable acidity is expressed in terms of percent of some specific acid. The acidity of foods packed in liquids should be expressed as grams of some acid per 100 ml of the packing medium. This is quantitatively equal: grams acid/volume of sample x 100. For solid or semi-solid foods, the percent of some acid is equal: grams acid/grams of sample x 100. Vinegar contains acetic acid and the strength of vinegar is frequently expressed in terms of grains. This refers to the percentage of acetic acid times 10. For example, 100 grain vinegar contains 10% acetic acid.

**Types of Acids:** Acids are frequently classed as either mineral or organic. Mineral acids such as hydrochloric and sulfuric acids are comprised of inorganic elements and are strong acids. Organic acids such as acetic, lactic, and citric acids are carbon-containing compounds and are weak acids. The strength of an acid depends on how readily it gives up [ $H^+$ ]. This will be discussed in context with pH. In dilute solutions, mineral acids dissociate completely. For example, when hydrochloric acid (HCl) is added to water, it separates completely into [ $H^+$ ] and chloride [ $Cl^-$ ] ions. In contrast, the extent to which organic acids dissociate varies widely with individual acids, and with other components of the system.

Acetic acid, in the form of vinegar, is the most commonly used acid to acidify foods, and it is relatively weak. Lactic acid, the predominant acid in fermented foods, is considerably stronger than acetic; and citric acid which is found in citrus fruits is stronger yet.

**Define pH:** pH is defined as a measure of hydrogen ion activity. For simplicity, we will define it as a *measure* of hydrogen ion concentration, [ $H^+$ ], in a solution. [ $H^+$ ] means the concentration of [ $H^+$ ] in moles / liter. Since the weight of [ $H^+$ ] is equal to about 1.0, it means gram [ $H^+$ ] / liter of solution. Hydrogen ion concentration is different from the total acid concentration as determined by titration. This difference will become very apparent during this discussion.

**The pH Scale:** There are two very important characteristics of the pH scale which must be understood: (a) the scale is inverse; that is, the higher the pH the lower the concentration of [ $H^+$ ] in solution and (b) the scale ranges from 0 to 14 and it is not linear; that is, a change by 1 pH unit does not reflect a change of 1/14 in the [ $H^+$ ] concentration. Instead, a change in 1 pH unit reflects a 10-fold change in [ $H^+$ ]. It is logarithmic in change.

One of the reasons for devising such a scale is because the scale must cover such a wide range of very low  $[H^+]$  concentrations.  $[H^+]$  concentration varies from 1 gram/liter to 1./100,000,000,000,000 ( $10^{-14}$ ) gram/liter. These are difficult figures with which to work but their logarithms (0 to -14) are quite simple. Since these are negative numbers and it is much easier to refer to positive whole numbers, pH was arbitrarily defined as equal to the negative logarithm of the hydrogen ion concentration ( $-\log [H^+]$ ). Converting negative numbers to positive ones results in the scale being inverse. Since it is a logarithmic scale, a change of 1 unit represents a 10X change in concentration.

The logarithm (log) to the base 10 of a number is the exponent of the power to which 10 has to be raised to produce a number. Following are a few examples:

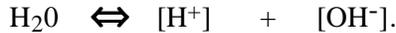
<u>Number</u>	<u>Log</u>
1,000,000 = $10^6$	6
100 = $10^2$	2
1 = $10^0$	0
0.1 = $10^{-1}$	-1
.001 = $10^{-3}$	-3
0.000,001 = $10^{-6}$	-6

Therefore, if the  $[H^+]$  concentration is 0.001 gram/liter, it is equal to  $10^{-3}$  gram/liter. The log of  $10^{-3}$  is -3. Since the pH is equal to the  $-\log [H^+]$ , it is equal to - (-3). A minus times a minus is a plus, so the pH is 3.0.

While the concentration of  $[H^+]$  in grams per liter is very low even at low pH, the numbers of hydrogen ions per liter are very high. One mole of a compound (1 gram of  $[H^+]$ ) consists of  $6.02 \times 10^{23}$  (602 thousand billion billions) molecules or ions, so even at pH 14 there are still over 6 billion  $[H^+]$  per liter of solution.

The pH scale goes from 0 to 14, and pure water has a pH of 7.0 which is right in the middle of the scale. Pure water has a neutral pH. When an acid is added to water, that solution becomes more acidic and the pH value decreases. When a base such as sodium hydroxide (NaOH) or caustic soda is added to water, the solution becomes more basic and the pH value increases. Solutions with pH values above 7.0 are said to be basic or alkaline while solutions with pH values below 7.0 are said to be acidic.

Why choose a pH scale from 0 to 14? Why not 0 to 10? The reason is that the scale is based upon an important property of water. Pure water dissociates *very* slightly as follows:



At room temperature (22°C, 71.6°F), the equilibrium is such that the concentration of [H<sup>+</sup>] is 10<sup>-7</sup> molar (moles / liter) (10<sup>-7</sup> gram, [H<sup>+</sup>] / liter) and the concentration of hydroxyl [OH<sup>-</sup>] ions is also 10<sup>-7</sup> molar (17 x 10<sup>-7</sup> gram [OH] / liter)\*. Thus, the pH (-log [H<sup>+</sup>]) is equal to 7.0 (neutrality). Similarly, the pOH (-log [OH<sup>-</sup>]) is equal to 7.0. If we add a strong acid such as hydrochloric acid (HCl) to pure water, it dissociates as follows:



Thus, the pH decreases. Conversely, if we add a strong base such as sodium hydroxide (NaOH) to pure water, it dissociates as follows:



Here, the [OH<sup>-</sup>] concentration increases and the pOH decreases. An important property of water is that the concentration of either [H<sup>+</sup>] or [OH<sup>-</sup>] depends on the concentration of the other; an increase in one results in a corresponding decrease in the other. The sum of the pH and pOH is always equal to 14 at any pH. Thus:

$$\text{pH} + \text{pOH} = 14.$$

On the addition of an acid, the pH decreases and the pOH increases; and, conversely, on addition of a base the pOH decreases and the pH increases. Since the sum of pH and pOH is always equal to 14, the only pH scale possible is 0 to 14.

---

\*The weight of [OH<sup>-</sup>] is 17 as compared to 1 for [H<sup>+</sup>].

---

<sup>1</sup> Appendix L, edited parts of Chapters 3 and 4, *Acidified and Fermented foods: Principles of Handling and Preservation*. Costilow, R. N. (1979). Pickle Packers International, Inc., St. Charles, IL 60174.

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<sup>2</sup> Dr. Ralph N. Costilow, Professor of Microbiology and Public Health, Michigan State University, East Lansing, MI.

## pH and Acidity

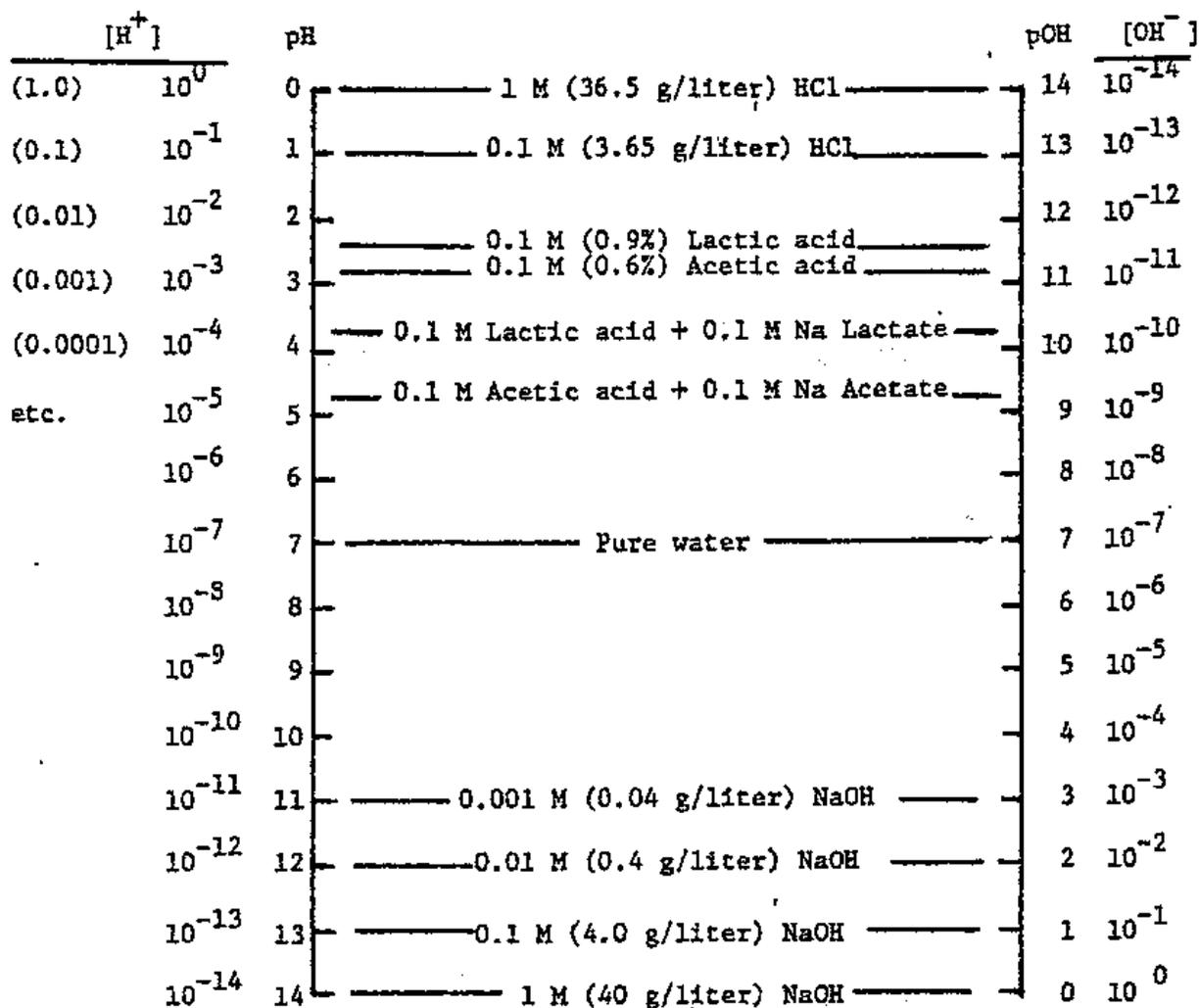


Fig. I.1. The pH scale.  $[H^+]$  = concentration of hydrogen ions ( $H^+$ ) in moles per liter = gram  $H^+$  per liter.  $[OH^-]$  = concentration of hydroxyl ions ( $OH^-$ ) in moles per liter = gram  $OH^-$  per liter divided by 17. The concentrations of acids indicated are for solutions in pure water.

