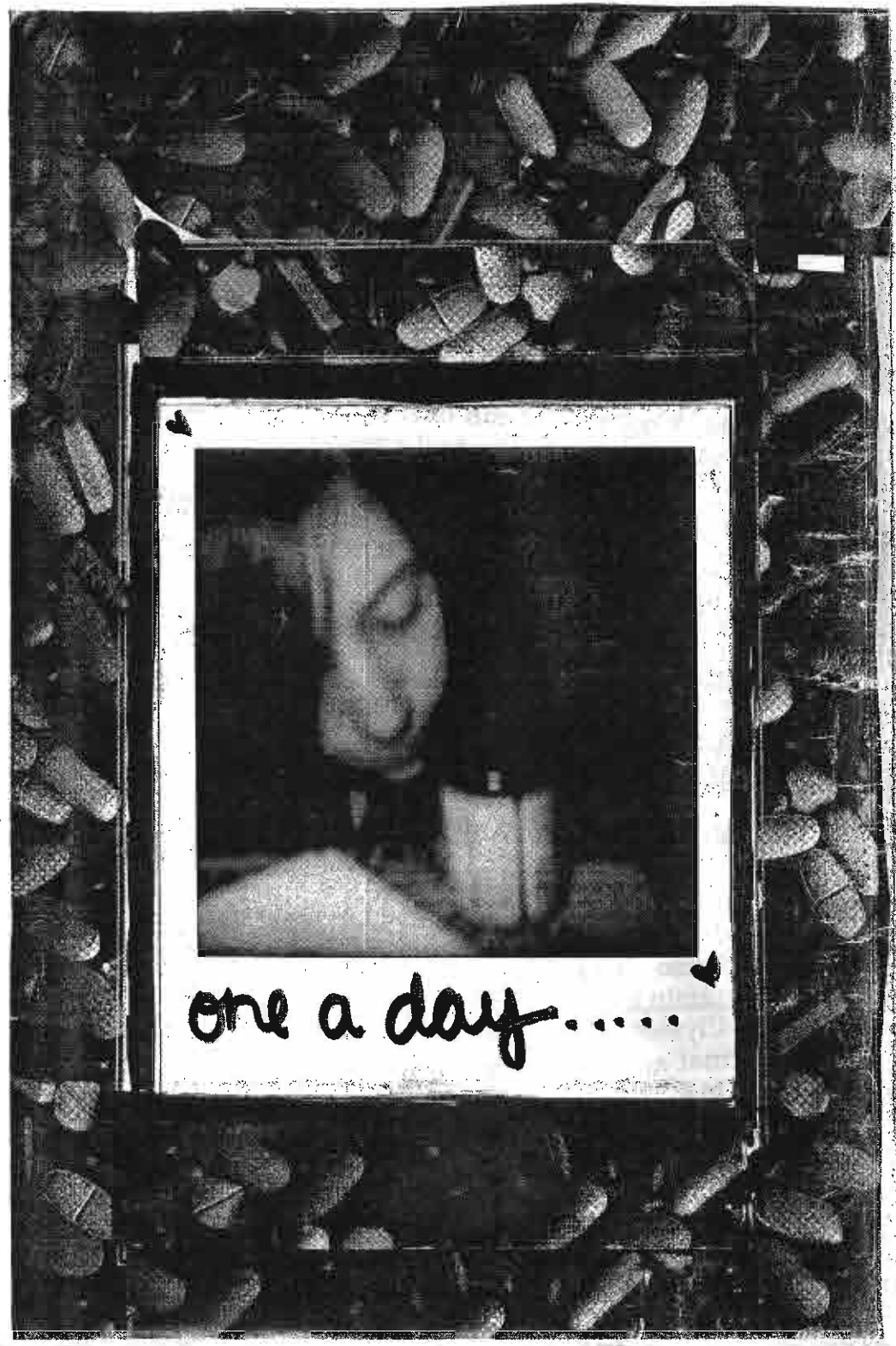
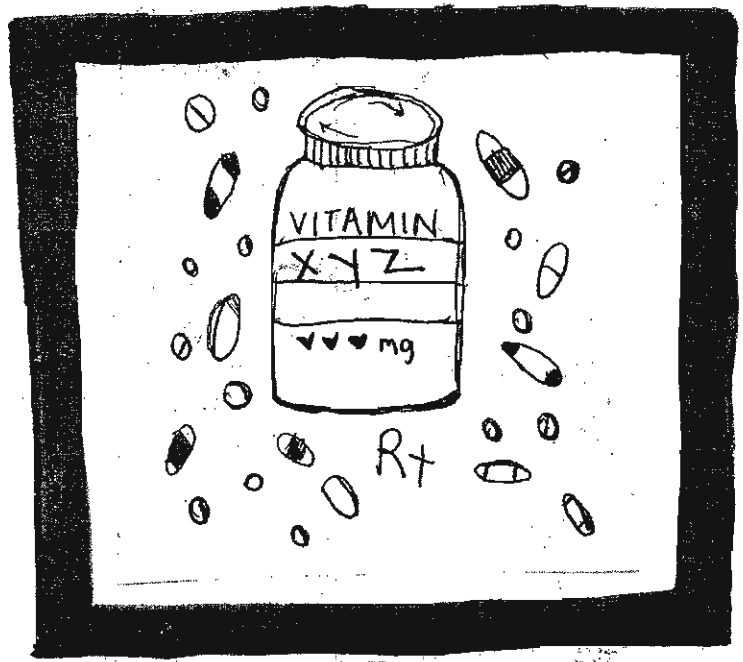


vitamins, minerals, and MENTAL HEALTH



the cpabs discussion

of wellness

AN INTRODUCTION OF SORTS:

I keep having this grandiose vision of authoring the most definitive and comprehensive guide to mental wellness through proper diet, nutrition and vitamin supplements. I keep getting all psyched up and proud and confident. I keep visualizing the final product, how it will feel in my hands and how your face will look when I watch you read it.

It is good to have visions, but it is also nice to be realistic. People spend their whole lives researching and studying so that they can author definitive works on this subject, and me, I am just some super obsessed girl who is trying to get this in your hands as quick as possible. As much as I'" would like to consider myself all knowing, I' am no expert or medical scientist. This does not negate what I am offering or make what I have to share less reliable. What I want to do is offer a starting point, facilitate a discussion on the idea of mental health and physical wellness.

See, I've been consistently coming in contact with various bits and pieces of nutritional and alternative health advice for years now. Each time I check my email and see a banner purporting the latest health supplement I read it, each time I"""" am waiting for an appointment, I flip through a magazine and scan for health issues, each time I am on the subway, I pick up a newspaper left behind and go right to the health and wellness section -you get the picture. Hell, I even hang out in the supplement aisles of health food stores reading labels. And no matter where I am or

CONCLUSION:

So there you have it! I hope this was everything you ever wanted to know about vitamins. This is only my first edition of this and I will probably try out different formats and ways to present all this information.

I would also like to do more installments of these discussions: particularities of vitamins and more specifications on how to go about actually including them in your life: like purchasing, the economics of vitamins, storage, and what kind of combos work best for certain disorders. I also want to do more personal story-telling, cause that's what I am best at doing and I think my stories can offer something even medical science cannot: hope and connection.

Until then: I value communication and would love it if you shared this with others and more importantly shared your thoughts on this with me!
ghostkidsonbikes@yahoo.com or
http://www.livejournal.com/users/Vickie_Velcro
AND
(Because I still write letters)
402 Grand Street Apt 2-F
Brooklyn, NY 11211

Much love and adoration,

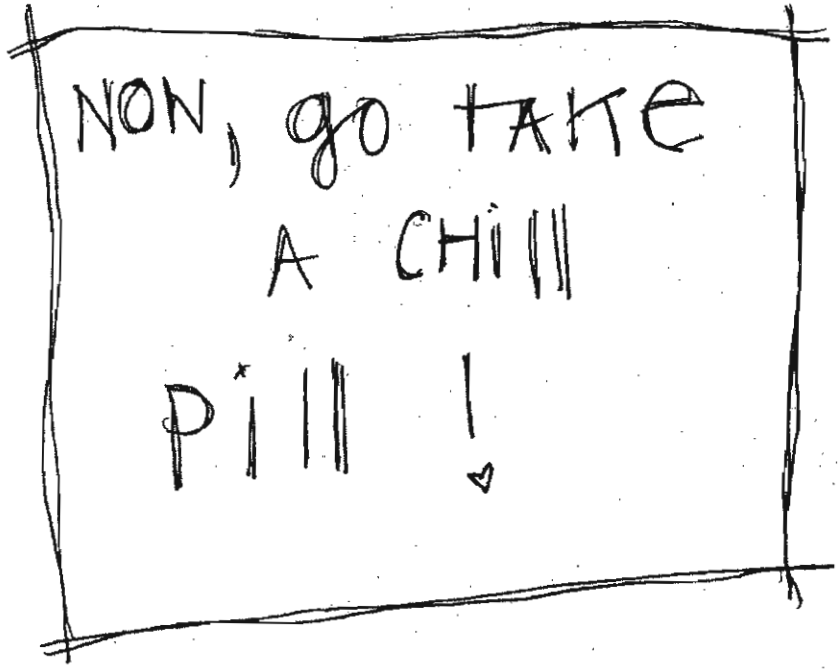
Vickie

P.S. I JUST came across this really rad book that you should also check out:
The Vitamin Strategy by Dr. Art Ulene and Dr. Val Ulene Ulysses Press 1994.
My format and the information I got from the webpage I cited is similar to their format.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind.

Toxicity and symptoms of high sulfur intake: None reported.

Best used with: Sulfur is best used with the B group vitamins.



what I am doing, I always end up talking to people about health, food, nutrition and vitamins. Probably because I am nearly obsessed with the subject. Its ok, its not some horrible, all-consuming obsession, more like a fixation and a strong interest.

Yes, I have a strong interest in your health. In my health. In everyone's health. And I have a strong opinion, a strong conviction that the powers to be, the structures above us do not have an interest in our health. Conversely, I truly believe it is in quite a few people's interests to keep us unhealthy: namely the U.S. agriculture industry, the pharmaceutical industry, the FDA, the Surgeon General, the advertisement and entertainment industry, the retail industry, etc. Don"t get me wrong, I' am not waging war on western medical science or any modern advancement in the study of health by uttering that last statements; that is not my intention in writing this pamphlet. These are only a few parts to our culture of un-health, only a few mechanisms that have taught us a lack of concern for what we put in and do with our bodies. There' are a whole lot of ingrained traditions and habits in our society that I believe have a lot to do with our diseases and illness. I want us to forge new traditions and new conceptions of wellness and to find new ways to achieve this.

