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INSIDER NUTRITION SECRETS (INTERVIEW)!

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Introduction

Q- How long have you been involved in the nutrition field?

A- I've been in the nutritional field for about 35 years. I worked for 14 years for Pillsbury which became General Mills then I left that job and worked another 20 years for a pharmaceutical food Company called Novartis, a large food corporation.

Q- What did you do for these companies?

A- Well I was in a lowly position with Pillsbury where I was working as a technician and I was a non-professional. I had a 2 years degree

and then I worked my way up the ladder there and then I became a food scientist and finally ended up getting a 4-year degree from the University of Minnesota.

Then when I went to work for Novartis, I ended up working with a scientist title and I continued to work my way up and I did a lot of work formulating products, looking at the nutrition of different products and really following the development of food all the way up from the research state to full scale manufacturing. Basically a product development food scientist does everything; they work with the marketing people of the Company. They help conceive the ideas for food products like analog products, like a cereal or whatever it may happen to be. It could also be a fabricated product like a take off of a baked item. You come up with the idea working with the marketing people. You would then put together a prototype of the product idea so that the marketing group would have something they could look at and actually sit around the conference table and talk about.

Then as a team you would decide which of these products you'd like to develop then one of those products would be picked and taken to the next stage and the product development scientist would begin

to refine that product. It might be improvement in flavor or taste or texture. The product would be refined and presented again to the marketing group. There would be another round table discussion about that particular product and the marketing group would point to food scientist in the direction he needs to go.

So I would go back to the bench so to speak in the lab and then make further refinements and then you end up at the first stage of product development, which would be product approval. Then once the product is approved by research and marketing then you begin to pull manufacturing into the picture. Is it possible to manufacture the product you have been working on, then at that point you have three groups involved, you have the research and marketing and manufacturing people then you would all work on development.

Q- At what point do you have to present that to the FDA?

A- Generally it is the responsibility of the product development people to be aware of the Food and Drug Administrations requirements. So when I used to work in the lab I had a library of different regulations called the Federal Code of Regulations. I would be aware of all the guidelines and I would either take that back to

marketing or present that to whomever I needed to inform.

We would talk about that regulation and whether it would be a problem in the development of this new product we are working on and if we agreed it was a problem then we would have to submit something to the FDA and if it wasn't a problem we would just proceed on.

Q- What was the average time limit until the first step until the product hit the shelf?

A- It's hard to tell but with the company like one of those mentioned, we would manufacture products. There were several different groups and one was a food product service and those would be the products you are most familiar with. They would be the products you would see of the shelf in the grocery stores. Then another group would research what was called the clinical group products and that particular group would work on developing products that would be intended for use in clinics and for people that required special feedings.

The development time and the rules and regulations applied to the

different kinds of products, whether they are food service items or clinic products. There were regulations that govern the formulation of and development of and the marketing of all of those different products. They were all different.

For example, Novartis had a line of weight loss products that were very popular. It was the Optifast Line. Within that product line I'm just going to guess there were at least 75 different products. There were different categories of products, liquid, supplements and there would be formulas of products intended to be administered through hospital tube feedings. There were solid foods as opposed to liquid. It kept getting divided even in the categories because the nutrition and they had very strict federal guidelines intended for hospital feeding situations. The products would be tested extensively then we could be talking years of clinical trials.

Q- Some of the commercials that have been on TV recently have been very enlightening, I'm not sure if it's Glaxco, but you've seen them talking about how long it takes to develop a drug. I think that's just very enlightening for the public because most people have no idea what is entailed. Would you agree with this and let our readers in on some additional information?

A- It does get pretty interesting because the normal consumer groups will make some blanket statement about how the consumer is getting ripped off by the drug companies and the pharmaceutical companies because they are charging 100 times more for their pills than what it cost to manufacture. That is a fact even with the dietary products that we would manufacture. They were sold many times for what is cost to manufacture the product in terms of the composition and the package and the marketing. You put all that together and that is just a fraction of the cost if you include the development of the product. When you figure that the clinical trials that these products go through can cost hundreds of thousands of dollars. Some cases I would have to guess would border on a million dollars done by some of the larger pharmaceutical companies.

I am not saying that there isn't a lot of profit is taken by some of the pharmaceutical companies but there is another side to the picture and that would be the testing that goes into some of these products is something people don't consider.

That was some very interesting information about the processes that a single product goes through before reaching our grocery or

pharmacy shelves. Let's move on to an overview of basic nutrition.

OVERVIEW

Q- We would like to explore some of the specifics about unhealthy eating and nutrition. If you had to define nutrition what is it?

A- Well in general terms it's going to probably depend on the individual. Through the years I have developed this concept: one level nutrition doesn't work for everyone. We come from different backgrounds and different genealogical makeup or whatever you want to call it. You might find that works well for one individual may not work for another individual.

There is a set of guidelines that the government publishes for 20 or so different vitamins and minerals and nutrient and the carbohydrates and those values or based on population studies where they go out and look at the health and consider what people consume on a regular basis.

Q- Would it be safe to say that nutrition is based on certain food stuffs?

A- If you wanted to generalize it I would say that it would be just getting all the right balance of nutrients necessary for good health.

Q- What is the difference between nutrients and food stuffs?

A- Basically none. You can look at anything that provides nutrients to the body like carbohydrates, protein, minerals and vitamins. They are the vitamins and minerals that everyone knows about and then there are the ones like micronutrients like selenium, chromium and zinc and some of those that aren't so talked about. But food in general is just a carrier for nutrients. You can take a loaf of bread it...has starch in it and protein and non-fat dry milk, the non-fat dry milk will contain lactose. It will contain a high amount of minerals usually. The non-fat dry milk will contain casing, which is a non-fat dry milk protein. You break down the constituents in the food and each one of those provides nutrients for the body.