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## G. Microbial Control in the Human Stomach

When nature created microorganisms, nature also created systems to control microorganisms. We observe this in the animal world where stomachs and gizzards help control microorganisms so the workings of our innards proceed safely.

As civilization advanced, we learned about microorganisms and the ability to control them. The use of heat to control microorganisms is a practice that is as old as civilization. First, we used fire itself, then we used hot irons, then we began to get control devices that produced hot and boiling water, then water under pressure, as in the steam autoclave. Pasteur preserved wine using heat and Jenner developed sterile surgery.

Microbial control systems were developed in the food industries and in the health-care and pharmaceutical industries. We learned about industrial sterilization (Pflug, Microbiology & Engineering) and we learned how to produce sterile supplies.

With this brief introduction to the microbial control world, we will now discuss the problem that is most important to all: microbial control in the normal human stomach.

### Introduction to Microbial Control in the Stomach

The stomach is an automated biological-reactor vessel whose purpose is to prepare (digest) raw food into a form that can be absorbed in the duodenum and small intestines.

The stomach receives everything that enters the mouth: food, vegetative microorganisms, spore-forming microorganisms, viruses, fungi, miscellaneous biological material and fluids. The size and contents of the meal determines the microbial load and the digestion time in the stomach.

As soon as food enters the stomach, the neurological system puts the whole digestive system into an automatic operation mode. The walls of a healthy stomach produce a highly acidic blend of enzymes, hydrochloric acid (HCl), and mucus with a pH of about 1.8. These chemicals are as strong and aggressive as car-battery acid. As the digestion process progresses, the resulting food mass has a pH of 2.0 to 3.0.

Churned and mixed by the stomach walls and degraded by the stomach juices, what started as food is now a thick soupy mass called *chyme* (from *chymos*, the Greek word for juice).

In a wave action from the stomach walls, the chyme is continuously subjected to the digestive effect of the strong hydrochloric acid and enzyme environment for 1 to 3 hours, breaking down all biological material.

I believe microbial control of vegetative microorganisms takes place in the stomach, naturally, when the chyme pH is 2.0 to 3.0. Historically, the time when we can no longer recover viable microorganisms in an environment at pH 2.0 to 3.0 is usually minutes for vegetative microorganisms and, for resistant bacterial spores, a reduction of 90% may require hours.

The microbial inactivation rate will be a function of the *D*-value of each species of microorganisms and follows the logarithmic order-of-death model (Rahn 1945); survival will be on a probabilistic basis.

The longer microorganisms are at a pH of 2.0 to 3.0, the larger will be the microbial-reduction effect. When microbial survival is small, survival is a probability effect.

*It is my opinion that, in a normal healthy stomach, the chyme pH is 2.0 to 3.0, and as the chyme leaves the stomach and enters the duodenum it is not microbiologically sterile, but most vegetative types of microorganisms will have been killed and the numbers of spore-forming organisms will have been reduced.*

### **The Stomach Loses the Ability to Have Microbial Control Effects When the Chyme Reaches pH 5.0 or Higher**

When, through food, drugs and/or lifestyle changes, we allow the stomach chyme to reach a pH of 5.0 or higher (a point where we have altered the natural operation of the stomach), we will have microbial-control problems. Degrading the stomach's acid producing system to where the pH of the chyme reaches a pH of 5.0 or higher, the control of pathogenic vegetative microorganisms is greatly diminished.

-----

**Death of One Celled Microorganisms:** *According to Rahn (1945), microorganisms subjected to heat and chemicals die as a result of adverse chemical reactions in the cell. This follows the Law of Mass Action.*

## **Disease and Chemicals Can Adversely Affect the Stomach**

The literature contains studies that suggest that increasing the stomach chyme pH to 4.0 to 5.0 will lead to unhealthy conditions in the gut of the organism. I will describe one route that could lead to a bad outcome.

The ability to destroy microorganisms in the stomach was of first importance in the development of man and animals, since failure to control pathogens results in the loss of the man or animal.

The size and nature of the microbial load leaving the stomach on its way to the duodenum is a function of the pH of the chyme in the stomach; increasing from pH 3.0 to pH 5.0 will affect the kind and numbers of microorganisms that survive into the duodenum and small intestines.

In their report, *Systematic review: the use of proton pump inhibitors and increased susceptibility to enteric infection*, Bavishi and DuPont reported that at therapeutic doses among healthy volunteers, studies evaluating the effect of Proton Pump Inhibitors (PPIs) on 24-h intragastric pH found that omeprazole 40m mg OD caused a median 24-h intragastric pH of 4.9 after 1 week; pantoprazole 40 mg caused a mean 24-h intragastric pH of 4.0 after 1 week; lansoprazole 30 mg OD produced a mean 24-h intragastric pH of 4.5, etc. They reported that at therapeutic doses PPIs generally cause the gastric pH to be greater than 4.0.

The significance of the paragraph above is that, whereas in nature, microorganisms will die at pH 2.0 to 3.0, when the pH increases to 4.0 to 5.0, a fraction of the microorganisms may survive through to the small intestines. These surviving microorganisms may reproduce and even colonize in the nutrient rich small intestines.

In this PPI study, the authors found pH levels in the chyme from 4.0 to 5.0. This suggests to me that some microorganisms may survive in the chyme through to the small intestines to reproduce and colonize. The result is uncontrolled, indiscriminate-seeding of microorganisms into the GI system.

## **Conclusion**

In my opinion, PPIs may not be bad in themselves, but will cause an increase in the pH of the stomach that in turn allows microorganisms to survive into the duodenum and small intestines.

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Bavishi, C., and DuPont, H.L. (2011). Systematic review: the use of proton pump inhibitors and increased susceptibility to enteric infection, *Aliment Pharmacol Ther.*34:1269-1281.

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## **H. Stomach Drugs and Supplements Used by IJ**

Listed below are the several stomach drugs and supplements used by me in the last several years. None of the health supplements are new; all of these materials have a history of being beneficial for stomach problems.

- 1. Belladonna Alkaloids and Phenobarbital (Oral Route)**
- 2. Vinegar Tonic (Vinegar Water)**
- 3. Camomile (Chamomile) Tea**
- 4. Deglycyrrhizinated (DGL) Licorice**
- 5. Iberogast™ STW 5**
- 6. Zinc L-Carnosine (Gastro Relief)**
- 7. Turmeric (Curcumin)**

On pages H.2-H.17, I have included description material on the use of each item.

## **Belladonna Alkaloids and Phenobarbital (Oral Route)**

The belladonna alkaloids included in this medication include atropine, hyoscyamine, and scopolamine. Belladonna alkaloid combinations and Phenobarbital are used to relieve cramping and spasms in the stomach and intestines and to treat irritable bowel syndrome and stomach ulcers.

They work by slowing the natural movements of the gut and by relaxing the muscles in the stomach and intestines. Belladonna alkaloids belong to a class of drugs known as anticholinergics/antispasmodics. Phenobarbital helps to reduce anxiety. It acts on the brain to produce a calming effect.

This product is available in the following dosage forms: Elixir, Tablet, Extended Release.

### **Directions for Use:**

Take this medication by mouth as directed by your doctor. If you are taking immediate-release tablets or liquid form of this medication, take it usually 3 to 4 times a day or as directed by your doctor. If you are using the liquid, carefully measure the dose using a special measuring device/spoon. Do not use a household spoon because you may not get the correct dose.

If you are taking the extended-release tablets, take them usually every 12 hours or as directed by your doctor. Do not crush or chew extended-release tablets. Doing so can release all of the drug at once, increasing the risk of side effects. Also, do not split the tablets unless they have a score line and your doctor or pharmacist tells you to do so. Swallow the whole or split tablet without crushing or chewing.

The dosage is based on your medical condition and response to treatment. In children, the dosage is also based on weight. Do not increase your dose or take this drug more often without your doctor's approval. Your condition will not improve any faster and the risk or serious side effects may increase.

Antacids lower the absorption of this medication. If you are taking an antacid, take it at least 2 hours apart from this medication.

This medication may cause withdrawal reactions, especially if it has been used regularly for a long time or in high doses. In such cases, withdrawal symptoms (such as anxiety, muscle twitching, shakiness, dizziness, worsening weakness, nausea, vomiting) may occur if you suddenly stop using this medication. Withdrawal from the Phenobarbital can be severe. Contact a pharmacist for more details, and report any withdrawal reactions immediately.

When this medication is used for a long time, it may not work as well. Your doctor may need to increase your dose or change your medication. Talk with your doctor if this medication stops working well.

### **Donnatal (IJ Started Using in about 1957)**

Donnatal is a trade-mark product for belladonna alkaloids plus Phenobarbital. IJ has used Donnatal for more than 60 years. He has mostly used the tablets, but has also used the elixir at low levels.

IJ's stomach adventures/episodes over the years are estimated to have been 15 to 20. He has been treated by many physicians, Dr. Rosan, Dr. Funk, Dr. Fry, Dr. Patel, and others. All episodes have been, in general, similar: Severe stomach pain for several days, recognition of a problem, and start of recovery by trying to reduce mental stress, change eating habits, use Donnatal and other drugs such as Roloids, Pepto-Bismal, changing diet, being careful with my food selection. After some weeks, the body recovers, returning to a more normal condition.