So THIS is my disclaimer: I am not a physician, a dietician or a specialist of any kind. And I do not claim to have the utmost of literary skills, so I cannot promise the most linear writing. I a'm inspired and spastic, I' am engaged and excited. I' am Vickie and I

hope to do a few installments of this. Stick around and you might just like what you see.

EDITOR'S NOTES:

I want to get down to the basics of why nutrition and physical health are so super important for mental health, but I want to share just a tiny bit of my personal history so you can see where I'm coming from and why I this is all so important to me.

PERSONAL ANECDOTE OF SORTS:

When I was 14 my mom caught my brother and I fist-fighting. It was such a common scene to stumble upon in our house that she was only alarmed when I viciously started biting his arm. So, she dragged me to therapy to deal with my "anger" (more like rage). Back then, I was always upset. Upset at everyone and everything. If you said hello to me the wrong way, I would burst into tears. Everything set me off and I felt completely out of control. I secretly reveled in being so on edge, so unpredictable, wild and different. Nobody knew if I was about laugh or cry and boy, I did a lot of both. But, I could not contain myself even if I wanted to. I was scared of my own emotions and the way I couldn't stop them. I obliged to tell my therapist everything and anything because I knew I needed help and I wanted to feel ok. I wanted to feel ok, but not in some ignorance-is-bliss, idiotic American, everyone-always-has-to-be-happy-way. My therapist was actually really cool and understood where I was coming from: I was artsy and weird and punk rock and feminist and I was gonna be damned if I had to conform or block out the negative and sometimes

take diuretic pills or laxatives. If you suffer from diabetes, or suffer from kidney problems do not take a potassium supplement without your doctors consent.

Enemy of element: Potassium is lost from food when canning.

Other interesting points on potassium: If you suffer from kidney stones, you might benefit from increasing high potassium containing foods in your diet to supply more potassium to your body, as higher potassium levels have proved helpful in preventing kidney stones.

Food sources: Potassium is found in fruit, vegetables as well as whole grains, citrus fruit, molasses, fish and unprocessed meats

Sulfur

Sulfur, an acid-forming, non-metallic element is not treated as an essential mineral, since there are no specific deficiency symptoms. It is the hydrogen sulfate in onions that causes us to weep when cutting or peeling them. It is found in the hair, nails and skin, and as much sulfur as potassium is normally found in the body. Sulfur is used to detoxify the body, assist the immune system and fight the effects of aging, as well as age related illnesses such as arthritis. Although sulfur might not be an essential mineral, it is an essential element of protein, biotin as well as vitamin B1. It is part of the chemical structure of the amino acids methionine, cysteine, taurine and glutathione. It is further needed in the synthesis of collagen, which is needed for good skin integrity.

Deficiency of sulfur: Deficiencies will only really happen if a diet is deprived of protein, or a poorly planned vegan diet, and a protein shortage is more likely to happen than a sulfur deficiency. Sulfur is said to clean the blood and to help protect us against toxic build-up

result in fatigue, cramping legs, muscle weakness, slow reflexes, acne, dry skin, mood changes, irregular heartbeat. If you are into bodybuilding, it is also a good idea to increase your potassium intake, since potassium is needed to maintain your muscles in good form, controlling your muscle actions, and since potassium is lost in excessive sweating and urine. A great way to include this in your diet is to have a banana, citrus fruit or even a dash of apple cider vinegar.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. A daily intake of about 3,500 milligrams is needed. Potassium is well absorbed, but is not stored in large quantities in the body.

Toxicity and symptoms of high intake: Excessive potassium can be toxic and will affect your heart, but is mainly a problem when you suffer from a problem such as kidney failure.

Best used with: A person should take twice as much potassium as sodium, and is best taken with vitamin B6.

When more potassium may be required: Potassium is easily lost in the urine, and if large amounts of salt is ingested, it may be wise to take a potassium supplement. If you are suffering from vomiting, diarrhea or extreme sweating you may require more potassium or if your diet includes mostly processed foods, large amounts of caffeine, alcohol, or if you

painful realities of our world. "Fuk it, if not being like everyone else means I am crazy, so be it. I'd just prefer to think of myself as "not a moron. My mom was pretty much of the same mind, but was concerned that there was something more to me than just being a little different. It's cool; she was just being my mom. So I was diagnosed with severe depression and about to be put on suicide watch when my mom intercepted. The therapist was talking to her about the different options we had, and suddenly she stood up, exaggeratingly placed one hand on her hip and said in a thick, sassy Boston accent: "Woah, woah, woah. Wait a minute heah. Did you ask her what she ate? Did you ask her when she last slept? The girl eats nothin but popcon and sucks down ice cawfees all day. Then she wondahs why she's up all night listnin to rekids. She wondahs why she's irritated and cries. I tell her to go to bed and she doesn't. If she just ate a good meal and went to bed at a decent hour, I think she'd be ok."

The therapist looked at me with shock and I had to avert her gaze. I mean, we had discussed my sleep disturbances and I woul'd go off on tangents about nightmares or sadness, or feeling like I had to be doing something; that I wasn't good enough to deserve sleep. But I failed to mention that I actually had not tried lying down in bed and closing my eyes. And for her part, she was embarrassed at not having asked about my nutrition and eating habits. She assumed that my poor nutrition and lack of appetite were simple a result of my depression, confirming symptoms of a correct diagnosis. And she never

thought a 14 year old girl would be consuming 6 large cups of coffee a day. So she pulled out all the stops, said lets start this shit over again and the three of us did an experiment. I had to maintain a strict sleep/diet schedule and we would see where I was at after 3 weeks. I was given the choice to do this but with my mom being so rad and sassy and tough as shit, I didn't have the option of saying no. The rules were: I had to eat three full meals a day, no caffeine after 4pm and I had to be in my bed from 11 until 7. At 14, this was fate worse than death. I hated breakfast, there was nothing vegetarian in the house, the punks left school during lunch, and I loved my afternoon ice cawfees from dunks. More importantly, I feared this disgustingly domesticated, boring routine. Normal people slept. I didn't want to be like everyone else. I was terrified of complacency. I did my best art and writing late at night and this was my outlet, my self-expression. My mom respected and loved that about me. I asked her why she wanted some normal, unexciting daughter, why she wanted to stifle my creativity and individuality. She told me to cut the shit and to get over myself. It was hard for her too, because she had always stood by my creativity and individuality. She said that as much as these things were part of me and part of my release in this world they might just be the things that were killing me. You know the scene from "Girl Interrupted", when Wynona Ryder is in the mental hospital with her notebook, writing all the time and Whoopi Goldberg tells her, "You can't curl up with it. You gotta write it down and let it go". Well that was me: I'd write depressing poetry and stay up all night re-reading it and crying. I'd

Toxicity and symptoms of high intake: Ingesting dosages of phosphorus exceeding 3 to 4 grams may be harmful as it can interfere with calcium absorption, such as the high level in fizzy soda drinks.
Best used with: Calcium and phosphorus must be taken in balance or a deficiency might be formed. Vitamins D and A as well as iron, manganese together with protein and unsaturated fatty acids increase the effectiveness of phosphorus.
When more may be required: Aluminum hydroxide used in antacids may interfere with the absorption of phosphorus but a deficiency is most unlikely, as phosphorus is so abundant in our everyday diet.
Other interesting points: Keep in mind that calcium and phosphorus must be balanced in the diet.
Food sources of phosphorus: Meat, poultry and fish, as well as eggs, seeds, milk, carbonated soft drinks, broccoli, apples, carrots, asparagus, bran, brewer's yeast and corn contain a good source of phosphorus.

Potassium
Potassium is one of the electrolytes we all require to maintain health. It is needed for growth, building muscles, transmission of nerve impulses, heart activity etc. Potassium, together with sodium - potassium inside the cell and sodium in the fluid surrounding the cell, work together for the nervous system to transmit messages as well as regulating the contraction of muscles.
Deficiency of potassium: The kidneys excrete any excesses, but deficiencies are seldom found in people on normal diets, although most people could look at increasing their potassium intake. A deficiency may

water and mineral water may also supply it in fair quantities.

Phosphorus
Phosphorus is present in the body and can be found mainly in the bones and muscles - at a total body content of around 400 - 500 grams. It is very involved with bone and teeth formation as well as most metabolic actions in the body, including kidney functioning, cell growth and the contraction of the heart muscle. The main inorganic component of bone is calcium phosphate salts while cell membranes are composed largely of phospholipids. While it assists the body in vitamin use (especially some B group vitamins), it also is involved in converting food to energy.
Deficiency of phosphorus: Deficiency of this element is unusual but may have symptoms varying from painful bones, irregular breathing, fatigue, anxiety, numbness, skin sensitivity and changes in body weight. A ratio of 2:1 in the diet between phosphorus and calcium can cause low blood calcium levels. If calcium is in short supply relative to phosphorus there may be increased risks of high blood pressure and bowel cancer.
Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Males 800 mg per day and females 800 mg per day

make art to cry some more. My mom knew this and saw the reverse effects it had on me. So after a lot of screaming and fighting surrounding the 11 o'clock bedtime, I had to succumb. My mom said that she didn't care if I couldn't fall asleep, so long as the lights were out and I lay I bed from 11pm till 7am. She even prepared 3 vegetarian meals a day for me. I was pissed but I resigned. And after a few weeks, I got over the domesticated boring routine fears. Friends could say hi and I wouldn't burst into tears. I didn't feel "*happy*" I just felt more in control of things. And I was still racy and cool, because I was pretty much under house arrest. After a few weeks, I begrudgingly admitted to the therapist and my mom that I felt better; that they were right. And after this time, they stayed true to their promise: I was given the choice to go back or stick with it. I choose to go back to my old ways. At 14 I believed I could just think better sick and life was more fun being out of control.

There is more to my story, which will come later, but the point of sharing this bit with you now is that I was nearly committed and whole lot of my diagnosis, my supposedly clear cut evaluation was a result of *severely* poor nutrition and lack of sleep. There were other things going on: underlying causes to my lack of sleep; reasons for why I felt compelled to stay up in the first place or to drink so much coffee and not pay attention to food. I suffer from actual insomnia, but the truth is, I never took it upon myself to actively help myself. My mental health wars most certainly did not end there, but getting the proper diet and sleep relieved a lot of the bullshit, to the point that I could

actually see things clear enough to get the help I needed.