Q- How does one go about breaking years and years of bad eating habits? And we are going to talk more about eating and diet a little bit later but what would be the start point for someone?

A- It gets pretty interesting and I have written some articles on the subject. If there were an easy answer to the question we wouldn't have the problems we have today like obesity. You know right now in the US 60% of the population has a weight problem. "Morbidly Obese" is clinically defined as being 100 pounds or more overweight. In our population, the number of people being morbidly obese is increasing year after year.

People with just such a weight problem are continuing to increase every year. I personally think that there is a root for that problem and one of those is that in our culture today there is an over abundance of food available. You know, on every corner there is fast food and billboards and everywhere you turn there is an advertisement for fast food. You know starting almost from infancy where you have two working parents they get home from their job and they are more likely to park their kids in front of the TV.

One of the things that I have noticed is the amount and length of the ads seem to be increasing: More and more year after year the cable companies seem to be just filled with everything you can imagine and not very nutritious food. You get exposed to that and it gets ingrained in your thinking about food and, if you will do the

research on it, many of those ads are geared toward influencing children. When they go back and do the research on the influence what mom and pop pick off the grocery shelf, they find that the children have a tremendous influence. So they target those ads at the children knowing that they are going to put the pressure on the parents to buy them.

I don't know if I am getting off track but what you can do to change a person's perception of food starts at such an early age. You can show a person in black and white what foods are good for them and what isn't and it pretty much comes down to a conscious decision if they want to consume healthy foods or not.

And it certainly would be a value to have a mentor or life coach or fitness trainer or just a friend where there is some kind of relationship when it comes to dealing with eating healthy.

The fact is that you need support and one of the reasons there are so many weight loss programs is that they do something a little different they have meetings and people get together and support each other.

You know I mentioned Optifast and there is Atkins and when you gauge how much weight people have lost and whether they keep it off, all of those people probably within a 5 year period have gained all that weight back because they have lost their support group. It speaks volumes to me that if people are going to lose weight and keep it off they need a support group. It has to be approached that you are not on a diet to lose weight you are trying to make a lifestyle change. It is going to be a new way of eating and new habits even your daily activities it is something that you are going to do for the rest of your life.

Q- What I think is very sad is generational obesity. You can be out shopping or eating in a restaurant and where you see overweight parents you are going to see overweight children. Why do you think this happens?

A- In a way it is endorsement to the children that their eating habits and lifestyle habits are acceptable. Just like any of us what better role models than your parents. If they snack and eat unhealthy then the children will as well.

You know what is interesting is that everyone is trying to answer

the question, "why are people getting fatter and fatter," and even Jay Leno makes jokes about people getting fat. You know the notion out there is that it isn't something that people can change it's just that people are genetically predisposed to getting fat. And there is a genetic factor to it but you know that Dr. Phil responds to it like you may be predisposed to it but you don't have to succumb to it.

Q- Do you think that much of those habits are linked to emotions?

A- Sure. Emotions and stress all those things get factored into it. I was going to finish one point on the genetic side of it. Genetics will change in a thousand years but not in the last ten years. You can factor the genetic side of it almost entirely out of it. Everybody has times of emotional needs.

You know I am almost 60 years old and I work out several times a week and I can still keep up with people half my age. I am not bragging but I am saying that just knowing what to eat and how much to eat and what is healthy and maintaining enough sleep all factor into just having a healthy lifestyle.

Diet and Nutrition

Q- I think we could move into diet and nutrition and what I would like to do with your permission is take this down to the "nitty gritty" because a lot of people hear these words and terms and they don't know what they mean. So what is a calorie?

A- I will keep it pretty simple. A calorie is the amount of heat that is required to raise one cubic centimeter of water one degree. What it is an amount of energy?

Q- How about a carbohydrate, what is a carbohydrate?

A- Carbohydrates are molecular linkages of sugar molecules. If you take a starch, which is a carbohydrate and you link those sugar molecules together. If you look at the ingredients they are always listed in the order of predominance. In that listing you will see an ingredient called maltodextrine. A maltodextrine is a hybrid ingredient that is neither a sugar nor a starch. You know a simple sugar can be like glucose and a starch is a long chain of glucose molecules. You link all those together and you finally get something called a starch. In between where you have the simple sugars and

you have the complex substance starch you have these things called maltodextrine.

Q- What about fat?

A- You know again it comes back to the whole idea of how many units are in this molecular chain. If you break down a fat you break it down into something called a fatty acid. They can all be broken down into smaller units. In the case of starch it can be broken down into simple sugars or these maltodextrines, which can be broken down into simple sugars.

The point I am trying to make is any of these macronutrients can be broken down into smaller units. Just like starch is broken down into simple sugars, the fat is broken down into fatty acids and the proteins are broken down into peptides or amino acids.

Each one of those macronutrients can be subdivided. In the case of proteins, proteins are made up of amino acids. Not all proteins have all amino acids that are important because there are essential amino acids. If you are consuming proteins and the essential ones are missing you will suffer. You could end up with some disease

because those are missing, in some cultures around the world where food isn't so plentiful and they aren't ingesting the right nutrients. You know one that I can think of is called Kwashiorkor. You will see often times where little kids will have the distended tummies. The rest of their bodies are fine and it just comes down to the fact that they have a nutritional deficiency.