Over my 90+ years, IJ has adjusted! We are using beneficial-herbals to keep the stomach happy. When we have stress we try to slow down. Over the years, the treatment has been reduced from using whole tablets of Donnatal, once or twice a day, to using a fraction of a tablet every several days.

## **Vinegar Tonic (Vinegar Water)**

A few years ago, about 2012, I was searching for ways to improve how I felt in the morning. I experimented with fluids that I could consume in the morning that made me feel better. I tried several juices and fluids; lemon, grape, cranberry, vinegar. After several trials, I settled on dilute apple cider vinegar.

After selecting ACV, the next decision was the concentration. After trying several concentrations, I concluded that one or two teaspoons in a cup of water seemed was right for the Vinegar Tonic (VT).

To use VT daily, the operation must be simple to prepare and use! After several trials I settled for, as the container, a 26-ounce glass jar with a 70mm screw closure (typical spaghetti sauce jar) and one to two tablespoons of apple cider vinegar; 26 ounces of vinegar tonic (VT) will last me 2-3 days.

Apple cider vinegar in the supermarket is 5% acidity (50 grain). One tablespoon ACV in 26 ounces of water will have an acidity of 1.9 grain, which is adequate for first thing in the morning time microbial control.

My morning program is: first thing in the morning I sip vinegar tonic water (VT) over about a half hour period, then I eat breakfast.

## **Camomile (Chamomile) Tea**

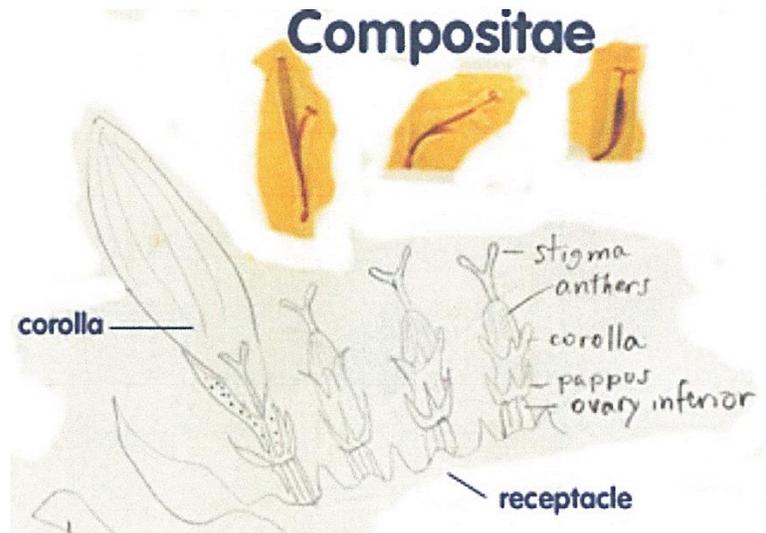
I use a camomile tea bag in a pint Mason jar to make Camomile tea liquid. I steep one tea bag in about 12 ounces of boiling water. I allow it to steep for five or six minutes. (After the tea has steeped, I put the jar of tea water into a refrigerator.)

It has been my practice to take 1/2 to one teaspoon of camomile tea first thing in the morning and then maybe again later in the morning. I will repeat this during the day as needed. The tea seems to reduce my jitters. Without the tea or if I miss having the tea "fix," I feel jittery. After I take a 1/2 to one teaspoon of camomile tea, perhaps by 15 to 30 minutes later, I feel more calm.

# The Benefits of Drinking German Chamomile Tea

## Botany

German chamomile, *Matricaria recutita*, is sufficiently different from the also drinkable Roman chamomile that botanists don't classify them under the same genus. (A genus is a group of similar species.) Both plants, however, have flowers typical of the Compositae or Asteraceae family, a group of genera that also includes dandelions, sunflowers and lettuce. What looks like a single flower is actually a conglomerate of tiny, identical flowers, giving members of this family the power to produce a greater number and wider variety of seeds. My diagram to the right shows the basic structure of such flowers; note, however, that my actual samples that are trapped beneath yellowed scotch tape, are from another member of the family. German chamomile flowers are about one fifth as big as the ones I preserved.



*Matricaria recutita* =

Britton, N.L., and A. Brown. 1913. *Illustrated flora of the northern states and Canada*. Vol. 3: 521. Courtesy of Kentucky Native Plant Society. Scanned by Omnitek Inc. Usage Guidelines.

## Uses

Traditionally and contemporarily, the essential oil obtained from chamomile flowers has been used to treat inflammations of the skin and mucosa. It is also inhaled to treat nasal catarrh, inflammation and irritation of the respiratory tract. The tea is drunk to treat flatulent nervous dyspepsia, gastritis, diarrhea, travel sickness and mild anxiety.

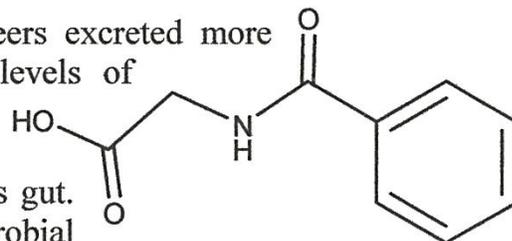
## Evidence

In human studies, anti-inflammatory, antiseptic, antispasmodic effects have been attributed to compounds known as flavanoids and sesquiterpenes. One of the sesquiterpenes, chamazulene, has been reported to have antioxidant activity in a 2000 study on rapeseed oil. More recently, in December 2004, the *Journal of Agricultural and Food Chemistry* reported a study on chamomile by Wang, Tang, Nicholson, Hylands and al. The authors used high resolution  $^1\text{H}$  NMR spectroscopy and other methods in what is known as a *metabonomic strategy*. This technology tries to obtain meaningful results for nutritional interventions, which typically are complicated by many variables such as genetics, gender and environmental factors.

The equivalent of 5 cups of chamomile tea (*Matricaria recutita*) were given to 14 volunteers for a period of two weeks. For a total of six weeks, their urine samples were monitored: two weeks prior to ingestion (to serve as a baseline) and also for two weeks after treatment to examine any potential lingering effects.

The most significant result was that the volunteers excreted more hippurate, glycine and an unknown metabolite. The levels of hippurate also were elevated in the post treatment period. Previous studies had revealed that hippurate levels fluctuate as different microbes battle it out within a rat's gut. Since evidence exists for chamomile flowers' antimicrobial activity, one possible explanation put forward by the authors is that the chamomile killed some bacteria in the intestines.

Two weeks after treatment, different populations of microorganisms had still not reestablished the original equilibrium between themselves. They point out that this is significant since these intestinal bacteria have a serious impact on digestive absorption and on the immune system.

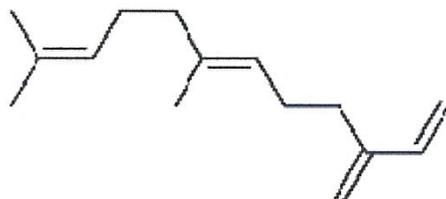


**hippurates are esters of this acid, hippuric acid**

## Chemistry

Chamomile's key ingredients seem to include  $\beta$ -trans-farnesene,

$C_{15}H_{24}$   
Exact Mass: 204.1878  
Mol. Wt.: 204.35106  
m/e: 204.18780 (100.0%), 205.19116 (16.2%), 206.19451 (1.2%)  
C, 88.16; H, 11.84

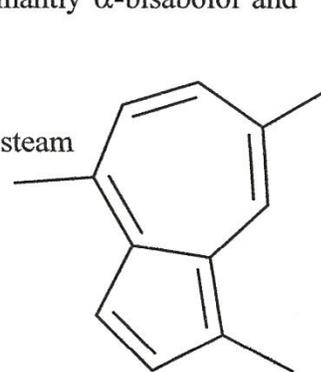


(E)-7,11-dimethyl-3-methylenedodeca-1,6,10-triene(farnesene)

Boiling Point: 544.12 [K]  
Melting Point: 202.75 [K]  
Gibbs Energy: 385.89 [kJ/mol]  
Heat of Form: 103 [kJ/mol]

the flavanoids(apigenin-, luteolin-, and patuletin-7-glycosides), coumarins (umbelliferone and herniarin) and the sesquiterpenoids, predominantly  $\alpha$ -bisabolol and chamazulene.

Chamazulene is an artefact formed from matricin during steam distillation and gives the oil a deep blue colour. Also present are polyacetylenes and polysaccharides.



1,4-Dimethyl-7-ethylazulene=chamazulene

### References:

- <http://plants.usda.gov>
- Wink and van Wyk. *Medicinal Plants of the World*. Timber Press. 2004
- Wang, Y., Tang, H. A Metabonic Strategy for the Detection of the Metabolic Effects of Chamomile( *Matricaria recutita* L.) Ingestion. *J. Agricultural and Food Chem.* **2004**

## **Deglycyrrhizinated Licorice (DGL): Gut Benefits and Beyond**

Chen, Julie, MD. "Deglycyrrhizinated Licorice (DGL): Gut Benefits and Beyond." *Huffington Post*, 4 April 2013. [www.huffingtonpost.com/julie-chen-md/dgl-supplements\\_b\\_2976260.html](http://www.huffingtonpost.com/julie-chen-md/dgl-supplements_b_2976260.html). Accessed 6 September 2018.

There are many supplements I frequently recommend to my patients in my integrative medicine clinic in San Jose, Calif. One of my all-time favorites is deglycyrrhizinated licorice, or DGL. The reason I love this supplement is that it addresses many health issues, and I am a big fan of addressing many issues with one stone, so to speak.

Licorice has been used in many forms throughout the centuries by many cultures. Traditionally, the licorice root is used for hormonal issues, gut and throat issues, respiratory issues, and fatigue issues. We know now that the glycyrrhizin in licorice root can cause issues with hypertension, edema, and possibly effect a hormonal component of our renal regulation called aldosterone regulation. So, there is definitely a concern for long-term use in regards to licorice root. But the deglycyrrhizinated licorice version has the substantial parts of glycyrrhizin removed, therefore is a safer option for long-term use if needed.