More importantly, I think my fear of being normal, my desire to keep the inspiration and creativity, to not give up the part of me that makes me who I am are actually quite common fears and speak to a lot of artsy, creative, and radical individuals who struggle with what it means to have a mental illness.

With this story told, if you are at all like me and pride your individuality and kookiness: do not fear being well. You can be healthy, relatively sane and still be as crazy inspired and creative as you are. Life only gets more enjoyable and although I no longer put out 2 fanzines in one night, no longer make a thousand fliers at 4am or write hundred page responses to Das Kapital, I've gotten more accomplished in the way of community and art since I've been taking good care of myself.

BEFORE WE GET STARTED

There a few basic assumptions and understandings I want to dispel so you know my context and the framework I am using.

THE NEED FOR HEALTH INFORMATION:

Mainstream society and medical advice already extols the virtues of healthy living, proper diet and exercise. At the risk of sounding overly redundant I am going to

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind.Males 19-30 years 400 mg per day Males >30 years 420 mg Females 19-30 years 310 mg Females >30 years 320 mg. In supplementation it is normally taken in dosages of 750 - 1,000 mg per day.
Toxicity and symptoms of high intake: If you have kidney or heart problems first check with your medical practitioner before taking a magnesium supplement as an over supply can in severe cases lead to coma and death.
Best used with: It is best taken with calcium, iron, B group vitamins as well as vitamin E.
When more magnesium may be required: It has been found that people under stress have low magnesium levels, indicating that magnesium may be beneficial to those under stress.
Enemy of magnesium: Consumption of alcohol, diuretics, high levels of zinc and vitamin D may increase your magnesium requirement. This will also apply if you are taking diuretics (water pills), have diarrhea or perspiring heavily as well as taking large amounts of vitamin C.
Other interesting points: Magnesium is being investigated for the treatment of migraine headaches.
Food sources: Magnesium is found in dairy products, fish, meat and seafood, as well as in legumes, apples, apricots, avocados, bananas, whole grain cereals, nuts, dark green vegetables, and cocoa, while hard

is of vital importance in our health. Magnesium helps with formation of bone and teeth and assists the absorption of calcium and potassium. Where calcium stimulates the muscles, magnesium is used to relax the muscles. It is further needed for cellular metabolism and the production of energy through its help with enzyme activity It is used for muscle tone of the heart and assists in controlling blood pressure. Together with vitamin B 12, it may prevent calcium oxalate kidney stones: It helps prevent depression, dizziness, muscle twitching, and pre-menstrual syndrome. It can help prevent the calcification of soft tissue and may help prevent cardiovascular disease, osteoporosis, and certain forms of cancer, and it may reduce cholesterol levels. Magnesium assists the parathyroid gland to process vitamin D, and a shortage here can cause absorption problems with calcium.

Deficiency of magnesium: A severe deficiency caused by mal-absorption, chronic alcoholism, renal dysfunction, or the use of certain medications can cause neuromuscular manifestations, and personality changes can occur. Many cardiovascular problems are indicated with magnesium in short supply and rapid heartbeats as well as fatigue, irritability, and seizure can occur. Insomnia, poor memory, painful periods, depression, hypertension and confusion may also indicative of magnesium in short supply. It is used for the management of premature labor, and for the prophylaxis and treatment of seizures in toxemia of pregnancy. A deficiency may also be a contributing factor to incontinence in older people and bedwetting in children.

try to state it more clearly that these are valid advisements and attempt to explain just why they are so necessary for good mental health. There are many factors in mental illness, but I think it is safe to say that the mind/body connection is one of the biggest. Here' is my obligatory knock on mainstream, western, medical science: the mind/body connection has become dissolved by various institutions and its importance diminished. Even the fact that I am writing about the *physical* health impacts on *mental* health denotes some sort of split, when really they should be talked about as one in the same. This idea of a mind/body connection has become relegated to some sort of new age hippie bullshit when it is actually a fairly practical, rational, logical and simple way to conceive of proper human health. Historically, ailments of the mind and ailments of the body were treated as one in the same. You could not heal one without the other.

CONSIDER SAYING BRAIN/BODY INSTEAD OF MIND/BODY FOR A MOMENT:

Your brain runs off of and produces chemicals and neurotransmitters which are fueled by nutrients. Your body takes in nutrients and energy through food and supplements and processes them through your bloodstream. Your bloodstream carries nutrients and energy to your brain which then uses them to function and to make sure the rest of your bodily systems are functioning properly too. Kinda simplistic, but that' is basically the way it works. Your central nervous system, which the brain and mind are

a part of, is called the *central* nervous system for a reason: it i's the powerhouse that oversees the rest of the body's systems. But shit, they all gotta work together. If there' is a problem up in the central tower, the rest of the factory might not be working at maximum productivity either. And vice versa: if the other little factories are not sending the right quality or amount of the right stuff, mister manager aint gonna be getting all the info it needs to run the whole operation efficiently. So there' you have it, a nice, little, non-hippie way to understand the brain/body connection. We can discuss concepts of the mind later. For now let us talk vitamins and nutrients.

FOOD AND NUTRITION: MACRO AND MICRO NUTRIENTS:

Your body and your brain need energy and a constant supply of fuel. Food and calories provide this. When you eat, the calories and fuel are recognized by your body as MACRO nutrients and MICRO nutrients. If there's some kind of disruption: some kind of imbalance of nutrients and vitamins its called a deficiency. Deficiencies can be the result of an existing illness or can cause/contribute to an illness. There i's a symbiotic relationship here: an existing illness may deplete the body's supply of vitamins and nutrients, which in turn exacerbates the illness. That's why its important to understand vitamins and nutrition.

Macro nutrients, as the name denotes are primary sources of energy and nutrition. I hesitate to say that they are more important than micro nutrients, but in reality you probably could survive on just macro nutrients. The point of this is not survival, its

for optimum health. Chloride in the diet works with potassium and sodium, the two electrolytes, to control the flow of fluid in blood vessels and tissues, as well as regulating acidity in the body, and also forms part of hydrochloric acid in the stomach.

Deficiency of chloride: A deficiency of chloride is extremely rare and unlikely to occur but a deficiency of chlorine in the body may cause excessive loss of potassium in the urine, weakness and lowered blood pressured.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind.

Toxicity and symptoms of high intake: A high concentration of chloride in the body may result in fluid retention, but sodium is normally the culprit for the retention.

When more may be required: When you suffer from vomiting, diarrhea and excessive sweating you might be in need of extra chlorine.

Other interesting points: The chlorine in tap water, used for purification, normally evaporates when boiled.

Food sources: Chloride is found in table salt as well as kelp, olives, tomatoes, celery etc.

Magnesium

Magnesium plays an important role in at least 300 fundamental enzymatic reactions and for that reason

form in your kidneys, which could cause kidney stones.

Best used with: It is recommended to take one to two parts of calcium and phosphorus to one part of magnesium. Vitamin D and vitamin A are beneficial to have around this nutrient and it is great when taking a supplement that it is chelated with amino acids.

When more may be required: More calcium may be needed if you suffer from osteoporosis, are lacking in Vitamin D, if you have a gum disease or eat processed foods, ingest excess protein, fat, sugar or caffeine, salt or fizzy soda drinks. Drinking bottled water with a low mineral content could require more dietary calcium and so may the consumption of alcohol, taking a birth control pill, diuretic (water pill) antacids or if you are on hormone replacement therapy.

Enemy of calcium: Phosphorus, sodium, alcohol, coffee and white flour aids the loss of calcium from the body, while too much protein, fat and sugars can have a negative effect with the absorption thereof. Tetracycline and calcium bond together which impairs the absorption of both.

Other interesting points: Estrogen promotes deposits of calcium in the bones.

Food sources of calcium: Milk, milk products, beans, nuts, molasses and fruit contain good amounts of calcium. Fish and seafood, as well as green leafy vegetables supply good amounts of calcium.

Chloride

Chloride is formed when chlorine gas dissolves in water but is also a dietary mineral needed by the body

wellness and quality of life and healing. Micro nutrients are just as important, but they do play more of a supporting role. There are three macro nutrients: proteins, fats, and carbohydrates. These are the basis of any food/calorie source and the essential vitals needed for the body to function. Despite any so-called diet advice, your body only interprets food as one of these three things. Of course some foods are fatty proteins, or high protein carbohydrates, but again your body just knows these three forms of calories. All three are equally necessary and important. Proteins build and repair cell tissues. Body cells are always carrying out different functions and doing all kinds of things and they get worn out and tiered. Proteins are really dense and concentrated so they break down into fuel for your body in a slow and steady kind of way. Fats protect cell tissues, assist in the absorption of protein, and help transport protein, carbohydrates and micro nutrients from cell to cell throughout your whole body. Fats are really really dense and concentrated so they break down into fuel even slower than proteins. Carbohydrates are basically the quickest burning fuel supply for your cells: they deliver the most energy in the quickest way to your cells and your whole body. Neither macro nutrient is more important than the others. They all work together: since carbohydrates are quickly broken down and quickly used up by your cells, proteins make sure this process is slowed down a bit so your body gets a continual supply of energy and nutrients. Fats do a nice job of this too. Fats also help your body absorb and store the quick energy from carbohydrates. Fats are really nice too because they

help protect and pad your cells while their using up carbohydrates and carrying out functions.

So the three macro nutrients are the most basic forms of energy for your body: they work together to deliver a nice steady supply of energy, help your cells use this energy and then help your cells rest and repair themselves when they get tiered. This is why you gotta consume all three: you gotta eat foods high in protein at least three times a day: like a piece of meat/big chunk of tofu/cup of beans three times a day. You want to eat a decent amount of healthy fat (not trans/hydrogenated/partially hydrogenated fat: like fake fats from processed foods or fried foods), but natural healthy fats like canola/olive/sunflower oil, oil from plants or nuts. And you definitely wanna consume a whole lotta whole grains like slices of whole wheat bread, whole grain cereals, whole grain crackers and stuff like rice, quinoa, spelt, barley, oats millet, cornmeal and so forth (–not so much wonder bread and potato chips though). Its always good to eat a little of each macro nutrient at each meal. You don't wanna get a rush of energy that will be quickly used up and burned off, and you don't wanna consume a whole lot of something that's gonna take forever to break down and provide your cells with fuel. This is the direct link for mental wellness and eating habits: an improper balance of carbohydrate/fat/protein consumption will lead to just that: energy rushes, crashing, fatigue, dizziness, fidgetiness, anxiety, lethargy, crankiness etc. For us folks already susceptible to these things, good eating habits are so important!

breaks down fats, maintains proper cell membrane permeability, aids in neuromuscular activity and helps to keep the skin healthy. Calcium also stops lead from being absorbed into bone.