You know in the case of fat you can actually measure the quality of nutrients. People will volunteer to be involved in a clinical feeding trial and they will hook these people up to all kinds of measuring devices everything from body temperature to how much moisture they exhale.

They weigh and eliminate brine in their feces and they weigh it and they record everything they can about these patients. They will feed these people a controlled diet and so they will feed them a controlled amount of protein. They can measure those four elements how much is excreted and how much how much weight a person gains and basically they can determine how much of that protein is utilized by the body.

When they do that they can determine the quality of the protein

and it's based on the amino acid that makes up the protein. They can determine how well that the body absorbs protein. Then they can assign a number value to the protein and how well it is absorbed.

Some proteins are absorbed extremely well and an example would be egg albumin, which is the white of an egg rather than the yolk. The egg white protein has an extremely high biological availability and all of the essential amino acids in the right balance. You can take a protein like gelatin and gelatin has the amino acids that it is made of you will find that it is deficient in an amino acid called triptophane and because it is lacking in that it isn't balanced. If it is combined with other sources of protein it is okay.

The bottom line is if you are looking at fat or protein it is important to look at the composition of them. You can read the declarations of the food labels and especially in snack items the protein will be there but often times the manufacturer is looking for inexpensive ingredients they can find. Often times the protein is inefficient and they don't have the quality and are deficient in amino acids. It is important to know that all fat and proteins are made up of these building blocks and it is important to know to have a balance of all

of these building blocks for the fat to be good for you and the protein to be good for you.

Q- Is it true then that you can eat more and lose weight by combining different foods?

A- No. People say that there are certain foods that take more calories to burn than they provide or that certain food items are going to cause more calories to be burned. It is a misconception and I can fully understand why people think the way they do.

People don't want to put the time and the energy or the money into losing weight. It is a lot of work. People want to lose weight and they know that some of the food they eat is unhealthy and they don't want to put the time and energy into changing things.

It takes planning and time. Instead of visiting the fast food restaurant on the corner on the way home you go to the produce aisle in the grocery store. It might take you a little more time and cost you a little more money but it's worth it. You know the fast food restaurants super size everything. The artists and executives that design the ads know that our mentality is that the more food

we can get for our buck then the better we are going to like it. It wasn't so long ago that you would go in and order a pop and you would get 8 oz or 12 oz and now it's not uncommon to get 24 or 36oz because they super size everything.

Q- Tell me are there any specific foods that burn fat?

A- I would say not. Basically, if you want to burn fat or lose or maintain your weight everything comes down to energy balance. It gets back to when you asked me to define a calorie and if you look at the macronutrients the carbohydrates, proteins and fat are assigned a certain level of energy and for example protein each gram of protein will contain four calories.

Q- Then what should we be counting? Should we be counting calories carbohydrates or fat?

A- Let me just go on a little further and we will come back to that. If you look at carbohydrates it is the same scenario. Each gram of carbohydrates contains 4 grams of fat. This is why fat is so important. It is almost twice that of protein and carbohydrates.

So one gram of fat contains roughly 9 calories. So if you start talking about the Atkins diet, it depends on how you set up the study. You can get any variety of results you want. You know the Atkins diet is one of my favorites to pick on because the early studies showed that people lost more weight initially and overall the diet was more effective than other diets.

Well I believe that since then they have gone bankrupt. Some where along the line people were starting to figure out that it's not all it's cracked up to be. What seems to be the case now when you start looking at the numbers is when you have enough people on the diets it becomes statistically significant. What it seems to boil down to is Atkins restricts your intake to mainly fat and protein and by eliminating carbohydrates from the diet it takes away so many of the food choices that are available.

You know, even lovers of protein and fat what they find that restrictions your variety and choices are taken away and what you do is actually limiting your caloric intake. Just because you don't have the wide variety of choices you can make any more. So it works initially and that is one of the reasons why people are so attracted to it.

95% of diets fail and what it really comes down to if you want to lose weight it has to be something that you decide to make as a lifestyle change. You know, a diet is only temporary. You go on it and what are you going to do eventually? You are going to go off it. In my definition that is not a lifestyle change that is a temporary fix. You know that is human nature. You go on the diet and eventually you are going to go off it and revert back to you old eating habits and gain the weight back.

It all comes down to understanding a little bit more to understanding the foods that you are eating and a choice to make a lifestyle change. Also almost all of these diet plans introduce a new way of eating, a way that is abnormal to the way that you are used to eating and we are creatures of habit and we like the foods that we are used to.

And because we are creatures of habit we don't adapt very well to changes like that. We can go on it for a while and because it is so abnormal it just doesn't fit. If you are a busy mom and you are rushing your kids back and forth to school you then all of the sudden you have to prepare these kinds of foods and eat these

certain foods it basically forces you off the diet. It all comes down to the fact that you have to make a decision that you are going to change the way you eat and it doesn't have to be an abrupt change you just need to understand more about what you are eating and what the energy value is and the nutrient value is of the foods you are consuming.

I know the nutritional value of the foods I am eating. I keep a running tabulation in my mind of the foods I have eaten and what I am going to eat today and how I am going to balance it out.

I know that if I have been naughty in eating too many chocolate chip cookies then the next day I am going to watch what I eat.

You know we talked about people and their eating habits and they are so ingrained, how can we change our eating habits. One of the things that I have noticed is that if you are doing something healthy for yourself, if you will just go out and walk 15 minutes a day the easier it will be to put aside the unhealthy ones.