One main reason I use DGL in my patients is for gastrointestinal issues. In my clinical experience, patients who have heartburn, peptic ulcer disease, or gastritis find great relief from DGL. There was a study published in the *British Medical Journal* comparing an over-the-counter medication for peptic ulcer disease and DGL for 82 patients who had endoscopically healed peptic ulcer. Patients were given two tablets of DGL twice daily compared to a regular dosage of the over-the-counter medication for peptic ulcer disease. After two years on this regimen, the recurrence rate for gastric ulcers for the two groups was relatively similar. However, after both groups went off the medication or DGL, the recurrence of peptic ulcers occurred. This study demonstrates DGL as an effective potential alternative to taking over-the-counter stomach ulcer medications if you have any concerns about these medications.

The general DGL dosage is about one to three tablets of DGL at a dosage of 380-400 mg per tablet. You would take it about 30 minutes before each meal (some suggest after the meal) to help your stomach upset issues. On the bottle, you should make sure that there is less than 1 to 2 percent glycyrrhizin in the tablet to make sure that majority of the concerning component is out of the tablets so that you can more safely use this long-term.

For many of my patients, they find that DGL also helps with fatigue because it has traditionally been used for adrenal support as well. Some of the more important takeaway points are that even though most of the glycyrrhizin is out of the DGL, you should still check your blood pressure daily at the start of using this supplement. Once you have been using the DGL for a while and are being monitored by a doctor for the long-term usage of this, you should still check your blood pressure once or twice every week to make sure that your blood pressure remains in your normal range.

Some other key factors to keep in mind are that you should also have your kidney and liver function checked regularly. Although there are generally minimal concerns with usage of DGL, in regard to your liver and kidney function - as you would with any other medication you use long-term - I caution all of my patients to treat supplements like a medication in that they should not be cavalier about using supplements, either. If you are on any supplements or medications on a daily basis, you should always have regular blood work done to monitor your liver and kidney functioning.

If you think that you are having any issues, whether it is hypertension or swelling in ankles, you may want to consider coming off the DGL and see if the symptoms improve. You should also see your doctor for a full physical evaluation and discussion about your supplement and medication regimen if you should at any point have any concerns about new or worsening symptoms.

It's safe to say that I am a huge fan of supplements as alternative options for medications when the safety profile is more favorable. So when you do have an ailment such as fatigue or stomach upset, DGL is a great option. But as with anything you ingest on a daily basis, natural, common-sense precautions should be taken. So make sure you are checking your blood pressure and blood work regularly, and make sure to keep your doctor in the loop about any new supplements or medications you are taking.

In my clinic, I teach my patients to use common sense with their health more so than anything else. In the end, being overly cautious is always better than not being cautious enough. While the safety profile and effectiveness of DGL in treating stomach ulcers, heartburn or gastritis is similar - if not better - than over-the-counter strong medications (and it is one of my favorites to use in my patients with no major issues in usage), continue to use common sense when starting a new supplement, whether it be DGL or something else.

Reference:

[1] Morgan AG, Pacsoo C, McAdam WA (June 1985). "Maintenance therapy: a two year comparison between Caved-S and cimetidine treatment in the prevention of symptomatic gastric ulcer recurrence." *Gut* 26 (6): 599-602.

## **Complementary and Alternative Medications (CAM) Stomach Pains: Functional Dyspepsia (Iberogast STW 5)**

At least one-third of the US population now used some form of CAM on a routine basis, while 62% of US adults have used some form of CAM within the preceding 12 months. STW 5-11 is an herbal preparation containing extracts of bitter candy tuft, matricaria flower, peppermint leaves, caraway, licorice root and lemon balm. Adult patients (n = 120; 71% women; mean age = 44.6 years) meeting Rome I criteria for FD were evenly randomized to one of four different treatment groups (placebo-placebo, drug-drug, placebo-drug, drug-placebo), for trial which consisted of two separate 4-week blocks of either placebo or STW 5-11 (20 drops t.d.s.). The primary outcome variable was patient-rated improvement in gastrointestinal symptoms using a 5-point Likert scale. The authors reported that 43.3% of FD patients treated with STW 5-n had complete relief of their symptoms at 8 weeks compared to 3.3% of patients treated with placebo (P < 0.001). No SAEs were reported.

In a multicentre study, 315 FD patients (Rome II criteria; mean age = 49; 67% women) were randomized to STW 5 (20 drops t.d.s.) or placebo for 8 weeks. The primary outcome measured was the change in the Gastrointestinal Symptom Score (GIS), a validated questionnaire that measures 10 dyspeptic symptoms using a Likert scale of 0 - 4. GIS scores significantly improved by 6.9 (+ or - 4.8) points in the STW 5 group at week 8, compared to a 5.9 (+ or - 4.3) in the placebo-treated group (P = 0.04). Adverse events were not different between the two groups, nor were the drop-out rate (11 - 12%). In a second multicentre study of STW 5, 103 FD patients (Rome II criteria; mean age = 47; 70% women) were randomized to t.d.s. STW 5 (20 drops) or placebo for 28 days. The primary outcome measure was a change in GIS scores. GIS scores decreased from 11.6 (= or - 4.4) to 5.0 (+ or - 4.3) in the STW 5 group compared to a decline in the placebo group scores from 12.0 (+ or - 4.7) to 7.5 (+ or - 6.6; P = 0.03). Adverse events were not different between the two groups.

Holtmann and colleagues evaluated the efficacy of artichoke leaf extract (ALE; 640 mg t.d.s.) during a 6-week, double-blind, RCTs of 247 FD patients (82; mean age = 47; 64% women). Overall symptom improvement, using a 4-point rating scale each week, was significantly greater in the ALE group than in the placebo group (8.3 + or - 4.6 vs. 6.7 + or - 4.8; P < 0.01). Quality of life scores, as measure by the Nepean Dyspepsia Index (NDI), were higher in the group treated with ALE compared to those treated with the placebo (P < 0.01). One SAE occurred in the placebo group.

Data on other agents are limited. A combination of peppermint oil and caraway oil (90 and 50 mg respectively) given twice daily for 4 weeks to 96 FD patients (67% women; mean age = 51) was more likely than placebo to improve both global dyspeptic symptoms, and the intensity of abdominal pain, using a per-protocol analysis ( $P < 0.003$ ). One study found that banana powder capsules were slightly better than placebo at improving dyspeptic symptoms during an 8-week trial period ( $n = 46$ ; mean age = 34; 40% women). Finally, the antioxidant astaxanthin, was found to be no better than placebo in a trial of 132 patients meeting Rome II criteria (mean age = 44; 86% women). STW 5 Iberogast = a safe and effective standard in the treatment of functional gastrointestinal disorders.

### **Functional Dyspepsia (FD) and Irritable Bowel Syndrome (IBS)**

Functional dyspepsia (FD) and irritable bowel syndrome (IBS) are frequent disorders affecting quality of life. They often require long-term treatment. Abdominal symptoms of both disorders can overlap, making differential diagnosis and treatment challenging. The extracts of the herbal combination preparation STW 5 (Iberogast) exert pharmacological effects in different gastrointestinal regions and can address symptoms of both FD and IBS. This review summarizes safety and efficacy data of 12 clinical trials using STW 5 in FD and IBS since 1990. Double-blind and randomized studies versus placebo or active control found statistically significant effects of STW 5 on patients' symptoms with a comparable efficacy to a standard prokinetic. Non-intentional and retrospective studies confirmed these effects. Various studies evaluated the tolerability profile of STW 5: the incidence of adverse drug reactions was 0.04%. The worldwide spontaneous reporting system confirmed this profile. STW 5 has a favorable tolerability which is relevant for long-term treatment.

### **Functional Dyspepsia and Irritable Bowel Syndrome (IBS)**

Functional dyspepsia and irritable bowel syndrome are the most frequent functional gastrointestinal disorders. In a Western population, their prevalence is estimated at approximately 10%-20% each. Symptoms of both disorders may overlap, showing components of functional dyspepsia and of IBS at one time. Functional gastrointestinal disorders are frequently perceived as psychological or psychosomatic disorders. They are the box to which patients are allocated, if organic disease is absent. In an attempt to find something "real," patients may undergo unneeded diagnostic approaches.

The therapy for functional dyspepsia and IBS is multi-faceted and includes patient education, dietary recommendations, physical exercise, relaxation, and stress management. If such non-pharmacological measures are not successful, pharmacological interventions like proton pump inhibitors, prokinetic drugs, antibiotics for the eradication of *Helicobacter pylori*, if positive, antidiarrhoeics, dietary fibers, bulking agents, anticholinergic spasmolytics, tricyclic antidepressants, and herbal drugs are recommended. With the exception of herbal combination medicines, pharmacological drugs mostly treat only one symptom at a time and thus cannot address overlapping a variable complaints. In addition, side-effects with chronic treatment can be observed.

Functional gastrointestinal disorders are not life-threatening and in the strict sense of the word also not debilitating diseases. Accordingly, they are not desperate illnesses, which require desperate remedies. However, functional gastrointestinal disorders relevantly reduce the quality of life and often require chronic therapy. Thus it is important not only to supply effective therapy to patients, but also to focus on the long-term tolerability. The herbal combination preparation STW 5 (Iberogast) has been comprehensively studied for the treatment of functional gastrointestinal disorders of the upper and lower abdomen. STW 5 contains alcoholic extracts of *Iberis amara totalis recens*, *Angelicae radix*, *Cardui mariae fructus*, *Chelidonii herba*, *Liquiritiae radix*, *Matricariae flos*, *Melissae folium*, *Carvi fructus*, and *Menthae piperitae folium* and has been used for the therapy of functional gastrointestinal disorders for five decades. The extracts exert different proven pharmacological effects on different regions of the gastrointestinal tract and thus address the whole symptom complex of functional dyspepsia syndrome and IBS. The tolerability of STW 5 was favorable both in clinical studies and in post-marketing use.