Deficiency of calcium: Prolonged bone re-absorption from chronic dietary deficiency results in osteoporosis - from either too little bone mass accumulation during growth or higher rate of bone loss at menopause. Dietary calcium deficiency also has been associated with increased risk of hypertension, and colon cancer. When it is in short supply, a variety of symptoms from aching joints, eczema, elevated blood cholesterol, heart palpitations, brittle nails, hypertension (high blood pressure) and insomnia can become evident. Muscle cramps, nervousness, numbness in the arms and legs, rheumatoid arthritis, convulsions, depression and delusions have also been noted.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. 1,000 mg per day for people aged 19-50 years 1,200 mg per day for people over the age of 51 years. The maximum level of calcium is 2.5 g/day. It is also recommended one to two parts of calcium and phosphorus to one part of magnesium.

Toxicity and symptoms of high intake: Excess calcium supplementation has been associated with some mineral imbalances such as zinc, but combined with a magnesium deficiency it may cause deposits to

Other interesting points: Absorption of the bioflavonoids can be a bit slow, but small amounts can be stored in the body. If you are suffering from cold sores, consider taking a supplement of 1,000-mg Vitamin C and 1,000 mg Bioflavonoids, and then 500 mg of each, three times a day. A daily intake of Vitamin C and Bioflavonoids may make you less susceptible to cold sores.

Food sources of bioflavonoids: Bioflavonoids are found in the white material just beneath citrus peel, as well as in peppers, grapes, pine bark, onions, garlic, blue and red berries, green tea as well as buckwheat.

NARRATIVE ON MINERALS:

Calcium

Calcium is needed for so many different functions in the body, from bones, to blood clotting, your muscles etc. People often think of bones as a static piece of the body, where very little change occurs, but that is a totally incorrect perception. Bone is a dynamic part of the body and calcium is constantly flowing into, and out of it. Calcium is needed for the formation and maintenance of bones, the development of teeth and healthy gums. It is necessary for blood clotting, stabilizes many body functions and is thought to assist in bowel cancer. It has a natural calming and tranquilizing effect and is necessary for maintaining a regular heartbeat and the transmission of nerve impulses. It helps with lowering cholesterol, muscular growth, the prevention of muscle cramps and normal blood clotting. Furthermore it also helps with protein structuring in DNA and RNA. It provides energy,

SIDE NOTE ON EXCERSICE:

That i's why exercise is important too. I do no't necessarily mean working out and going to the gym and stuff, although that' is cool too. It is necessary t get your blood pumping and to move around. It gets all your cells motivated, gets your nutrients flowing and actually gives you more energy. There' are plenty of well documented studies pertaining to the effects exercise on mental well-being. It does not take much effort to find more information on this idea if you are interested. Exercise and movement that gets your blood pumping has been proven to raise serotonin levels, produce endorphins and regulate the same neurotransmitters that play a variety of roles in mental illnesses. For folks like me with PTSD, it's a great way to make sure all the stress and adrenaline that is produced and builds up is released and kept a bay. At the risk of sounding cheesy, I must say that regular exercise greatly reduces both the physical an mental repercussions of my PTSD! It can for many other mental illnesses too.

People who do not get enough exercise often say that they are too tiered or too sore to exercise and I know that depression of any kind can wear you the fuck out. Especially when you feel like shit and you have not slept in forever, you feel worn out and exercise is the last thing on your mind. I know this, but trust me once you start moving and exercising, you actually ge MORE energy. Plus, being connected to your body ca help you feel better about yourself and better about stuff in general. Again, there' is plenty of documentation on the positive effects of exercise on feelings of self-worth.

I know it is hard to get started and it is not an issue o determination or motivation for folks with mental illnesses. Some days I have knots in my shoulders and my leg muscles are so cramped from whatever subconscious shit is going on in my brain, or I' am so exhausted from being up all night I can not conceive of working out. But once I start out on a light stroll, the aching subsides. And it does not take much to reap the benefits: turning on your favorite record and dancing as hard as you can in your bedroom can rais your spirits, your serotonin and get the oxygen flowin to your brain. Likewise, getting out in the fresh air, riding your bike or skateboard or going for a little walk is just fine too. Sunshine compliments aerobic activity wonderfully too. If you are experiencing anxiety, social tensions, or are generally creeped out by the outside world, you can always go back home and take it easy. Some days I try and just can not do it and that is ok too. Taking it easy, relaxing when yo need to is just as important.

You should strive for at least 30 minutes of continuous moderate activity of any kind. Most experts say at least 3 times a week, but I think you should pick something you like that makes you feel good and do it whenever the hell you want. Getting into a schedule can be comforting and setting a time to put all bullshit aside and just connect with you an your body can be so helpful. There is something so calming about just focusing on one thing and one thing only, like sitting and stretching. I know we all got hella shit going on, but sometimes you gotta just stop and take fifteen minutes to sit and chill out. Ever when I got a million other things going on, I

Bioflavonoids are thought to enhance the absorption of Vitamin C, and possibly to prolong the effectiveness of it as well. These are super active substances, and can add a great deal to your nutritional needs in health and disease. This nutrient acts together with Vitamin C to help maintain the thin walls of the capillaries, therefore preventing bleeding or bruising. Bioflavonoids have been linked to having an antibacterial effect, stimulating bile production, promoting circulation and even assisting with fighting allergies, asthma etc.

Deficiency of vitamin P: If a diet contains enough fruit and vegetables, bioflavonoids should not be deficient, but deficiency would show up as bruising. Where antioxidants are indicated and none present bioflavonoids could be of help, as well as iron deficiency, since it helps with the absorption of iron.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient.

In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. No dosage has been determined but 500 mg per day is indicated for supplementation.

Toxicity and symptoms of high intake: Very high dosages of bioflavonoids may cause diarrhea.

Best used with: Bioflavonoids should be taken with Vitamin C (ascorbic acid) and calcium.

When more may be required: Bioflavonoids should be taken with Vitamin C (ascorbic acid) and calcium.

antibiotics, high dosages of Vitamin E, or Calcium and mineral oils.
Enemy of vitamin K: When you are prone to bruising easily, or when pregnant you might be in need of more Vitamin K. But be careful not to take too much Vitamin K in the last stages of pregnancy, since it could be toxic for the baby.
Other interesting points: Some people are of the opinion that it also promotes longevity.
Food sources of vitamin K: Vitamin K is found in leafy vegetables, cheese and liver. It is also found in asparagus, coffee, bacon and green tea.

Vitamin P
Bioflavonoids also called Vitamin P are not strictly speaking a vitamin, but for easy classification, we are listing it as a vitamin. The term bioflavonoids refers to many different ingredients and include hesperin, hesperidin, eriodictyol, quercetin, quercertrin, rutin etc. This nutrient can not be manufactured by the body and must be supplied in the diet.
Bioflavonoids enhance the action of Vitamin C and for this reason they should be taken together.
Bioflavonoids are effectively used in the treatment of sport injuries as they are pain relieving. They may also be used in relieving pain in the legs, across the back and can lessen the symptoms of prolonged bleeding, a low serum calcium as well as oral herpes. Bioflavonoids may also be active in preserving the structures of capillaries, have an antibacterial effect and promote circulation. They may be indicated in the production of bile, lowering blood cholesterol levels and in the prevention and treatment of cataracts.

sometimes just stop everything and spend a few minutes stretching and it makes everything else slightly more bearable.

BACK ON TRACK: MICRO NUTRIENTS:

Returning to the subject of micro nutrients, these are what we commonly refer to as vitamins. **MICRO** nutrients can be separated into three categories as well: vitamins, minerals and trace minerals, with the first being the topic of greatest importance and interest for this discussion.

There are two kinds of vitamins: fat soluble and water soluble. Without going into chemistry or physics, the best way to understand the difference is that there are vitamins your body uses up frequently and these need to be replenished daily, and there are vitamins that your body actually helps to produce or holds onto for longer periods of time and therefore do not require as much replenishment.

There are basic requirements as purported by the FDA and other Government Health Committees through the use of nutrition labels and Recommended Daily Allowances (RDA). Doctors and scientists have come up with basic guidelines for even therapeutic vitamin intake, but it is really up to you individually to assess your health and concerns. By this I mean that only you know if you are active, you know if you eat certain foods, are on birth control or lead a very active lifestyle.

GUIDE TO READING LABLES AND UNDERSTANDING WHAT SUPPLEMENTS TELL YOU:

Please don't get overwhelmed

or confused! This is just a guide to the basics of vitamins and nutrients and how they effect mental health. Use this a starting point to find out more and to ask more questions.

Good nutrition and proper intake of vitamins is important for health in general, but is also important for therapeutic purposes. By therapeutic purposes, I mean taking this idea that we need vitamins and placing it in the context of: how much of a vitamin do we need? and for what healing purposes? As stated, I do not have the full knowledge of proper amounts of every vitamin nor do I know all their therapeutic purposes. I just know that the Recommended Daily Allowances for vitamins, (the little percentage things on vitamin bottles nutrition labels), are based off of some pretty bunk data purported by some pretty lame institutions who rely on some pretty questionable research.

For example: the U.S. Food and Drug Administration and all the departments that come up with the US Daily Allowances say that we as people need 60 mg of vitamin C a day. That' is considered a RDA of 100%. Any mainstream doctor will tell you that 60mg is nothing! Certain vitamins like C, get depleted and used so fast by daily activity, environmental factors, colds, illness, and stress that we require more than just what the government stipulates, on a regular basis. So when you see that a vitamin supplement reads XXX% be sure to look at the milligrams on the label too. Unfortunately I am not an expert, and I' am not at a place in my research where I can tell you what milligrams you need but, I can offer some fairly

converting glucose to glycogen, this can then be stored in the liver. There are some indications that Vitamin K may decrease the incidence or severity of osteoporosis and slow bone loss.