When you do something like walk 15 minutes and then you are standing in front of the chocolate chip cookies you are more likely

to start thinking should I eat those cookies or shouldn't I, well I think it becomes a little more easier to make healthy choices. The more healthy choices you make the easier it is to incorporate more.

It's almost like the unhealthy choices don't fit anymore. They are incompatible with the healthy choices. You know, I have quoted that adage that the rich get richer and the poor get poorer. Well it's almost the same applied to health and nutrition.

As I kick around health and nutrition with people that are into it like I am, I find that if you do exercise and have more muscle mass you burn more calories when you are at rest. Lean muscle mass has a higher metabolic requirement. When you are just sitting around doing nothing and your body has more lean muscle mass you are going to burn more calories than if your body contains fatty tissue.

It's kind of a cruel injustice but the fitter you get even at rest you are burning more calories. The basal metabolic requirement on a daily basis may be a very small percent of your total energy needs as compared to other ways you burn energy. The basal metabolic requirement is just how much energy you need to sustain your basic metabolic processes, like breathing, heartbeat and digestion

and those things.

Q- What about alcohol? You know that we hear that one drink is okay or two drinks are okay and now it's just red wine.

A- You know the studies that I have read, and I am not 100% up to date on this, but a small amount of alcohol ingested on a daily basis may have some positives in reducing your risk for heart disease or may help to lower blood cholesterol levels.

Red wine may be preferred because of the antioxidants that you get and the other chemicals that come along with the wine. Obviously there is something in the red wine as opposed to the white that makes it more beneficial. Alcohol is number one a source of calories and you know that it is quite high. The higher the level of alcohol in the beverage the higher the caloric intake is. I believe that one gram of alcohol would be five and a half calories. It isn't as high as fat but not as low as protein and carbohydrates.

There are other aspects of that to think about, if you are trying to lose weight you need to question whether you need the extra calories. There are many other beverages that would provide many

more nutrients. If you are trying to lose weight you need to question whether or not you need those extra calories from something that basically has no nutritional value. I would tend to be more negative about consuming alcohol because people tend to get out of hand when consuming it and the damage it can do to families as well as the individual.

So I would never be one to advocate the drinking of alcohol because it has no nutritional value or health value. You know any benefit that alcohol might provide you can get from something else.

Q- That brings up something that I completely skipped and that is a well balanced diet, just what is a well balanced diet?

A- Following the food pyramid is a good place to start and maybe it's a good place to end for some people. If you take all the food somebody eats at the end of the week and then add them all up and how much variety there was, you will find that there really wasn't that much variety.

People generally have a dozen foods they like to eat and they will end up eating the same foods day after day for most of their life

and that are where you run into problems. You get stuck in a rut and fail to incorporate a vast variety into your diet and fail to get the nutritional balance that you should be getting. If you know nothing about food but incorporate a lot of variety into your diet the chances of your being malnourished because you don't get the right nutrients goes down hill.

I like fresh fruits and vegetables especially in the summer time. My wife does the grocery shopping and she and I like fresh fruit and vegetables. We will just take a big salad bowl and fill it like the diet out there called the Rainbow diet. It's based on all the different colors of fruits and vegetables. So I will take purple grapes and onions and garlic and sprinkle some lettuce and if we have fresh strawberries I will add those cantaloupe and really your imagination is your only limitation. You know, just basically add all your favorite fruits and vegetables and throw in a couple of tablespoons of your favorite dressing and season it to taste. Mix it all up and you have an incorporation of all of that variety. You get all of the vitamins and the nutrients and the minerals that you need in just one meal instead of just ingesting one kind of food.

My point is the more variety you can get in your diet the greater

the possibility that if you are lacking in something that you are going to get it. I am an advocate of getting variety in your diet. It all comes down to looking at your budget and having some knowledge of getting what you need and looking at the food labels.

With just a little bit of knowledge of how to read food labels and what you need you can make the right choices with the money that you have to work with.

Even the restaurants and the fast food chains are starting to offer more nutritious choices, likes salads. Subway is one that has really jumped on the bandwagon. You know the one with Jared standing there saying this deep fat fried sandwich contains 45 plus grams of fat I wonder how they got all that fat in there to begin with and compare it to the subway sandwich.

I saw an interview where they were talking with the producer of Sesame Street and they were talking about the cookie monster and how it was presented in a way to get kids to eat more junk food and more cookies. Now they have repositioned that whole program to where they are starting to teach kids more about nutrition. I am hoping that one of the things that are happening is that there is

awareness about nutrition and this obesity epidemic. Some people are just succumbing to obesity and the things that come with it like cancer and heart disease and diabetes. It's good to see some positive changes taking place.

Q- Why is that we sometimes crave certain foods? Can it be that your body is sending you a message?

A- You know that in some developing cultures there is a craving that some people have and I believe it is called Pica. It is where a person will have a craving to eat a particular food item and it doesn't always have to be a food item, it can be dirt or something that isn't a food at all. The theory is that people will have a craving for certain things that will provide a nutrient that is lacking.

In our culture I don't think it is metabolic for food cravings. You know if you are used to consuming sugary sweets and that is all you eat, your metabolism adapts and guides you to the foods you are used to consuming.

An example of that would be someone who has gone on a vegetarian diet and eliminate meat from their diet temporarily.

Then they start to reintroduce meat and their stomach is upset. Their stomach is not used to digesting that kind of food. They have adapted to digesting just non-meat items. There are food digestive adaptations to the kinds of food that you eat. One would have to believe that those are the kinds of foods that you get used to.

Q- Do we become hungry because our stomach is empty or is it because of something else?