Taken from the Internet:

### **STW 5 (Iberogast) - a safe and effective standard in the treatment of functional gastrointestinal disorders.**

Bertram Ottillinger, Martin Storr, Peter Malfertheiner, and Hans-Dieter Allescher  
Peter Malfertheiner, email: peter.malfertheiner@med.ovgu.de

## **Zinc-Carnosine Improves Stomach Health**

### **Zinc-Carnosine**

Zinc-Carnosine was developed in the late 1980s by Hamari Ltd. of Osaka in Japan. Since 1994, it has been in widespread clinical use in Japan, where it is known under the generic name polaprezinc. Based upon scientific data supplied by the Japanese medical researchers, the inventors at Hamari took out a complete line of patents in the United States, Canada, and Europe. The first U.S. patent, 4,981,846, was issued in 1991 and covered the composition of the Zinc-Carnosine molecule and its anti-ulcer activity. Several more patents soon followed, but Zinc-Carnosine was not developed commercially until it was submitted to the Food and Drug Administration as a new dietary ingredient (NOi) in May 2002. After completing the review process in late 2002, Zinc-Carnosine was made available as a supplement in the United States.

### **Ingredients of Zinc-Carnosine**

Zinc-Carnosine is a chelated - a chemically joined - compound that combines the trace mineral zinc and L-carnosine. Chelated compounds are firmly attached, which is an advantage in the digestive system where hydrochloric acid and pepsin readily break down everything that comes their way. On their own, zinc and L-carnosine soon disassociate in the stomach's acidic environment, but, owing to its chelated structure, the Zinc-Carnosine compound doesn't disassociate as easily. This accounts for Zinc-Carnosine's staying power in the stomach. Both zinc and L-carnosine have healing properties in their own right, but, as numerous experiments have demonstrated, the compounded healing effect of the two ingredients is much greater than that of zinc or L-carnosine on its own. As a compound, zinc and L-carnosine make for a dynamic healing agent. Zinc-Carnosine is much greater than the sum of its parts.

### **How Zinc-Carnosine Heals Ulcers**

Zinc-Carnosine relieves stomach pain, heals ulcers, and perhaps prevents them. How? The supplement works by strengthening the stomach mucosa, sticking to the stomach wall and acting as a buffer to gastric acid, serving as an antioxidant, controlling the inflammatory response to stomach injury, and inhibiting the growth of *H. pylori* bacteria. You'll learn more about each of these important actions directly below, and will discover the technical details of Zinc-Carnosine's mode of action later in the chapter.

When zinc and L-Carnosine are chemically joined, a unique nutrient is formed. It is called Zinc-Carnosine. It is insoluble in water and heat stable. Why is this important? First, because it doesn't dissolve in water, it doesn't easily lose its potency, nor is it quickly flushed out of the body. And second, being heat stable, hot and cold temperatures will not change its ability to work. The supplement's heat-stability gives the pills and tablets a long shelf life.

The peptic-ulcer healing rate from Zinc-Carnosine, as observed by endoscopy, is approximately 65 percent after the standard eight week treatment. The improvement, in terms of symptoms and other objective criteria, is about 70%. Zinc-Carnosine is the first anti-ulcer drug to include zinc, a substance known for its healing properties. How Zinc-Carnosine works is explained throughout this chapter. Meanwhile, here is what Zinc-Carnosine does in a nutshell.

This nutrient:

- Protects the membranes of epithelial cells in the stomach and brings the cells back to their normal metabolism.
- Acts as an antioxidant.
- Has anti-inflammatory properties.
- Adheres to the stomach ulcer sores and acts as a barrier between the sores and caustic gastric juice.
- After adhering to sores, releases its zinc and L-carnosine for healing purposes.
- Has an inhibitory effect on *H. pylori* bacteria.
- Is prostaglandin-independent and doesn't interfere with the prostaglandin production that is necessary for the stomach's mucosal protection.

Patients taking Zinc-Carnosine have reported no significant adverse effects or side effects. The supplement does not cause zinc toxicity or interfere with the absorption of copper, which is a concern whenever zinc is ingested.

## **Strengthens the Stomach Mucosa**

The lining of the stomach is protected from its own caustic gastric juice by a thin gel-like layer of mucus. When this mucus layer erodes, the stomach lining is exposed, and you can get an ulcer. Evidence suggests that Zinc-Carnosine works primarily by strengthening the mucosal barrier between the stomach lining and the harsh gastric juices of the stomach. The supplement appears to adhere to the stomach wall to provide protection to all areas of the stomach. These studies give a picture of Zinc-Carnosine's protective effect on the stomach lining.

In an early study conducted at the Yokohama Red Cross Hospital in 1992, twenty-five patients whose ulcers were confirmed by endoscopy were given 75 mg Zinc-Carnosine tablets twice daily (one after breakfast and one before bed) for eight weeks. Drugs such as H2 blockers and proton pump inhibitors that might affect the results of the study were prohibited. The "disappearance rate" of epigastric pain symptoms in the patients was 53.3 percent after meals, 76.9 percent fasting, and 90.9 percent at night. Of the twenty-five subjects who had a final assessment by endoscopy after the eight weeks, 65 percent were healed of their gastric ulcers. This study is interesting because the ulcers were healed without suppressing the production of acid. Zinc-Carnosine was able to provide a genuine protective effect to the stomach.

In a double-blind study of three groups taking 50-mg, 75-mg, or 100-mg Zinc-Carnosine tablets twice daily for eight weeks, the success rates of the study as obtained by endoscopy were as follows: 50.8 percent for the 100-mg group, 58.6 percent for the 150-mg group, and 53.6 percent for the 200-mg group.

These studies show very clearly that Zinc-Carnosine has a protective effect on the stomach, and that the supplement's healing action is not based solely on its role as a buffer of stomach acid.

## **Adheres to the Stomach Wall**

Like bismuth and to a lesser degree sucralfate, Zinc-Carnosine coats the stomach and acts as a barrier between ulcers and hydrochloric acid. In this way, it protects ulcer sores from irritation by acid, relieves pain, and permits the sores to heal. In a 1992 study called "The gastric mucosal adhesiveness of Z-103 (Zinc-Carnosine) in rats with chronic ulcer," M. Seiki et al. concluded, "(Zinc-Carnosine) shows a long-term adhesive and permeable action on the gastric mucosa in acetic acid ulcer rats, and it has a comparable high affinity at the ulcerous site." The scientists attributed Zinc-Carnosine's adhesiveness to its zinc content. They also noted that the strength and duration of adhesiveness was dose-dependent, which indicates that Zinc-Carnosine has a genuine adhesive effect in the stomach.

## **Dosage**

So how much Zinc-Carnosine should you take? The standard adult dosage of Zinc-Carnosine is 75 mg a day - or, better still, 37.5 mg twice daily - to be taken for eight weeks. Usually, the supplement is taken in tablet form once in the morning and once before bed. It is best taken with food. Studies have shown that the optimal dose of Zinc-Carnosine is 150 mg per day, not 75 mg. However, I recommend taking 75 mg daily because, first, studies show that the effects of the optimal dose and recommended dose are actually quite similar, and, second, taking 75 instead of 150 mg per day enables patients to meet, but not exceed, the FDA's recommended daily intake (ROI) of zinc.

Copied from:

Halpern, George M.

*Ulcer free! : Nature's safe & effective remedy for ulcers*

**Square One Publishers**

115 Herricks Road  
Garden City Park, NY 11040

## Turmeric\*(Curcumin)

Turmeric is a spice that comes from the root of the turmeric plant. It is the main spice in curry and has been used in medicine for thousands of years. It is a staple in Asian food. It has powerful anti-inflammatory effects, in that it can reduce pain and fever and is a very strong antioxidant. Turmeric (curcumin) as a dietary constituent is safe and well tolerated. It has a warm, bitter taste and is frequently used to flavor or color curry powders, mustards, butters, and cheeses.

### Uses of Turmeric

Many consider turmeric to be a miracle folk medicine. It is used in hundred of ways, for example, as turmeric powder, as golden paste, in milk and as a tea. Turmeric is widely used for arthritis, dyspepsia, joint pain and other inflammatory conditions that might involve inflammation.

### Making Turmeric Golden Paste (Recipe from Doug English)

- 1/2 cup turmeric powder
- 1 cup water (or a bit more to get desired consistency)
- 1/2 to 1 teaspoon ground black pepper (tolerated strength)
- 1/4 cup virgin olive oil

Add turmeric to water in a pan. Heat gently while stirring. Continue until you get a thick paste (6 to 10 min.). Adjust thickness by adding more water or a bit more turmeric. Add pepper and oil. Stir making sure all ingredients are well mixed. Allow to cool.

Bottle in a clean container with a tight-fitting lid and refrigerate for 4 to 5 weeks or more.

### Why Use Black Pepper

Curcumin is not readily absorbed by the body. Once ingested, most of the curcumin gets quickly metabolized before it can get absorbed. *Piperine* (the heat in black pepper) helps make curcumin more bio-available as it temporarily slows the liver from removing it from the blood.

We know that the bio-availability, serum levels, and levels of absorption of curcumin all improve dramatically when both are present.

One study found that even when 2 g. (a good dose) of curcumin was ingested, serum levels stayed very low. However, **when 20 mg. piperine was added to curcumin the bio-availability increased 2000%!**

It doesn't take much piperine. Even a little pinch of black pepper - 1/20<sup>th</sup> of a teaspoon - can significantly boost levels.

\*Taken from Web MD



# **I. Psychological Stress on the Stomach**

- (1). Comments on Stress on the Stomach,**
- (2). Psychological Stress,**
- (3). The computer as a stress generator.**
- (4). The Dr. Howard Mertz report on "Stress and the Gut."**

## **Comments Regarding Stress on the Stomach**

In about June 1822, Dr. William Beaumont was the attending physician at an accidental discharge of a shotgun, which left a hole in the victim's gut. Dr. Beaumont saved the victim, Alexis St. Martin, and used him for early experiments in digestion. In one such experiment, he observed that when his patient was angry, food just laid in the stomach and did not digest. This was one of the first observations that stress will halt the digestion process.