Deficiency of vitamin K: A deficiency of this vitamin in newborn babies results in hemorrhagic disease, as well as postoperative bleeding and hematuria while muscle hematomas and inter-cranial hemorrhages have been reported. A shortage of this vitamin may manifest itself in nosebleeds, internal hemorrhaging.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Males 80 micrograms per day and females 70 micrograms per day.

Toxicity and symptoms of high intake: Toxicity does not easily occur with normal dietary intake of this vitamin, but can happen if synthetic compound vitamin K 3 is taken. High to toxic uptake in the synthetic form ca cause flushing and sweating. Jaundice and anemia may also develop. If you are taking anti-coagulant (to prevent blood clotting) medication, consult your medical practitioner before taking a Vitamin K supplement.

Best used with: Dietary fat is necessary for the absorption of this vitamin.

When more may be required: This nutrient can be destroyed by freezing and radiation as well as air pollution. Absorption may be decreased when rancid fats are present, as well as excessive refined sugar,

users of antibiotics may also have to look at their biotin levels.

Enemy of element: Biotin is not easily destroyed

Other interesting points: It seems that biotin may affect hair color, together with PABA, folic acid and pantothenic acid. Some research had varying results with biotin supplements in returning hair to it original color. This has proved only successful to a limited degree and only when natural vitamins were used, as the synthetic vitamins did not influence the results very much.

Food sources: Biotin is present in cheese, beef liver, cauliflower, eggs, mushrooms, chicken breasts, salmon, spinach, brewer's yeast, nuts and can be manufactured in the body should a small shortfall occur.

Vitamin K

Vitamin K can be produced in the intestines and this function is improved with the presence of cultured milk, like yogurt, in the diet, Vitamin K is classified as a fat-soluble vitamin. Vitamin K is found in nature in two forms - K1, also called phylloquinone, is found in plants and vitamin K2, also called menaquinone, which can be synthesized by many bacteria. Vitamin K3, menadione, is a synthetic form of this vitamin which is manmade. Vitamin K is used in the body to control blood clotting and is essential for synthesizing the liver protein that controls the clotting. It is involved in creating the important prothrombin, which is the precursor to thrombin - a very important factor in blood clotting. It is also involved in bone formation and repair. In the intestines it also assists in

reliable stuff that I've come across and I can tell you what I take and I can tell you that you probably most definitely need more than whatever the government says is 100%". Don't be alarmed at vitamin supplements that read "2389%, as –this amount may be just what you need, if not less. Sticking with the Vitamin C example, I personally take 500 mg everyda (almost). This is because I live in an urban environment with cars and pollution and stuff, I smoke cigarettes, I'm a really active person and I'm pretty damn stressed. On days when I'm not feeling s hot I wi'll maybe take 1000 mgs. If I get sick, shit, I will even take more. The toxicity of Vitamin C is relatively low, so there is not much to worry about it. You' will just piss out what you don't need. Toxicity for the vitamins where it may be of concern is noted below.

All information below was borrowed from this pretty badass personal website:

http://ivy league0.tripod.com/rhyme of the ancient wanderer/id78.html

This guy wrote so clearly and his research was so thorough and understandable, I do not think I could do a better job.

PLEASE keep in mind that these are not doctor's orders and do not constitute the end all be all source of information on the subject.

GUIDE TO READING THE NEXT TWO SECTIONS: This first section is a somewhat clinical overview of how these vitamins and minerals effect neurotransmitters and brain functioning. It is

little overwhelming, but I did want to include it for validity and reference for those interested in the biochemical aspects of vitamins. The second section is more narrative and provides dosage information and food source information with more applicable ways to include these things in your life. *So make a cup of tea and browse at your leisure.*

II. SORTA CLINICAL OVERVIEW

Vitamins

*** Vitamin C**

o Involved in both serotonin and norepinephrine synthesis.

o High dose vitamin C reduces copper levels and some heavy metals (lead, cadmium, mercury) and other toxins detrimental to brain health.

o Water soluble antioxidant involved in numerous metabolic reactions.

o Large doses of vitamin C may have an anti-histamine effect.

o Subclinical deficiencies can produce depression, which requires the use of supplements. Supplementation is particularly important if you have had surgery or an inflammatory disease. Stress, pregnancy, and lactation also increase the body's need for vitamin C, while aspirin, tetracycline, and birth control pills can deplete the body's supply.

*** Vitamin E**

o May protect fatty components of brain tissue from free radicals and peroxidation.

o Deficiency is associated with neurological deterioration.

in various metabolic chemical conversions, but also helps with the transfer of carbon dioxide. Biotin is also helpful in maintaining a steady blood sugar level. Deficiency of biotin - vitamin H Although a shortage of Biotin is very rare, it can happen and may result in dry scaly skin, fatigue, loss of appetite, nausea and vomiting, mental depression as well as tongue inflammation and high cholesterol.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Adults 300 microgram (0.3 mg) per day and pregnant and lactating women 300 microgram (0.3 mg) per day.

Toxicity and symptoms of high intake: No known toxic levels are known, as excesses are easily lost in the urine and feces. No known side effects are known.

Best used with: Biotin should be taken with the B Group Vitamins, but Vitamin C, Vitamin B5 (pantothenic acid), Vitamin B-12 and Sulfar are good companions to it. A tricologist will sometimes add biotin to the diet of a patient suffering from alopecia, to help with severe hair loss, but it must be in the right quantities to satisfy the inter-dependence of other nutrients.

When more biotin may be required: Bodybuilders and athletes consuming raw eggs should be careful of not running into a biotin shortage, since raw eggs contain avidin, which binds with the biotin, making it impossible to be absorbed by the body. Long term

with inorganic iron supplements as it may destroy the vitamin, while organic iron, such as ferrous gluconate and ferrous fumarate does not affect the vitamin.

Other interesting points: When buying a supplement you often see "d-alpha-tocopherol" on the list of ingredients - that means that the Vitamin E is from natural sources, whereas "dl-alpha-tocopherol" will indicate that it is from synthetic origin. As such the origin of the vitamin does not influence the efficiency thereof.

Food sources of vitamin E: Vitamin E is found in nuts, oils, vegetables, sunflower seeds, whole grains, spinach, oils, seeds, wheat oils, asparagus, avocado, beef, seafood, apples, carrots, celery etc.

Vitamin H

Biotin, as referred to as Vitamin H is part of the Vitamin B complex group and might be interesting to some people since one of the most visible symptoms of shortage of this vitamin is thinning of hair which can lead to total hair loss. This does not mean that baldness is a sign of Vitamin H in short supply - severe hair loss might just be indicative of biotin being deficient. Vitamin H is used in cell growth, the production of fatty acids, metabolism of fats, and proteins. It plays a role in the Kreb cycle, which is the process in which energy is released from food. Biotin is also indicated for healthy hair and skin, healthy sweat glands, nerve tissue, and bone marrow, and assisting with muscle pain.Vitamin H not only assists

o May protect dietary omega-3 fatty acids from peroxidation.

o One study found people with major depression had significantly lower vitamin E levels than controls.

*** Folate (folic acid)**

o Involved in serotonin, norepinephrine and histamine synthesis.

o One review reported that as many as 15-38% of adults diagnosed with depression may be deficient or borderline in folate.

o As supplemental folic acid can raise histamine levels and should be avoided by individuals with high histamine levels.

o This B vitamin is needed for DNA synthesis. It is also necessary for the production of SAM (S-adenosyl methionine). Poor dietary habits contribute to folic acid deficiencies, as do illness, alcoholism, and various drugs, including aspirin, birth control pills, barbiturates, and anticonvulsants. It is usually administered along with vitamin B12, since a B12 deficiency can mask a folic acid deficiency. Pregnant women are often advised to take this vitamin to prevent neural tube defects in the developing fetus.

*** B12 (cobalamin)**

o B12 is essential for the health of the central nervous system. A deficiency can result in impaired synthesis of myelin (fatty substance that insulates nerves), impaired synthesis of nerve sheaths and an imbalance of hormone like molecules in nerve tissue. These impairments result in neurological symptoms.

o B12 is also involved in the synthesis of a compound, called SAM-e, which donates a chemical

group in the synthesis and breakdown of neurotransmitters.

o B12 deficiency results in the trapping of folate in a form unusable to the body leading to symptoms of folate deficiency.

o One review found as many as 30% of patients hospitalized for depression were deficient in B12.

o A study of older women found 17% of the 100 mildly depressed subjects, and 27% of the 122 severely depressed women where deficient in B12. The subjects with vitamin B12 deficiency were 2.05 times as likely to be severely depressed as were non-deficient subjects.

o The normal B12 serum reference range in the US is 200-900 pg/ml while that in Japan is 500-1300 pg/ml. Some physicians, such as John Dommisse M.D. question the reference range and recommend people maintain serum levels above 600 pg/ml. Further research is needed to clarify this, in the meantime it may be best to be on the safe side.

o Because vitamin B12 is important to red blood cell formation, deficiency leads to an oxygen-transport problem known as pernicious anemia. This disorder can cause mood swings, paranoia, irritability confusion, dementia, hallucinations, or mania, eventually followed by appetite loss, dizziness, weakness, shortage of breath, heart palpitations, diarrhea, and tingling sensations in the extremities. Deficiencies take a long time to develop, since the body stores a three- to five-year supply in the liver. When shortages do occur, they are often due to a lack of intrinsic factor, an enzyme that allows vitamin B12 to be absorbed in the intestinal tract. Since intrinsic

of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Males 300 iu (10 mg) per day and females 8 mg per day

Toxicity and symptoms of high intake: Toxicity is not easily reached. High intakes may induce diarrhea, nausea or abdominal wind. People on anticoagulant medication should not take more than 1,200 iu per day.

Best used with: Take Vitamin E with the range of antioxidants - that being vitamin C, beta-carotene and selenium. Vitamin B group vitamins as well as inositol and manganese is also indicated.

When more may be required: When your diet is high in refined carbohydrates, fried foods and fat, or you are taking a birth control pill or hormone replacement therapy, then a supplement of Vitamin E might be called for. People suffering from pre-menstrual cramps, menopausal hot flushes, after a stroke or suffering from a heart disease might benefit from Vitamin E. It might also be beneficial to relieve painful or swollen joints, if you are exposed to pollution (that is about all of us), suffer from poor circulation or from Dupuytren's disease, which is a thickening of the ligaments in the hands.