A- That is a tricky question. There are people who have studied this and can boil it right down to all kinds of enzymes and mechanisms that kick into play that stimulate appetite or depress appetite. Individual metabolism is so significant individually that I am sure that you can feel that on a general basis.

You know one thing that I can say is when I go exercise and I get back and sit down I need to replenish my water intake. The next thing that I find is that if I find a combination of fruits to eat it will suppress my hunger because fruits are primarily water and sugar and carbohydrates. But the digestive process is pretty rapid when it comes to breaking down sugars into glucose and the glucose is stored in your body. So digestion of fruits in particular is pretty

rapid. I can consume a lot of fresh fruits and it doesn't satisfy my hunger.

I will still have hunger pains because the digestion is completed so rapidly as opposed to protein, which takes longer. It almost seems like exercise can suppress appetite but I think you have to balance that whole idea with how much exercise you are doing and how many calories your body needs to replace and what kinds of food you are going to consume when you are done.

It is complex and is another whole area to think about why people are gaining weight, whether it is emotional or whether it is the amount of exercise they have done. You know that everybody that is out there studying this whole thing and trying to help people lose weight, each one of these communities have their own theories and their own recommendations. They all study it in a different way - some try to understand the psychology and some try to understand the nutritional aspects of it. You know, if it was well understood we probably wouldn't be having the problems we are having today.

Q- We have discussed foods in general, but can you tell us, what are "functional foods"?

A- It is a term that gets bantered about by people who are food scientists or food companies that are talking about different kinds of foods. Usually when they are talking about a functional food it is a food analog, which is a food that has been put together by when it is manufactured.

You know a functional food through the company that I was working for may be let's say internal tube feeding formula for a hospital. The composition of the product contains all the nutrition in the right proportions for protein and amino acids plus fat with the right fatty acids and the right vitamins and minerals and you put all that together and you have it has a particular food functionality.

There are foods that are designed to resolve particular health problems. Let's take something common like lactose intolerance, people have trouble digesting the lactose they are missing an enzyme called lactaid. So an example of a functional food would be a food that was put together without any milk protein or lactose sugar. It functions with that person who is lactose intolerant. You can take that example and apply it to anyone else who has special feeding needs.

Q- Do they actually convert differently into energy than if they had this component in it?

A- No, functional food is just a catchy term that came up years ago by food companies looking for a certain marketing handle to promote different types of food they may want to manufacture. This term functional foods really originated 8 or ten years ago really by food manufacturing companies. It really doesn't have any scientific meaning. It's just a generic term used to describe foods that they want to manufacture. It is a little hype and one of the areas would be food that is high in fiber.

Often times food companies will include products that they have formulated that contain high amounts of fiber because fiber functionally is healthy in most forms anyway. Therefore they include all these high fiber foods that that have formulated under the functional food umbrella. It's just another way of marketing foods.

Q- Nutrients obviously decrease the risk of some diseases, is that correct? In other words you can't eat a magic vegetable to cure cancer but you can gain eat certain nutrients that lend themselves to good health can't you?

A- When I worked for that company for 14 years, I worked with a fellow that had more patents than anybody else in the company. He was their number one inventor and he had two PhDs and a genius IQ.

He had actually developed a lot of the foods that were first used in the bio-satellites. Some of them would have a monkey or some other kind of animal and they needed the food company that I was working for. The company contracted with the government to produce the foods that were for those animals.

All kinds of foods spun off those kinds of contracts. One of the foods came about when astronauts started to go up into space. They had all their spacesuit paraphernalia and the large helmets and whatnot and the only way they could eat was to insert food through a certain orifice. Actually there was a food item that was marketed that looked like a tootsie roll and what is actually a combination of protein and fat, carbohydrates and all the vitamins and minerals that were needed for good health. Everything in the proper balance and the proper amounts and it was in this tootsie roll form and could be inserted through the space helmet.

To get back to your question this person that I worked for would joke that someday there would be magic pill that you could take to get all of your nutrients in the proper proportions that you needed for the day. The astronauts had to take six of those a day, but he ended up making this magic pill and it ended up being the size of a softball.

The bottom line is there is no magic pill. It wasn't until the 1940's that we as a country started to put together nutritional requirements in relation to disease and when we started to establish the different recommendations.

Something that has always intrigued me is that if you do take that historical perspective and go back you find that in the early years there were just a few nutrients for which the recommended daily allowances were established and through the years, through the studies and the whole process of understanding we have continued to add to the list of things that are required. It hasn't been until quite recently that we have learned about trace nutrients like selenium and things like that, that have recently been added to the list. Those levels continue to change as we learn more. One of the things that interest me is the addition to the list; it is almost a

never-ending process. I always come back to the concept of nutrition and variety and not getting locked into a few fixed food items.

Q- Just to clarify, in the most basic form what are the basic nutrients?

A- There are, call them building blocks of good nutrition, the level of protein in your diet and a certain amount of carbohydrates to provide energy and a certain amount of fat. Those are the main building blocks and the body requires certain enzymes and vitamins and minerals. A good quality protein contains certain amino acids and then you break it down into smaller blocks called peptides. Basically it just comes down to protein, fat and vitamins and minerals to keep metabolic process continued.

Q- So then what is a non-nutrient?

A- Basically it would be something that didn't contain any calories or a source of protein, carbohydrates or vitamins and minerals. Water would be non-caloric. There is a lake in Minneapolis called Lake Harriet. There are water pumps all around the lake and by the main pavilion there is a pump that goes down a couple hundred feet

and it is the best spring feed water and when ever I ride my bike I always seem to swing by that pump and load up.