One type of stress will produce diarrhea, one type will produce severe headache, a confrontational situation with an individual or a machine can be stressful, and depending on the length and intensity, the stress will determine the physical damage.

## **Psychological Stress**

We need to consider the effect of stress on the stomach system. In general, I am talking about what is going on inside the stomach, between the entrance of the esophagus through to the deposit of the chyme into the small intestines. This is the area I am most interested in and here I think that our psychological being and our environment has a great effect on the type of enzymes that are produced in the stomach, also perhaps the level of acidity in the stomach. Does stress increase the acidity or does it decrease the acidity? How does stress affect the functioning of the stomach?

# The Computer as a Stress Generator

## Computer Induced Stress

A unique stress is produced when using the digital computer. The stress appears most often when doing word processing or data analysis. It has several components:

- (1). Physical stress; most probably tight muscles. We do not sit relaxed when working with the computer.**
- (2). Mental anguish; eye, mind and finger action to develop and print words.**
- (3). External stress; telephone interruptions.**

The digital computer with appropriate software programs is almost a miracle device regarding what it can do and what is possible to do.

There are two sides to every coin: on one side of the digital computer coin are all its wonderful attributes. On the other side are the problems that must be handled by the beast. The major problem is that the computer is a machine, with built-in operating specifications, and the computer operator is a biological entity who must learn and must adjust to the machine requirements.

Using the computer to do manuscript development, word processing, over an intense several-hour period, has the ability to do bad things to the stomach-GI system. The nature of the project, which often involves interaction of man and machine, often produces a large amount of frustration. For example, there is a type of computer-system problem where when working on data systems, we face problems that we know how to solve, but the system seems to repeatedly cause the system to fail. Working on these problems for an hour can cause stomach-GI system upset for the rest of the day.

Carrying out word processing using a computer, the objective is to print perfect pages. The operator needs to hit the right key to complete each word on the page. The mind, fingers and machine must work together rapidly and flawlessly to produce a perfect result. Working constantly for 10, 20, 40 minutes to solve the problem results later that there will be a stomach problem. Problems worked on in the morning may end with stomach problems in the evening or night.

For many sensitive individuals, stress does bad things to the stomach-GI system.

## Stress and the Gut

Dr. Howard Mertz

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Vanderbilt University

Stress is a ubiquitous condition that affects all people. Stress can be mental or physical, although in the context of this article the focus will be mental stress. Mental stress involves challenge, threat or worry about future adverse events. Such stress activates the brain's stress response systems, which in turn affect the body. Many of the body's major systems are altered by stress (cardiovascular, muscular, urinary, gastrointestinal, sweat glands, etc) often with adverse consequences.

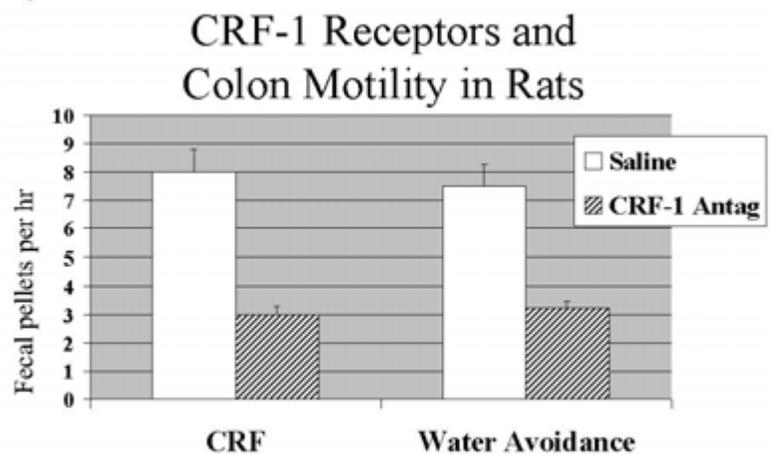
Gastrointestinal function is particularly influenced by stress. Common gastrointestinal symptoms due to stress are heartburn, indigestion, nausea and vomiting, diarrhea, constipation and associated lower abdominal pain. These symptoms and the alterations in intestinal function that cause them are becoming understood.

### Gastrointestinal Stress Reactions in Animals and CRF

In animals such as rats, stress can be induced in experimental situations. When rats are wrap restrained, or placed on a small platform surrounded by water they become stressed. During these situations, alterations in motility of the gut occur. The upper gut, including the stomach and small intestine, exhibits markedly reduced transit. This may be a defense mechanism to promote vomiting and reduce oral intake. Conversely the large bowel motility increases with increased stool output and transit speed. This may be a defense mechanism to eliminate toxins.

We have learned that a hormone called corticotropin releasing factor (CRF) influences these changes. CRF is released from nerve cells in the hypothalamus of the brain. These nerve cells release the hormone via long processes into other parts of the brain such as the locus ceruleus, where arousal and autonomic nervous system changes are mediated. In rats, injection of CRF blockers into the brain fluid diminishes the stress induced motility changes in the gut. CRF directly injected into the brain fluid mimics the stress

Figure 1



Maillot, Gastro '00

I.3

response closely (**Figure 1**). CRF also stimulates the gut directly via CRF-1 and CRF-2 receptors. CRF-1 receptors stimulate colonic contractions, while CRF-2 receptors reduce upper gut activity. Antagonists to CRF-1 receptors are currently being tested for treatment of depression, and may become available for testing in functional bowel disorders as well.

### Brain Areas Involved in Stress Reaction

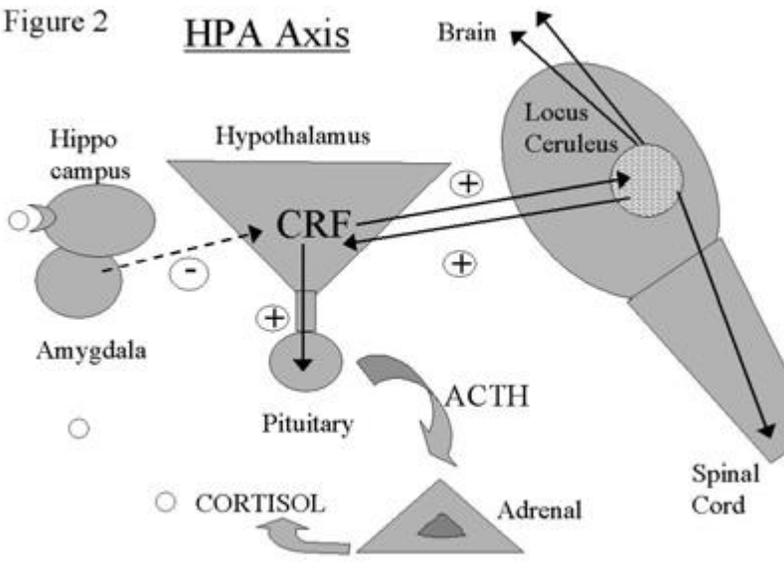
Two of the primary brain regions involved in stress reactivity are the hypothalamus and the locus ceruleus. Activation of the hypothalamus by stress is likely to be mediated in part by the limbic brain (particularly the amygdala and hippocampus) and partly by the locus ceruleus in the brainstem. The locus ceruleus and the hypothalamus actually stimulate each other, creating the potential for a vicious cycle, where a stress reaction in one region stimulates the other, which in turn stimulates the first to react even more. The limbic system is a group of connected and related brain regions that mediate emotions and flight or fight attitudes. The limbic or “emotional brain” is more primitive by evolutionary standards, and is not necessarily under control by the higher intellectual cortex. This system receives sensory and higher cortical inputs, calls upon memories and determines the threat level imposed by a stimulus. The amygdala for instance is a limbic structure in the base of the brain that is important in anger and rage. In cats, electrical stimulation of the amygdala causes hissing, back arching and the hair to stand on end, typical of anger and defense postures in cats. In animals that have damage to the amygdala a placid state results in which anger cannot be induced. Inputs to the amygdala are thought to originate from the hippocampus, the cingulate cortex and other parts of the limbic system. The locus ceruleus is located in the pontine portion of the brainstem. The locus ceruleus is the source of most of the stimulant neurotransmitter norepinephrine in the nervous system. Cells here project to other brain areas, releasing norepinephrine to activate other systems and increase arousal and alertness. Release of norepinephrine increases heart rate, blood pressure and primes the muscles and nervous system for fight or flight. This reaction is not helpful in routine stress of daily activities. If the stress reaction is excessive or the perceived threat too frequent, tachycardia (racing heart), hypertension, muscle tension, bowel spasms, and dyspepsia can result.

### Hypothalamic-Pituitary-Adrenal Axis

CRF release is the first step in activation of the hypothalamic-pituitary-adrenal axis (HPA axis) involved in stress response. This is the major endocrine (hormonal) response system to stress. Release of CRF by the hypothalamus stimulates the pituitary gland immediately underneath it. The pituitary gland responds to CRF by release of adreno-corticotrophic hormone (ACTH) to stimulate adrenal gland secretion of the stress hormone cortisol. Cortisol promotes fluid and salt retention and impairs inflammation, functions helpful in the short term during flight or fight situations or injury. Again, if the HPA system is activated too frequently adverse health outcomes such as hypertension (from salt retention) and impaired immune function (from excess cortisol)

## I.4

Figure 2



may result. The CRF system and the norepinephrine systems work together to respond to stress with resultant changes in bodily functions that prepare for flight or fight. (Figure 2)

### Gastrointestinal Stress Response in Humans

Humans respond to stress in similar ways to animals. A variety of human studies indicate stress promotes decreased gastric emptying and accelerated colonic transit in normal volunteers. A pioneering study by Almy measured colonic contractions during

flexible sigmoidoscopy. The volunteers were told that a cancer was found, leading to abrupt increases in colonic contractions, which resolved after the hoax was explained. Other stressors such as ball-sorting, driving in city traffic and mentally challenging listening tasks similarly increase colonic contractions and reduce gastric motility. Recent data also indicates that intestinal sensitivity increases with stress compared to relaxation. This effect may lower the threshold for sensing intestinal events. In gastroesophageal reflux for example, psychological stressors can increase heartburn symptoms. Analysis of the esophageal pH (measurement of acid) indicates that the amount of reflux doesn't increase during stress, but the probability of feeling a reflux as heartburn does increase. In one small study of normal controls, intravenous infusion of CRF induced greater rectal sensitivity to balloon distension. It may be that the sensitizing effects of stress on the gut are partly mediated by the stress hormone CRF.