Enemy of vitamin E: Vitamin E is lost in food processing which includes milling, cooking, freezing, long storage periods and when exposed to air. Vitamin E should not be taken together

from being oxidized. This antioxidant capability is then also great in helping to prevent degenerative diseases - including heart disease, strokes, arthritis, senility, diabetes and cancer. It also assists in fighting heart disease and cancers and is essential for red blood cells, helps with cellular respiration and protects the body from pollution - especially the lungs. Vitamin E is also useful in preventing blood clots from forming and promotes fertility, reduces and/or prevents hot flushes in menopause. An increase in stamina and endurance is also attributed to Vitamin E. Vitamin E is also used topically to great effect for skin treatments - in helping the skin look younger, promoting healing and cutting down the risk of scar tissue forming. Used on the skin it is also reported to help with eczema, skin ulcers cold sores and shingles.

Deficiency of vitamin E: Deficiency of Vitamin E is not common, and the symptoms not very clear cut, but may include fatigue, inflamed varicose veins, wounds healing slowly, premature aging and sub-fertility. When Vitamin E is in short supply symptoms may include acne, anemia, muscle disease, dementia, cancers, gallstones, shortened red blood cell life span, spontaneous abortion (miscarriage), and uterine degeneration.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use

factor diminishes with age, older people are more prone to B12 deficiencies.

* **B1 (thiamine)**
    - o Thiamine deficiency can induce depression and irritability.
    - o High dose thiamine may increase levels of monoamines (serotonin, dopamine, norepinephrine) by inhibiting monoamine oxidase.
    - o The brain uses this vitamin to help convert glucose, or blood sugar, into fuel, and without it the brain rapidly runs out of energy. This can lead to fatigue, depression, irritability, anxiety, and even thoughts of suicide. Deficiencies can also cause memory problems, loss of appetite, insomnia, and gastrointestinal disorders. The consumption of refined carbohydrates, such as simple sugars, drains the body's B1 supply.
* **B2 (riboflavin),**
    - o Deficiency can induce depression.
    - o Involved in norepinephrine synthesis.
* **B3 (niacin)**
    - o Involved in serotonin and norepinephrine synthesis.
    - o Deficiency symptoms include depression, disorientation and memory loss.
    - o May decrease allergic responses.
    - o Pellagra-which produces psychosis and dementia, among other symptoms-was eventually found to be caused by niacin deficiency. Many commercial food products now contain niacin, and pellagra has virtually disappeared. However, subclinical deficiencies of vitamin B3 can produce

agitation and anxiety, as well as mental and physical slowness.

* **Vitamin B5 (pantothenic acid)**:Symptoms of deficiency are fatigue, chronic stress, and depression.Vitamin B5 is needed for hormone formation and the uptake of amino acids and the brain chemical acetylcholine, which combine to prevent certain types of depression.

* **B6 (pyridoxine)**

o Involved in serotonin and/or norepinephrine synthesis.

o Involved in the synthesis of gamma-aminobutyric acid (GABA).

o Deficiency symptoms include irritability, depression, and confusion.

o This vitamin aids in the processing of amino acids, which are the building blocks of all proteins and some hormones. It is needed in the manufacture of serotonin, melatonin and dopamine. Vitamin B6 deficiencies, although very rare, cause impaired immunity, skin lesions, and mental confusion. A marginal deficiency sometimes occurs in alcoholics, patients with kidney failure, and women using oral contraceptives. MAOIs, ironically, may also lead to a shortage of this vitamin. Many nutritionally oriented doctors believe that most diets do not provide optimal amounts of this vitamin.

* **Biotin**

o Deficiency symptoms include depression

you are on a strict vegan diet and older people are also advised to check their level of vitamin D. People with compromised kidneys or liver are at risk of too little of this vitamin, since the kidneys and liver are required to activate this vitamin in processes taking place in those organs.

Other interesting points: Vitamin D is also classified as a hormone by certain people.

Food sources of vitamin D: Vitamin D is present in fatty fish like kipper, sardines, salmon, tuna and mackerel, liver, egg yolk and butter. Smaller amounts are also present in dark leafy vegetables.

Vitamin E Vitamin E has earned itself a reputation - from spicing up your sex life to banning wrinkles and old age. One of the most important functions of this vitamin is its antioxidant properties. Vitamin E is an essential fat-soluble vitamin that includes eight naturally occurring compounds in two classes designated as tocopherols and tocotrienols. Vitamin E is an effective chain-breaking, lipid-soluble antioxidant in biological membranes, and aids in membrane stability. Vitamin E is a powerful antioxidant, protects your cells from oxidation, and neutralizes unstable free radicals, which can cause damage. This is done by the vitamin E giving up one of its electrons to the electron deficient free radical, making it more stable. While Vitamin E performs its antioxidant functions, it also protects the other antioxidants

Vitamin D in short supply is also linked to having a burning sensation in the mouth and throat, diarrhea, insomnia and visual problems.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Male 400 iu, female 400 iu.

Toxicity and symptoms of high intake: Some clinical guidelines for toxicity are sometimes set as 5,000 to 10,000 iu per day to cause toxicity, but other researchers place the value much higher to reach toxicity. You are however advised to keep your supplement intake to no more than 600 iu per day. Having too much vitamin D in your system could leave a too elevated calcium level, a lower appetite, increased thirst, nausea, vomiting, drowsiness, abdominal pain. A long-term effect of too much vitamin D is the deposit of calcium in soft tissues of the body including the blood vessel walls and kidneys where it can cause serious damage. Best used with: Check to have vitamin A around this vitamin as well as calcium and phosphorus.

When more may be required: When you are very seldom exposed to sunlight, or if you always wear sunscreens with a SPF factor higher than 8, you might need extra vitamin D. This is also the case if

Minerals

*** Iron**

o Iron is involved in the synthesis of serotonin, norepinephrine, GABA (gamma-amino-butyric-acid; a relaxing neurotransmitter) and vitamin B3 (niacin).

o Iron deficiency may result in imbalances in other minerals important in mental health (including zinc and copper), reduction of the blood oxygen carrying capacity and increased absorption of the toxic metal lead.

o Iron deficiency can contribute to hypothyroidism, which can contribute to altered mental state. This is due to irons role in the conversion of phenylalanine to tyrosine (a precursor thyroid hormones).

o While iron is required for the action of antioxidant enzyme catalyses, excess iron can contribute to oxidative stress.

o Depression is often a symptom of chronic iro deficiency. Other symptoms include general weakness, listlessness, exhaustion, lack of appetite, and headaches.

*** Zinc**

o Zinc is a cofactor for over 200 different enzymes, including some important in the synthesis of serotonin, norepinephrine and GABA (gamma-amino-butyric-acid).

o Zinc promotes the development of brain cells regulates copper levels and eliminates candida (funga infection).

o Zinc is required for the metabolism of Thyroid Stimulating Hormone (TSH), with zinc deficiency contributing to hypothyroidism.

o Zinc is antagonistic to heavy metals which can potentially impair mental health (cadmium, lead, mercury).

o Adequate zinc is require for an optimum balance of progesterone, estrogen and testosterone.

o Inadequacies result in apathy, lack of appetite, and lethargy. When zinc is low, copper in the body can increase to toxic levels, resulting in paranoia and fearfulness.

*** Copper**

o Excess copper plays a role in a subgroup of people, particularly women, suffering from depression.

o Some copper is required for the synthesis of norepinephrine and other chemicals important in mental health.

o Copper is involved in reducing levels of histamine (a neurotransmitter important in mental health).

o The enzyme monoamine Oxidase (MAO) which plays a role in the degradation of norepinephrine, epinephrine, dopamine and serotonin, requires copper as a cofactor.

o Copper is involved in the synthesis of myelin, a lipid rich coating that surrounds and insulates nerve fibers.

o The enzyme diamine oxidase, which breaks down histamine, requires copper as a cofactor. High copper lowers histamine levels.

*** Magnesium**

Other interesting points: Ongoing research is looking at the clinical use of vitamin C in the prevention and treatment of human diseases.
Food sources of vitamin C: Good sources of vitamin C are green leafy vegetables, berries, citrus fruits, guavas, tomatoes, melons, papayas etc.

Vitamin D

Vitamin D is also referred to as calciferol and can rightly be called the sunshine vitamin, since the body, in a sunny climate can manufacture this nutrient from sunshine on your skin using cholesterol from your body to do so.Vitamin D helps with increasing the absorption of calcium, assists in bone growth and the integrity of bone and promotes strong teeth. It also helps regulate the amount of phosphorus in the body as well as assisting in a healthy heart and nervous system. In some recent studies it has also shown great promise in assisting psoriasis, the immune system, thyroid function as well as normal blood clotting.

Deficiency of vitamin D: A shortage can lead to softening of the bone and muscle twitching and convulsions, and in children it causes rickets - resulting in bent legs. In adults, the shortage causes loss of minerals from the bones, (osteomalacia) where the bones are sore, tender, and weak muscles with the possibility of deafness developing. In older people, osteoporosis may appear when protein is also lost from the bone.

experience discomfort is difficult, since some people can easily stomach up to 25,000 mg per day, while others start having a problem at 600 or 1,000 mg. Some people using mega dose therapy of vitamin C may have side effects such as gastrointestinal complaints including diarrhea, nausea and abdominal cramps. These side effects normally stop as soon as high potency intake is reduced or stopped.

Best used with: Vitamin C will be more effective if taken with bioflavonoids, calcium and magnesium. To enhance the antioxidant properties, it will be best to take it with the other anti-oxidants, as there is strong evidence of synergy between all of them.

When more may be required: Mega doses of vitamin C should be avoided in individuals with a history of renal stones due to oxalate formation or hemochromatosis or other diseases related to excessive iron accumulation. Extremely high dosage of vitamin C may predispose premature infants to hemolytic anemia due to the fragility of their red blood cells. The need for vitamin C will dramatically increase in times when the body is subjected to trauma, infections, and strenuous exercise, elevated environmental temperatures or if the person is a smoker. Smokers should supplement with another 100 mg per day. Be careful of taking aspirin and vitamin C together - it may cause stomach irritation.

Enemy of vitamin C: Antagonists that destroy this vitamin are air, heat, water as well as prolonged storage, overcooking and processing. Antacids, alcohol, antidepressants, birth control pills and steroids will also deplete this vitamin.

o Magnesium is involved in over 300 metabolic reactions including in serotonin and norepinephrine synthesis.

o Deficiency symptoms are varied and include irritability, sleep disturbances, depression, personalit changes, fatigue, anxiousness, and hallucinations, as well as a variety of physical problems. Most diets do not include enough magnesium, and stress also contributes to magnesium depletion and muscle tremors.

o Histamine synthesis is increased when magnesium is deficient.