Digestion

Q- We are told that the body processes foods via three different methods. Those methods are digestion, absorption and transport. Can you explain each of these methods beginning with digestion?

A- I would just look at it very simply and explain that first you have to consume the food to get it into digestion and then at that point the digestive process starts and the proteins that are composed of peptides and the acids go into action and start to break the protein down.

The protein would be broken down into it's simplest form and when the complex protein gets broke down it is then ready for absorption by your body and then once it is absorbed into your body it has to be transported to those sites in your body that would use the broken down units.

In the case of protein that would be the amino acids. The amino

acids would be transported to wherever they were needed, muscle tissue or organ tissue. Then the transport method would actually be the blood stream. It is true for any of the big building blocks like the carbohydrates would be broken down and transported and the fats as well.

Q- We see so many advertisements about digestion and heart burn and apparently what it does is block the acid production in your stomach, which probably isn't good for you. Don't you need those acids?

A- Well you know if you have an overproduction of acids in your stomach either you can irritate the lining of your esophagus. Obviously you want to reduce the acidity in your stomach and I think in most cases there is enough acid in your stomach for most digestive processes to take place.

You know it is not just acids that digest the food in your stomach. When we were talking about lactose intolerant and sugars getting digested, the lactaid acts on the sugars lactose and breaks down the sugar lactose into two simpler sugars by the enzyme lactaid. It's not just the acidity in your stomach it is much more like the

muscle action of the stomach.

Protein

Q- Going back to protein, what is it about red meat that doctors say is bad for you?

A- Well you know fatty meats or red meats are typically higher in fat and the fat is generally a higher saturated fat than say, poultry. It would be the saturation of fat in the meat.

To make a blanket statement that red meat is bad for you would be overkill. It certainly wouldn't be healthy to base your diet on red meat alone and consume unlimited amounts of saturated fat, but then again we talked about the bioavailability of the protein qualities and meat proteins in particular even though they may contain higher levels of saturated fat have an extremely high biological value.

That means that the protein in the meat is going to be absorbed in the body much better than some other sources of protein. An example would be the protein found in wheat flour or cake flour or

our bodies can't always use bread that contains protein very well, but the meat protein contains all the essential amino acids and can be utilized by the body.

It comes down to an understanding of not throwing out the baby with the bath water, if you eat a cut of good beef just be aware of the amount of fat and balance it out the next day.

Q- What are some of the other sources of protein?

A- Eggs are a tremendous source of protein. The egg white has an abundance of all the right amino acids and is easily digested and absorbed into the body. Egg whites may have the bioavailability of 100% because it is a reference protein. Meat protein is very close to the egg protein as compared to some of the grain proteins. The yolk contains quite a lot of fat but is also a good source of protein. Last I heard about the literature was the egg or the yolk that influenced the cholesterol level I am not sure that they ever came to any conclusion. I have read studies that in clinical trials some individuals have consumed a dozen eggs every day his cholesterol level was fine or below normal and then there are other people who seem to be predisposed to that kind of fat. Some people don't have

any negative forms of fat as compared to others.

Q- How about an all vegan diet, is it healthy?

A- Actually it is. There was a pretty significant study done that was widely published. They tried to study the influence of consuming alcohol and smoking and make a fair comparison. What I remember from the study is that they concluded that if you were a vegetarian you would live an average of seven years longer. There is something to be said for it but it comes down to knowledge and balancing. You have to be cautious when going to a vegetarian diet and knowledgeable about it.

Like it's harder to get the adequate amount of B vitamins on a vegetarian diet and you have to know which foods to eat to get the right amount of vitamins and minerals. So you have to be knowledgeable when going into it.

Carbohydrates and Lipids

Q- For years we have heard about good LDL and bad LDL. Is it true that there are good carbohydrates and bad carbohydrates?

A- To kind of boil it down into a nutshell, if you look at it everybody is trying to answer that question and again you can draw a correlation between what people are eating and who is doing the study.

One thing that is obvious is that diabetes is on the rise and it probably has something to do with digesting simple sugars. I think the jury is out on what is causing the rise in diabetes. We keep coming back to practicality and just balance.

I still use sugar on my cereal and eat chocolate chip cookies. I don't exclude those from my diet but on the other hand I don't overdo it. We have some family friends who have teenage kids and we get to visit them quite often. We would eat out together and their parents were on the overweight side and I still remember that when the kids would use any kind of condiment like on their toast they would use like 2 tablespoons of butter. If you want to add butter to your toast fine but a little bit goes a long way. There is this kind of an attitude that if a little is good more is better.

Q- What are phytochemicals?

A- Phytochemicals are chemicals that occur in growing plants. It's just another catchy term. It is more about food antioxidants and the

role they play in metabolism and cholesterol and heart disease.

I am going to say that it is a term that popped up about 10 years ago like functional foods. Basically phytochemicals are those chemicals that usually act as an antioxidant in metabolism. There is so much talk about free radicals and oxidation of fat and metabolism you know when fat gets metabolized. Those chemicals will basically act to reduce free radicals. Therefore they are supposed to be effective in reducing cardiovascular disease.

I think it all keeps coming back to balance. You know my son and I had an interesting exchange of emails the other night. He had come across an article on energy consumption and where our nation was on consuming energy. You know the price of a barrel of oil and what was going to happen to energy costs and the rising consumption.

It was an article that was quite lengthy and it was basically a doomsday article about how we were going to run out of energy. Bottom line was that it left out human nature and innovative ideas that they will come up with when they need one. Then we read a totally different article that was optimistic and upbeat.