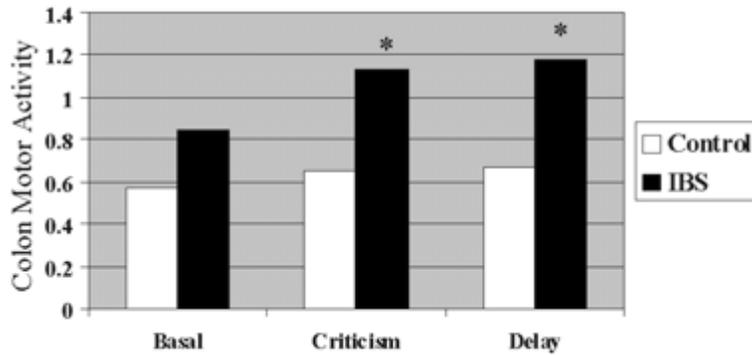
### Irritable Bowel Syndrome and Functional Dyspepsia

Two of the major causes of uncomfortable or painful intestinal symptoms are irritable bowel syndrome (IBS) and functional dyspepsia. IBS occurs in approximately 12% of people worldwide. Dyspepsia (indigestion/upper abdominal discomfort) is also very common. The majority of dyspepsia is functional, that is not associated with ulcers, gallstones, reflux esophagitis or cancer. In both of these common disorders, motility and sensory changes are present which mimic the stress state. Both disorders demonstrate hypersensitivity of the gut (either stomach or intestine). Both disorders demonstrate alterations in motor function of the gut typical of stress and CRF-induced changes. In functional dyspepsia the stomach generally has mildly reduced emptying and reduced accommodation of meals. In IBS, colonic contractions are generally increased.

## I.5

Figure 3

### Effect of Anger on Colon Motility



*Welgan Gastroenterology 1988;94:1150-6*

Furthermore, IBS subjects appear to have increased stress responsiveness in the gut. In one study, IBS patients and healthy controls both underwent ambulatory motility recordings in the colon. Both groups were confronted on return to the lab (“you’re late”, “you came to the wrong window”, “now the study may need to be repeated”). Colonic motility jumped up in the IBS patients during confrontation, but not in healthy volunteer (Figure 3). IBS patients may also have greater sensitivity to the stress hormone CRF. Infusion of CRF intravenously

to IBS patients and controls in one study caused significantly greater colonic motor responses in IBS patients. Another study indicates that listening stress increases rectal sensitivity to balloon distension in IBS patients but not controls. It appears both intestinal motility and sensory responses to stress are heightened in IBS patients. These alterations are likely to cause symptoms such as diarrhea and intestinal cramps due to increased contractions of the gut and increased sensitivity of the gut during stress.

The chemical mediators of these changes are not yet established, although alterations in CRF release or CRF receptors may be implicated to some extent in functional bowel diseases. IBS (and other functional bowel symptoms) are generally worsened by stress. In fact recent research has indicated that IBS symptoms tend to resolve in those without major psychosocial stressors. Conversely, symptoms are persistent in subjects with ongoing “threatening” psychosocial stressors. The onset of IBS and functional dyspepsia often begin with bereavement, abuse or other major negative life events. Emotional distress is very common in IBS patients, particularly those who seek medical treatment for the condition. **Anxiety and depression are significantly increased in IBS patient populations, present in nearly 40%.** Psychosocial distress appears much less common in IBS sufferers who do not seek medical care. Population based surveys, however, do still suggest tendencies toward emotional reactivity in people with IBS. Accordingly, stress modification, psychotherapy and hypnosis appear helpful for IBS and functional dyspeptic symptoms. Tricyclic antidepressants also appear effective for IBS and other functional bowel symptoms, even in low doses. Recent evidence indicates the drugs may work by reducing the brain’s response to intestinal pain during stress. Sedatives such as the

#### I.6



benzodiazepine Librium can reduce the effect of stress on the gut. During ball sorting challenge, Librium blunts the colonic motor response to mental stress in IBS patients. This effect may explain the benefits of combined sedative-anti-spasmodic drugs for IBS.

## Summary

There is much yet to learn about the effects of stress on the gastrointestinal tract. The exact neural and hormonal pathways that mediate excess gut sensitivity and altered contractility during stress are not defined. Where these pathways are excessive or dysfunctional in IBS, functional dyspepsia and other GI disorders is unclear. Specific neurotransmitters are likely to underlie the gastrointestinal stress reaction, and may be amenable to pharmacologic blockade. Psychological therapies are likely to blunt the stress response as well. New tools such as brain imaging to study brain responses to stressors and drugs, and molecular biology to study function of neurotransmitters and their receptors are likely to lead to better understanding of the stress response and its role in disease states. Based on this knowledge, advances in pharmacology may lead to better drug therapies to address these important health problems.



## **J. Specific Acute Stomach Problems**

On the following pages are the dictated and edited stomach adventures that I have experienced during the years 2012 to 2019.

**Pg.    Title**

**J.2. 28th of March, 2013**

**J.3. October, November, December 2014**

**J.4. One-year-period, June 2014 to June 2015**

**J.5. 15June 2015**

**J.6. An Incapacitating Event in May 2016**

**J.7 Early part of 2016**

**J.8. Stomach Observations in 2016 & Spring 2017**

**J.9. Stomach Comments in 2017**

**J.10. Improving Stomach Operation in 2018**

**J.11. Eating Small Meals in the Night in 2019**

## **J.2. 28th of March, 2013.**

This is the 28th of March, 2013. It is about 2:50 AM and I am making a few notes regarding the week's happenings.

On Friday I went to Rochester, Minnesota and visited the Mayo Clinic. I had a consultation with two physicians, Dr. Mise who is the leader and Luke who is an assistant. The end result of the consultation was a recommendation that I take a medicine, Benyl (I need to correct the spelling) it's a blue pill and there are two dose levels, 10 ml and 20 mg. This was on Friday so I tried until Monday to stay off of Donnatal and then on Tuesday morning I took a blue pill. This was as we left Minneapolis, heading for the Ponderosa. The blue pill seemed to have a settling effect, in the afternoon I slept some but it seemed to be an effective medicine. Late in the night on Tuesday I began to wonder, because I was not feeling 100%. I had a GI system effect.

On Wednesday morning, early, I took a blue pill and it again seemed to be effective but starting in the afternoon of Wednesday, there seemed to be an adverse effect that continued and later in the day I had an adverse effect although it wasn't as severe as the first one in some respects but it had some other effects that I did not like.

On Thursday morning at about 3:00 AM I decided to go back to my simpler approach. I had a vinegar tonic about 2:00 AM I followed that with a little milk and later, perhaps 2:30, I had shredded wheat, milk and toast. This seemed to set okay and we will see how it goes from there.

It seems to me that the blue pill is very strong compared to no treatment at all. I do not know how I can compare the blue pill to Donnatal, I think maybe the Donnatal is not as strong as the blue pill. In other words, the blue pill is stronger than Donnatal. All we can do is to wait and see what happens next in this saga.

I think that for the next day or two, which would be Thursday and Friday, we may try to just observe. I will try making Chamomile tea, one tea bag in 12 ounces of water and I will start with one tablespoon every one or two hours to see if that has a beneficial effect.

### **J.3. October, November, December 2014**

It is in the October-November-December 2014 period, and I am calling this as the Donnatal Adventure:

During this period, we were still doing some computer work trying to get the PC computer running and some of the programs like Legacy running.

There was a strange phenomenon happening October 11 2014. It also probably happened again in a mild way October 10.

I was up early, had a first breakfast, did the IGB 1? drops and went back to bed then I was awakened about by 9 AM with heart palpitations. Later, I got up, had two teaspoons of chamomile tea; now a quarter to a half-hour later I was sort-of back to normal, I am expecting the chamomile.

It has taken years to understand the effect of word processing and the computer and my stomach. In a general way, stomach stress does not show up as a pain like a cut on my finger. It is more or less a general discomfort.

There is discomfort while and after tying my shoes. It is the kind-of shortness of breath that was acute at times went on for several months.

## **J.4. One-year-period, June 2014 to June 2015**

### **Gut Discomfort Condition When I Bend Down.**

During the period of summer 2014 through perhaps June 2015, I experienced a gut discomfort condition when I bent over to tie my shoes.

This was a new and unique condition for me. When it began to occur, as best I can remember, it developed over a several months time period and continued getting more severe. This pain in my gut when I went to tie my shoe got my attention and I then started working to find out what was going on and what I should do about my problem.

I will describe a typical event. (I am not a limber person, I cannot bend and touch my toes). To reach my feet I would put a foot on a stool. I would first put the right foot on the stool and then I would pull up the laces and then tie the shoelaces. I would then move to the left foot and repeat the operation. By the time I finished tying the lace of the second shoe, I was in distress. It was so severe that I would have to sit down to be able to breathe. My gut area hurt and I could not breathe. It took me several minutes to recover my breath and return back to normal conditions. Over a several month period, when I had the problem it was always the same.

I kept a mental record of the shortness of breath phenomenon and observed that as the year progressed and I started to take the herbal meds, my shortness of breath phenomenon decreased and then disappeared altogether.