*** Calcium**

o Calcium indirectly enhances the synthesis of serotonin.

o Calcium helps regulate histamine production

o Depletion affects the central nervous system. Low levels of calcium cause nervousness, apprehension, irritability, and numbness.

*** Chromium**

o Chromium regulates the effects of insulin, enhancing its metabolic effects. Excess insulin can contribute to hypoglycemia and hypothyroidism (insulin can inhibit thyroid function), both of which can contribute to impaired mental health.

*** Manganese:**

This metal is needed for proper use of the B-complex vitamins and vitamin C. Since it also plays a role in amino-acid formation, a deficiency may contribute to depression stemming from low levels of the neurotransmitters serotonin and norepinephrine. Manganese also helps stabilize blood sugar and prevent hypoglycemic mood swings.

***Potassium:**

Depletion is frequently associated with depression, tearfulness, weakness, and fatigue.

II. NARRITIVES ON VITAMINS

Vitamin B-1

Thiamin, also called vitamin B1, is used in many different body functions and deficiencies may have far reaching effects on the body, yet very little of this vitamin is stored in the body, and depletion of this vitamin can happen within 14 days. **T**hiamin is also a miraculous nutrient, somebody suffering from beriberi, scarcely able to lift their head from their pillow, will respond quickly from injected thiamin, and will be on their feet within a matter of hours. Thiamin may enhance circulation, helps with blood formation and the metabolism of carbohydrates. It is also required for the health of the nervous system and is used in the biosynthesis of a number of cell constituents, including the neurotransmitter acetylcholine and gamma-aminobutyric acid (GABA). It is used in the manufacture of hydrochloric acid, and therefore plays a part in digestion. It is also great for the brain and may help with depression and assist with memory and learning. In children it is required for growth and has shown some indication to assist in arthritis, cataracts as well as infertility.

Deficiency of vitamin B1: Minor deficiencies may be indicated with extreme fatigue, irritability, constipation, edema and an enlarged liver. Forgetfulness, gastrointestinal disturbances, heart changes, irritability, labored breathing and loss of enhance the immune system and help reduce cholesterol levels, high blood pressure and preventing arteriosclerosis.

Deficiency of vitamin C: When there is a shortage of VITAMIN C, various problems can arise, although scurvy is the only disease clinically treated with vitamin C. However, a shortage of vitamin C may result in "pinpoint" hemorrhages under the skin and a tendency to bruise easily, poor wound healing, soft and spongy bleeding gums and loose teeth. Edema (water retention) also happens with a shortage of vitamin C, and weakness, a lack of energy, poor digestion, painful joints and bronchial infection and colds are also indicative of an under-supply.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. The RDA is 60 mg, per day - yet this amount will only prevent you from picking up scurvy and more recent studies suggest that an intake between 200 - 500 mg per day may be the most beneficial for healthy people. The recommend dosage for pregnant or lactating women is 75-95 mg per day.

Toxicity and symptoms of high intake: Since ascorbic acid is a water-soluble vitamin, toxic levels are not built up or stored in the body, and any excess is lost mostly through urine. If extremely large amounts are taken gastrointestinal problems may appear, but will normalize when the intake is cut or reduced. To determine a level where a person might

have been associated with excess vitamin B12 intake from food and supplements in healthy individuals. The Institute recommends that adults over 50 years of age get most of their vitamin B12 from supplements or fortified food because of the high incidence of impaired absorption of B12 from unfortified foods in this population.

Vitamin C:
Vitamin C also known as, ascorbic acid, L-ascorbic acid, dehydroascorbic acid, the antiscorbutic vitamin, L-xyloascorbic acid and L-threo-hex-2-uronic acidy-lactone, is a much talked about vitamin, with people claiming it as a cure-all for may diseases and problems - from cancer to the common cold. Yet, this miracle vitamin cannot be manufactured by the body, and needs to be ingested. Vitamin C is required in the synthesis of collagen in connective tissue, neurotransmitters, steroid hormones, carnitine, conversion of cholesterol to bile acids and enhances iron bioavailability. Ascorbic acid is a great antioxidant and helps protect the body against pollutants. Because vitamin C is a biological reducing agent, it is also linked to prevention of degenerative diseases - such as cataracts, certain cancers and cardiovascular diseases. Ascorbic acid also promotes healthy cell development, proper calcium absorption, normal tissue growth and repair - such as healing of wounds and burns. It assists in the prevention of blood clotting and bruising, and strengthening the walls of the capillaries. Vitamin C is needed for healthy gums, to help protect against infection, and assisting with clearing up infections and is thought to

appetite may also be experienced. With too little thiamin around a person may also experience nervousness, numbness of the hands and feet, pain and sensitivity, poor coordination, tingling sensations, weak and sore muscles, general weakness and severe weight loss.
Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Male 1.4 mg per day and female 1.0 mg per day; although 50 mg is usually used in supplementation.
Toxicity and symptoms of high intake: Thiamin toxicity is uncommon; as excesses are readily excreted, although long-term supplementation of amounts larger than 3 gram have been known to cause toxicity.
Best used with: Thiamin should be taken with the B group vitamins and manganese.
When more may be required: When taking alcohol, antacids and birth control pills or if you have hormone replacement therapy, you need to look at your thiamin intake.
People suffering from depression or anxiety and those passing large volumes of urine, or suffering from an infection may all require more thiamin.
Enemy of vitamin B1: Thiamin is destroyed in cooking, and intake may be low if the diet is high in refined foods. Do not add soda if you are boiling greer

/egetables since soda is alkaline and will destroy hiamin.

Other interesting points: It is thought that thiamin :an be useful for motion sickness in air and sea ravel, and that this vitamin also repels insects when excreted through the skin.

Food sources of vitamin B1: Sunflower seeds, peanuts, wheat bran, beef liver, pork, seafood, egg-olk, beans all contain good amounts of thiamin.

Vitamin B2 - riboflavin

Riboflavin (vitamin B2) is manufactured in the body by the intestinal flora and is easily absorbed, although very small quantities are stored, so there is a constant need for this vitamin. It is required by the body to use oxygen and the metabolism of amino acids, fatty acids, and carbohydrates. Riboflavin is further needed to activate vitamin B6 (pyridoxine), helps to create niacin and assists the adrenal gland. It may be used for red blood cell formation, antibody production, cell respiration, and growth. It eases watery eye fatigue and may be helpful in the prevention and treatment of cataracts. Vitamin B2 is required for the health of the mucus membranes in the digestive tract and helps with the absorption of iron and vitamin B6. Although it is needed for periods of rapid growth, it is also needed when protein intake is high, and is most beneficial to the skin, hair and nails.

Deficiency of vitamin B2: A shortage of this vitamin may manifest itself as cracks and sores at the corners of the mouth, eye disorders, inflammation of the mouth and tongue, and skin lesions. Dermatitis, dizziness, hair loss, insomnia, light sensitivity, poor

appear because it usually takes years to deplete normal body stores of B12. However, severe symptoms of B12 deficiency, most often featuring poor neurological development, can show up quickly in children and breast-fed infants of women who follow a strict vegetarian diet.

Fortified cereals are one of the few plant food sources of vitamin B12, and are an important dietary source of B12 for vegetarians who consume no eggs, milk or milk products. Vegetarian adults who do not consume plant foods fortified with vitamin B12 need to consider taking a B12-containing supplement. Vegetarian mothers should consult with a pediatrician regarding appropriate vitamin B12 supplementation for their infants and children.

Caution: Folic acid may mask signs of vitamin B12 deficiency

Folic acid can correct the anemia that is caused by vitamin B12 deficiency. Unfortunately, folic acid will not correct the underlying B12 deficiency. Permanent nerve damage can occur if vitamin B12 deficiency is not treated. Folic acid intake from food and supplements should not exceed 1,000 micrograms (mcg) daily because large amounts of folic acid can hide the damaging effects of vitamin B12 deficiency. Adults older than 50 years are advised to consult with their physician about the advisability of taking folic acid without also taking a vitamin B12 supplement.

What is the health risk of too much vitamin B12?

Vitamin B12 has a very low potential for toxicity. The Institute of Medicine states that no adverse effects

deficiency have an underlying stomach or intestinal disorder that limits the absorption of vitamin B12 (10). Sometimes the only symptom of these intestinal disorders is anemia resulting from B12 deficiency. Characteristic signs of B12 deficiency include fatigue, weakness, nausea, constipation, flatulence (gas), loss of appetite, and weight loss Deficiency also can lead to neurological changes such as numbness and tingling in the hands and feet. Additional symptoms of B12 deficiency are difficulty in maintaining balance, depression, confusion, poor memory, and soreness of the mouth or tongue. Some of these symptoms can also result from a variety of medical conditions other than vitamin B12 deficiency. It is important to have a physician evaluate these symptoms so that appropriate medical care can be given.

Individuals with gastrointestinal disorders

Individuals with stomach and small intestinal disorders may not absorb enough vitamin B12 from food to maintain healthy body stores (16). Sprue and celiac disease are intestinal disorders caused by intolerance to protein in wheat and wheat products. Regional enteritis, localized inflammation of the stomach or small intestine, also results in generalized malabsorption of vitamin B12 (7). Excess bacteria in the stomach and small intestine also can decrease vitamin B12 absorption.

Vegetarians who do not eat meats, fish, eggs, milk or milk products, or B12 fortified foods consume no vitamin B12 and are at high risk of developing a deficiency of vitamin B12 (9, 25). When adults adopt a vegetarian diet, deficiency symptoms can be slow to digestion, retarded growth, and slow mental responses have also been reported. Burning feet can also be indicative of a shortage.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Male 1.6 mg per day and female 1.2 mg per da although 50 mg is mostly recommended for supplementation.

Toxicity and symptoms of high intake: The limitec capacity to absorb orally administered riboflavin precludes its potential for harm. Riboflavin intake of many times the RDA is without demonstrable toxicity A normal yellow discoloration of the urine is seen wit an increased intake of this vitamin - but it is normal and harmless.

Best used with: Riboflavin is best taken with B grou vitamins and vitamin C.

But please note - if taking a B2 supplement make sure that the B6 amount is nearly the same.