My point is, here are two articles with completely different points of view having to deal with the energy crisis or energy consumption. The same thing is true about nutrition. You can find different studies on either sides of the fence on about anything. What you have to do, and what I know in my professional experience, is know that studies can vary like that.

You know the fellow that I worked for that had the genius IQ? He used to tell me that when he graduated from high school and he thought he was a know it all and when he graduated from college with a 4 year degree he thought he knew a little less than when he got out of high school. But as he learned more and more he decided he knew less and less about what was going on in the industry. He said to me repeatedly that the food process is just a big gray area. If you just take one piece of information and hold on to it as the gospel truth you are going to be dead wrong about it. You have to keep an open mind about nutrition because it is constantly changing. You have to be current because it is a rapidly changing field.

Diet Plans

Q- You know we have talked about the different diet plans out there but what do you think about diet pills?

A- I would avoid them with a passion.

Q- What are some of the risks involved?

A- Well some of the obvious ones are the "over the counter ones" which were pulled off the market. To me it's like the preverbal band-aid you aren't helping yourself you are just covering it up.

I mentioned Weight Watchers awhile back. They have been around for a while and the one thing that they do differently is that they have their support groups. Number one is it takes too much of a persons time to attend those meetings, two they don't like the interpersonal confrontations of being a member of one of those groups, they want to do what they want to do but the statistics show that they work.

Q- If someone were looking for a particular weight loss plan or group should they look for one with the availability to partner with someone?

A- Well it is something to look at. I would look at a few things in particular and one of the first things is, does the particular weight loss plan advocate certain foods, in other words Jenny Craig says you have to eat my food and you have to have Jenny Craig drinks and entrees. Jenny Craig is very profitable.

One of the things I would look at, does the diet plan introduce you to eating normal food. A second thing to look at does the diet plan teach you good nutrition, you know what should you be eating, how to interpret the food labels and how should you shop. Those kind of things.

Diet plans that keep you focused in a certain area or a particular niche that they have tried to carve out in a marketing opportunity, I would avoid those with a passion. I would try and go with the plans that give you a normal way of eating. There is certainly nothing wrong with the partnership like with Weight Watchers if for no other reason it is a good way to develop social skills and just get together with some other people.

Vitamins and Minerals

Q- What about vitamin and minerals. Do we get enough from our food

or do we actually need to supplement?

A- It depends on where you are coming from and what culture. Again if you get variety in your diet there is probably no need for vitamin and mineral supplement.

Most people get enough variety in their diet so they don't need a supplement but there are exceptions to that rule. If you are pregnant or lactating or if there is some other need for vitamins and minerals then it is probably a good idea. You kind of need to go off your doctors recommendations.

Q- Would age be a factor?

A- Yes, there are quite a few areas where you may need a supplement. You know supplements can be expensive. Some may be dangerous. It depends on the kind of vitamins and minerals you are talking about.

You know they break down into water soluble and fat-soluble and there are the vitamins they call oil soluble. There are four of them, vitamins A, D, E, and K. Typically there is more concern with the oil soluble vitamins because they are not excreted from your body,

unlike the water soluble vitamins like B and C, the excess will get flushed but with the oil soluble vitamins the excess is retained in your body.

That can get to be a problem if you are for some strange reason taking excessive amounts of let's say vitamin D for example. I think the recommendation is 400 international units. Well there have been people that have taken many multiples of that like 25,000 international units of that and there are health consequences for doing that.

It comes down to someone not having a balanced background and information to fall back on and they just do it because they are naïve. You know it may start out as a doubling of the recommended daily allowance and they think, "well I'm not seeing any results so I will triple it." Some of the vitamin companies that manufacture these are no help because they will introduce products in the marketplace and where one capsule will deliver a mega dose of the product it can be confusing to people. You know if one is safe to take then why are they marketing those products in that amount in the first place?

It just gets to be like a power struggle even with the manufacturers of those products. People will think that if a little bit in a tablet is good then more will be better and we go back to that philosophy well how much can we get for our dollar then we start to think in terms of mega dose amounts.

I don't understand that whole thought process. There are very well documented cases of overdoses and the consequences of taking too much of one vitamin and minerals in the medical journals. It isn't a mystery it is out there and you just have to be careful. Most supplements if you will look on the labels will tell you how much to take.

You know, we take them occasionally. I take a supplement daily and I think my wife takes one now. If you stick with a name brand like One a Day or something like that and look at the labels it will always tell you what percent is applied for each one of the vitamins and minerals. If you see 100% beside one of those vitamins or minerals then you know that taking that supplement will provide 100% for that particular vitamin or mineral Or, if it says 150% or 500% then it is supplying 5 times more of the level than you really need. And all those levels are based on typical values in our society.

On an individual basis there may be a person who needs more than that or someone who might need even less than that. That's when it becomes difficult to know if you are getting the right amount of nutrients. I keep going to just getting variety in your diet.

Q- Should children take some kind of supplement?

A- I would tend to think that if it is a school age child, you know school lunch programs are absolutely terrible, they have the vending machines with the pop and the food and non-nutritional snacks. You know like you were saying earlier if the parents are good role models then the kids are going to pick up on that.

You know every kid likes to run over to the McDonalds if they can. When I was working for Novartis it was between a McDonalds on one side and a Burger King on the other and both of those were close to high schools. Occasionally I would go over there and at lunch time the kids would just pour over there and the lines would be long.

Q- What about little children, toddlers with the Flintstone crave?