## **J.5. 15Jun2015**

Observations I have made over the past couple of years has led me to the conclusion that whenever there are chronic types of problems similar to those of my stomach problems that it takes at least one month for the healing process to take place. In other words, it is possible and necessary to carry out the health practice for a whole month without seeing very much result; that only after more than a month using the new procedure will I begin to see measurable results of the effort.

## **J.6. May 2016**

### **An Incapacitating Event in May 2016**

On 09 May I had an incapacitating event. I was doing word processing and in the afternoon I had a pain in my stomach. This situation pain occurred on several days. Then one day it got worse, it lasted all evening and then my gut acted like the food I had eaten did not move through and later in the night I was sick.

### **Attempting to Solve the Problem**

On 10 May I started taking Donnatal Tabs, one in the morning and one in the evening, later reducing the dose until my gut muscles had slowed down, after which I ate soda crackers and milk, still later soup and toast. After 2 to 3 days, I moved toward a more normal diet cycle. During these days, I slept a lot.

The Donnatal, starting on 12 May, started to quiet my gut and heal my stomach.

Starting from 12 May until 31 May, I was in a recovery mode. During this time, I was taking Donnatal and suffering from stomach pains. I feel that from 12 to 31 May, I was in a recovery mode against whatever was ailing my stomach.

I believe there were two problems: (1) a sore or ulcer in the stomach and (2) the need to quiet my GI system. I believe that it took three weeks for my body to get the GI system quiet and for healing to take place. To help the healing I used 1 to 5 capsules of Gastro Relief and DGL. During this period up to today, I watched my diet following generally the Rosan Ulcer Diet.

Starting in the first of June, the stomach was better, but through the fifth I was still not my old normal. It may take many weeks to be back where I was in January through March 2016.

## **J.7. Early part of 2016**

Sometime in the early part of 2016, I became aware that I was not very well and that there was something wrong with me and my stomach that was causing a great deal of discomfort. At this time I had three or four different hurts or problems. My back was bothering me, I had gut pains and I was shaking both internally and externally.

My chiropractor, Dr. Starns, treated me for my back problem.

For my internal and external shaking, I started using Chamomile Herbal Tea.

Regarding the stomach and gut, I did not know exactly what I was dealing with. There was something that I felt when I bent over, I had a shortness of breath in addition to other hurts. The pain seemed to manifest itself as a shortness of breath. After a few different situations and reading the literature, I reached the conclusion that maybe I was dealing with what one author called pseudo shortness of breath.

In December 2015 and January 2016, I had a lot of stress and pain in the gut whenever I bent over.

I concluded, sometime early in 2016, that I needed to carry out some type of healing process. In 2016, I started using several herbal products. I read that licorice (the TTL variety of licorice extract) was good for simply healing the stomach. I also read that Zinc L-Carnosine had been found by Japanese researchers to be helpful in treating stomach ulcers. In my stomach study I read about the German herbal Iberogast, STW 5. I started taking the Iberogast, STW 5 at the rate of 18 drops, morning and evening (the recommended dose is 20 drops, three times per day).

## **J.8. Stomach Observations in 2016 & Spring (Jan-Feb-Mar), 2017**

I have had a fairly peaceful time during this period: no significant stomach pain.

I consider that the last three months have been quiet where the stomach is concerned. Everything was about normal: no pain. I have the usual hunger pains when I am operating on a fairly regular schedule: I am up in the morning 8:30 to 9:30; light food at 10 AM; dinner at noon; maybe food at 3 PM; and dinner at 5 to 6 PM I feel good when I keep this schedule.

The largest complaint is hunger pains in the morning before I get up. I moderate these with vinegar tonic and chamomile tea and two Donnatal fixes, one drop of Donnatal elixir in the evening and then about every four to seven days a part of a Donnatal tablet.

The Donnatal tab is a downer that keeps my stomach quiet. I use an on-demand-need of one fraction per four-to-seven days, for the fraction is Donnatal-tab. The Donnatal-tab is still on an experimental basis in that I am using the fraction of a Donnatal tablet on a four-to-seven-day basis to keep my stomach quiet in times of activity and then just on a normal basis. For any given cycle, whether it is four days, five days, six days, or seven days, it is when I feel my stomach needs quieting that I then take the Donnatal tab fix.

I find that the stomach is happier if I have some food mid-morning and perhaps mid-afternoon. Having a few soda crackers and some cottage cheese in the mid-morning does me well.

I took my normal herbals: I take Iberogast, 18 drops in the morning; at noon a capsule of zinc-carnosine. When I feel stress, I might take one tablet of licorice.

I try to limit my computer/word-processing time. When I do too much computer time, the body says, "Slow down."

We are eating almost everything: pork, pasta, chili, applesauce, cake, popcorn, etc.

Several times in this period, Ann Nicholas had prepared special foods. They were pork ribs prepared by slow cooking and potatoes and gravy; chicken thighs and rice casserole; and chicken stew and dumplings. All three of these dishes are very tasty and I enjoy them very much. These can be one meal for Ann and me, or it would be appropriate for having company.

## **J.9. Stomach comments in 2017.**

This is an update of the last 6 months observations and some general comments on stomach observations for the last about 10 years.

### **Overview of the last 10 years.**

I seem to have significant stomach problems about every 2-3 years. About 5 years ago, we started using three medications that healed the stomach, we have not had a severe stomach problem since.

The three major things that affect the stomach are computer stress, food stress, and lifestyle. Computer induced stress is one of my main problems. Reducing stress reduces stomach problems. Food stress is of my own making. I have no problem with simple, home prepared food but many chemicals in food are bad. Even sugar and fat in large quantity is bad. Home prepared pork and gravy is good.

Living in this world with the day in, day out changes in our activity, weather changes. We have the rhythm of our own body (circadian and biological).

Attention to all that have stomach problems. More than half of the population at one time or another have had stomach problems; no two stomach problems are the same.

As I seek help for my stomach problems, I need to recognize that 50% of physicians have unresolved stomach problems.

### **My Stomach.**

My stomach is a self-centered animal within me. This animal has the character of a cat, it is independent of my in most respects of the GI system. My only control is when and what to feed it. Once food has arrived, it is self-controlled.

Our primary control is by our choice of food, both quality and quantity.

### **Microbial control in the Stomach**

Controlling micro-organisms in our stomach.

In nature, the human stomach is able to handle micro-organisms that end up in the stomach. Over eons of time our stomach has the capacity to kill vegetable pathogenic micro-organisms and neutralize spores from micro-organisms in the gut. In our search for feel-good answers to stomach pains, we induce self-help potions, food and drugs that while they may feel good, they may not be good for our long term health.

When the stomach and GI system are maintained in good condition, then the control of micro-organisms in the stomach is automatic.

We have Microbial Control problem when the stomach and GI system, through food, drugs, and or lifestyle, alter the natural operation of the system.

## **J.10. Improving the stomach operation in 2018**

In the years 2017-2018, I had continuous problems with stomach pains, hunger pains.

I have been eating shredded wheat or oatmeal cereal for many years and in the spring of 2018, I started using bite size shredded wheat in my diet. I experimented with plain, sugar frosted, and maple brown sugar biscuits and was surprised that my stomach detected a difference. The maple brown sugar biscuits produced a less satisfactory result so I stopped eating those biscuits; I assumed that the maple brown sugar biscuits had small quantities of additives that my stomach didn't like.

Shredded wheat biscuits with sugar frosting do not seem to be in agreement with my stomach.

I have found that plain shredded wheat is most satisfactory for my stomach. Eating two or three bite size shredded wheat makes my stomach feel good.

### **Hunger Pains**

We had stomach hunger pains in 2018 and tried to establish the cause. My problem was in how to control hunger pains. I had continuous problems with my stomach but in the 2017-2018 time period I had what I called an epiphany -- a recognition that stomach pain and need to eat are related. We know that there are needs for food every 4 or 5 hours. When I have a hunger pain in the night, providing a small meal will satisfy the hunger pain.

### **Food Rhythm**

My father followed a type of food plan in his food consumption: he ate early, 5-6 AM, a lunch at 9:30, noon meal at 12-1, an evening meal at 4-5 PM, and a snack before going to bed. I decided to try a modified food plan for my problem of hunger pain in the nights.

Starting from about October 2018, I started a plan where I eat a few shredded wheat biscuits just before going to bed, then when I wake up 4 to 6 hours later, I eat more shredded wheat biscuits, fall asleep, and repeat the process.

The plan that I have tried seems to satisfy my hunger pains and take care of my food intake requirements.

## **J.11. Sensitivity to Food and Eating Small Meals in the Night, 2019**

For several months, I have used shredded wheat as a supplement to help me reduce hunger pains in the night. I use original shredded wheat, typically I use the bite size which is 3/4 inch x 1 inch. I have found that the original shredded wheat is more agreeable to my GI system.

### **I Have Been Eating Small Meals About Every Four to Eight Hours**

Our evening schedule is that we have dinner about 5-6 PM and then off to bed at 9-10 PM.

I prepare for the night with five special treatments:

1. I sip vinegar tonic (VT);
2. I eat six spoon size 3/4 inch by 1 inch shredded wheat biscuits;
3. I take two drops donnatal;
4. I drink one teaspoon of chamomile tea;
5. I take one baby aspirin.

After the treatment, I usually go to bed and sleep for four to six hours, at which time I will awaken, repeat the treatment, and go back to sleep for another four to six hours. When I wake up in the morning at 7 to 8 AM, I will sip VT and then have breakfast.

We have proceeded on this basis for a number of weeks with fairly good results. Nothing is perfect but that seems to work pretty well.

### **Food Sensitivity**

I find that natural shredded wheat, old-fashioned made, is most agreeable to my GI system. Minor changes in manufacturing methods with small amounts of additives will be distinguished by my GI system.

I find fewer effects with natural food, such as natural shredded wheat. When there are additives such as sugar or chocolate, I find it affects my GI system.

My GI system is sensitive to many food items, and I often notice an effect after a couple of days on a new food item. This effect can be subtle, even hardly noticeable, but sometimes it can be an attention-getting effect.



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