A- You know do they really need it? The same things apply from kids to toddlers to grownups. Just make sure they get the variety. You know often times with the baby foods like Gerber, the recommendations of what they eat are so closely monitored by the pediatricians and the company that manufacture the baby foods.

They are really under very strict guidelines and what nutrients are necessary for the toddlers to consume. Just be practical about it don't go to any extremes. Just follow the guidelines of your pediatrician. I think it is just like adults if you get enough variety and use a little common sense in what you are feeding the kid or toddlers then I really don't think there is a need for supplements.

Q- What about water, how much water should we consume?

A- You know that whole question has been kicked around a lot too.

The people who were studying that were saying for a long time that we don't get enough and we need to be consuming more than we do. Then there were some publications that were saying that too much water isn't good for you either.

I would tend to believe that we don't get as much water as we

need. If you drink too much you are just going to eliminate it, so if you drink a lot of pop or whatever then you probably get ample water. I personally don't consume any pop at all and I don't drink that much milk so I have to make it a point to drink water. I bike or workout and I have to replenish it.

As a general rule of thumb, your body will let you know when it is thirsty. If you ignore the urge to drink then you can get into trouble. Water level is the maker or breaker of whether or not you are going to have a healthy lifestyle because it is self-regulating, you know if you get thirsty then you drink and if you are not thirsty then you don't drink. So it is sort of self-regulating. So usually the amount of water you intake is in the acceptable range.

Is Our Food Healthy?

Q- How healthy is our food, the stuff we buy in the grocery stores?

A- Well, if you make a comparison between our food in the USA and the food in other areas, we probably have the safest and the most nutritional and the best food supply in the entire world.

You know the standards for food inspections and food quality that goes into the manufacture and safety and the formulation of foods

it is really pretty extraordinary. Is it perfect? No, you can find problems if you look.

Q- What is processing and does it really takes the nutrients out the food when they are processed?

A- It can if manufacturers let it, but it is a marketing power struggle. It behooves any food manufacturer to preserve the nutrients in the food as best they can.

Q- That was going to be my next question. Does food lose its nutritive value over time?

A- They can and can't. You know if the label makes a claim on food value, let's say they manufacture some nutritious drink product and on that drink is some nutritional claim then let's say it has a shelf value of two years then at the end of the shelf life that product still needs to contain 100% of the vitamin C level.

It doesn't mean that when the product was manufactured it contained 100% of vitamin C and at the end of the shelf life it can contain half that level of vitamin C. What that means is that

the manufacturer has to put an overage of that vitamin in the product because some of the vitamins will deteriorate over a period of time. Depending on the temperature of the storage of the product, usually the higher the temperature and the longer the storage time affects the rate of deterioration.

Vitamin C happens to be one of the most sensitive. The government does inspections on these products. They will randomly and routinely visit the food manufacturing companies. They will take samples and often times it is a surprise. What the food companies will do and the food scientist would do it when the product is formulated they will add an overage of vitamins and minerals but usually it's the vitamins. It protects the product during the shelf life.

What I am saying is that if they want the product to contain 100% of vitamin C at the end of the shelf life, then they may have to put in 200% to begin with because they know that 2 years later it will have lost half of its value.

Then what the food companies will do is have documentation on other food products that they have manufactured so they can

protect the rate of loss. They can predict the rate of loss on similar products so that when a nutritional beverage is formulated they can base the level of any particular nutrient against historical values for similar foods.

Then that is the starting point and what they will do is enter the food into something called accelerated storage. That is a higher level of temperature so they can monitor the level of loss. They call that storage study. Most food companies will do that on their own accord but they do that in case there is ever a government inspection because they want to make sure they are meeting their label claim.

Companies that manufacture vitamins and minerals do the same thing. If it is a dry food like a vitamin tablet the rate of deterioration is usually much slower because it is a dry environment.

In a dry environment you don't get hydrolysis, which is the break down of a dry product compared to a liquid. The nutrients break down much faster in a liquid.

There is a whole host of different studies. When a product is placed in a storage study like that, not only do they assess the nutritional properties of the food but also they have to know if the food is stable in other ways.

Like fats can oxidize. If you have ever had a bag of cake flour on your shelf in your kitchen and two or three years later it is full of weevils and you smell it and it has an awful smell, it is usually because the fat that is present in the flour has oxidized. The fat will break down into pre-fatty acids, which is not necessarily very good for you.

Q- Where do the weevils come from?

A- The weevils have been there from day one, the larvae. Any cake flour or anything made from wheat, you use flour to make a dough and when you develop the dough it's because it has gluten and the gluten contains a fat or lipid.

When flour is aged or begins to smell bad it's because the fat that is in the gluten is starting to oxidize and break down into fatty acids.

The point of all that I just said is that the food companies not only

look at the nutritional value of the product in the accelerated storage tests they will also look at parameters like chemical tests on the food, if the food contains fats is the fat breaking down into pre-fatty acids. They will periodically sample the food and submit it to a taste panel; you know a panel of taste experts. They will taste the food and compare it back to a control sample to see whether or not that sample ages and the flavor and texture remain. There is a lot involved in it.

Q- Well I think we are almost to the end of our time but I did want to ask you one last thing. Do you have any advice that you want to offer to our readers regarding their personal nutrition?

A- it would be something that we have touched upon four or five times and that would be to use a balanced approach in how you eat and the things you enjoy doing.

Don't do anything to great excess and keep an open mind when you hear information about things that seem to be important to your diet and health. Read many sources before you make a final judgment.

So I would say keeping an open mind and introducing as much variety

as you can in your diet and get some exercise. Throw some exercise in there because the value and the benefits are great.