When more may be required: Extra might be neede when consuming alcohol, antibiotics, and birth control pills or doing strenuous exercise. If you are under a lot of stress or on a calorie-restricted diet, this vitamin could also be of use.

Enemy of nutrient of vitamin B2: Riboflavin is sensitive to light.

Other interesting points: This nutrient is of use in the health of hair, nails and skin.

Food sources of vitamin B2: Organ meats, nuts, cheese, eggs, milk and lean meat are great sources of riboflavin, but is also available in good quantities in green leafy vegetables, fish, legumes, whole grains, and yogurt.

Vitamin B-3

Vitamin B3 - niacin, niacinamide, nicotinic acid. Niacin is also called nicotinic acid, niacinamide or nicotinic acid and referred to as vitamin B 3, which can be manufactured by the body. Niacin is derived from two compounds - nicotinic acid and niacinamide. Vitamin B3 - niacin - is required for cell respiration, helps in the release of energy and metabolism of carbohydrates, fats, and proteins, proper circulation and healthy skin, functioning of the nervous system, and normal secretion of bile and stomach fluids. It is used in the synthesis of sex hormones, treating schizophrenia and other mental illnesses, and a memory-enhancer. Nicotinic acid (but not nicotinamide) given in drug dosage improves the blood cholesterol profile, and has been used to clear the body of organic poisons, such as certain insecticides. People report more mental alertness when this vitamin is in sufficient supply.

Deficiency of vitamin B3: A shortage of niacin may be indicated with symptoms such as canker sores, depression, diarrhea, dizziness, fatigue, halitosis, headaches, indigestion, insomnia, limb pains, loss of appetite, low blood sugar, muscular weakness, skin eruptions, and inflammation.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you

What foods provide vitamin B12?:

Vitamin B12 is naturally found in animal foods including fish, milk and milk products, eggs, meat, and poultry. Fortified breakfast cereals are an excellent source of vitamin B12 and a particularly valuable source for vegetarians (5, 6, 7). The table of selected food sources of vitamin B12 suggests dietary sources of vitamin B12.

What is the Recommended Dietary Allowance for vitamin B12 for adults?:

The Recommended Dietary Allowance (RDA) is the average daily dietary intake level that is sufficient to meet the nutrient requirements of nearly all (97 to 98 percent) healthy individuals in each life-stage and gender group (7). The 1998 RDAs for vitamin B12 (in micrograms) for adults (7) are:

Life-Stage	Men	Women	Pregnancy	Lactation
Ages 19+	2.4 mcg	2.4 mcg		
All ages		2.6 mcg	2.8 mcg	

Results of two national surveys, the National Health and Nutrition Examination Survey (NHANES III-1988-91) (8) and the Continuing Survey of Food Intakes by Individuals (CSFII 1994-96) (7) found that most adult men and women consume recommended amounts of vitamin B12 (6-8).

When is a deficiency of vitamin B12 likely to occur?:

Diets of most adult Americans provide recommended intakes of vitamin B12, but deficiency may still occur as a result of an inability to absorb B12 from food. It can also occur in individuals with dietary patterns that exclude animal or fortified foods (9). As a general rule, most individuals who develop a vitamin B12

When more may be required: Pregnant women are sometimes advised to take a small supplement of folic acid to help prevent spina bifida and other congenial nervous disorders, and may also assist to reduce the risk of toxemia in pregnancy, premature labor and hemorrhaging. It is also thought to enhance the production of milk after delivery.
Sufferers of psoriasis may consider taking extra folic acid, people under stress or anyone consuming alcohol. Women on birth control pills or busy with hormone replacement therapy may benefit from folic acid, as well as children if they are on goats milk instead of cows milk.
Enemy of vitamin B9: Light, heat and storage for extended periods can destroy this vitamin.
Other interesting points: Localized deficiencies of folic acid may exist for smokers, as low levels have been detected in the lungs of smokers.
Food sources of vitamin B9: Fresh green vegetables, such as spinach and broccoli contain folic acid. It is also found in fruit, starchy vegetables, beans, whole grains and liver.

Vitamin B-12:
Vitamin B12, also called cobalamin, is important to good health. It helps maintain healthy nerve cells and red blood cells, and is also needed to make DNA, the genetic material in all cells (1-4). Vitamin B12 is bound to the protein in food. Hydrochloric acid in the stomach releases B12 from protein during digestion. Once released, B12 combines with a substance called intrinsic factor (IF) before it is absorbed into the bloodstream.

require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Male 18 mg per day and female 13 mg per day although 100 mg is mostly used in supplementation. Large doses given to lower cholesterol may produce hyperuricemia, and hepatic abnormalities. These effects are reversed if the drug is reduced in amount or discontinued.
Toxicity and symptoms of high intake: Nicotinic acid, but not nicotinamide in doses larger than 200 mg causes flushing by dilating the blood vessels, which can also cause the blood pressure to drop. These flushes are normally harmless. Large dosages can also cause itching, elevated blood glucose, peptic ulcers and liver damage
Best used with: Niacin is best taken with the B group vitamins and vitamin c.
When more may be required: Consuming alcohol and not having enough protein in your diet may increase your need for niacin. People with diabetes, glaucoma, any liver disease or peptic ulcers should be careful of niacin supplementation.
Enemy of vitamin B3: Niacin is lost readily when food is cooked in water.
Other interesting points: Nicotinamide is under investigation for helping to prevent and control diabetes.
Food sources of vitamin B3: Liver, lean meat, poultry, fish, rabbit, nuts, peanut yeast, meats including liver, cereals, legumes, asparagus, seeds,

milk, green leafy vegetables, and fish. Your daily cup of coffee also provides about 3 milligrams of niacin.

Vitamin B-5

Pantothenic acid, also known as vitamin B5, as well as the "anti-stress vitamin" is part of the B group vitamins and classified as a water-soluble vitamin. This nutrient can be manufactured in the body by the intestinal flora.Vitamin B5 plays an important role in the secretion of hormones, such as cortisone because of the role it plays in supporting the adrenal gland. These hormones assist the metabolism, help to fight allergies and are beneficial in the maintenance of healthy skin, muscles and nerves. Pantothenic acid is also used in the release of energy as well as the metabolism of fat, protein and carbohydrates. It is used in the creation of lipids, neurotransmitters, steroid hormones and hemoglobin.Some are of the opinion that pantothenic acid is also helpful to fight wrinkles as well as graying of the hair.

Deficiency of vitamin B5: With Vitamin B5 in short supply symptoms like fatigue, headaches, nausea, tingling in the hands, depression, personality changes and cardiac instability have been reported. Frequent infection, fatigue, abdominal pains, sleep disturbances and neurological disorders including numbness, paresthesia (abnormal sensation such as "burning feet" syndrome), muscle weakness and cramps are also possible indications that this nutrient is in short supply. Biochemical changes include increased insulin sensitivity, lowered blood cholesterol, decreased serum potassium, and failure of adrenocorticotropin to induce eosinopenia.

of folic acid may be indicated with diarrhea, heartburn and constipation. Folic acid is very important in the development of the nervous system of a developing fetus.

Deficiency of vitamin B9: A deficiency of folic acid on an unborn baby may increase the risk of the baby being born with spina bifida and other serious defects of the nervous system.

When deficient of folic acid, you might suffer from fatigue, acne, a sore tongue, cracking at the corners of your mouth (same as deficiency of vitamin B2, vitamin B6 as well as iron). Long term deficiency may result in anemia and later in osteoporosis, as well as cancer of the bowel and cervix.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. 400 micrograms per day.

Toxicity and symptoms of high intake: Anybody on medication for epilepsy should be careful with large amounts of folic acid, since it can change the functioning of such drugs.

Too much folic acid may mask a Vitamin B-12 deficiency. Regular high intake of folic acid may cause digestive upset, energy loss and insomnia.

Best used with: Folic acid is more effective when taken with the B group vitamins especially Vitamin B-12 and Vitamin B-6. Vitamin C is also good to have around folic acid.

must be taken regularly to ensure an adequate amount in the body. Anybody on a very high protein diet, using alcohol, or allergic to MSG (mono sodium glutamate) and/or tartrazine may also consider increasing their vitamin B6 intake.

Enemy of vitamin B6: Pyridoxine is sensitive to sunlight, cooking and processing Cortisone is known to impair the absorption of pyridoxine.

Other interesting points: Exercising may aid the production of the active form of vitamin B6.

Food sources of vitamin B6: Good sources to obtain pyridoxine from are brewer's yeast, eggs, chicken, carrots, fish, liver, kidneys, peas, wheat germ, walnuts.

Vitamin B-9

Folic acid, also known as Vitamin B9, is also referred to as folacin or folate and its chemical name is pteroylglutamic acid. This vitamin can be manufactured by the body and be stored in the liver. Folic acid is required for DNA synthesis and cell growth and is important for red blood cell formation, energy production as well as the forming of amino acids. Folic acid is essential for creating heme, the iron containing substance in hemoglobin, crucial for oxygen transport. It is important for healthy cell division and replication, since its involvement as coenzyme for RNA and DNA synthesis. It is also required for protein metabolism and in treating folic acid anemia. Folic acid also assists in digestion, and the nervous system, and works at improving mental as well as emotional health. This nutrient may be effective in treating depression and anxiety. Shortage

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. No recommended dosage but 10 - 100 mg is indicated.

Toxicity and symptoms of high intake: It does not appear to be toxic in high dosage, although diarrhea digestive disturbances and water retention have beer reported on dosage exceeding 10 g a day. Taking 1,500 mg a day over an extended period may cause sensitivity to the teeth.

Best used with: It is most effective when taken with the B group vitamins, Vitamin A, vitamin C and Vitamin E

When more may be required: People under stress, prone to allergies, consuming alcohol or eating too many refined foods might develop a shortage of this vitamin.

Enemy of vitamin B5: Pantothenic acid can be lost in cooking - particularly with roasting or milling, as well as when exposed to acids like vinegar, or alkali such as baking soda. It is also destroyed to a large degree in canning.

Other interesting points: Do not add soda to the water when cooking vegetables - it will destroy the pantothenic acid.

Food sources of vitamin B5: Beef, brewers yeast, eggs, fresh vegetables, kidney, legumes, liver, mushrooms, nuts, pork, royal jelly, saltwater fish, torula yeast, whole rye flour, and whole wheat.

Vitamin B-6

Vitamin B6, also known as pyridoxine is part of the B group vitamins and is water-soluble and is required for both mental and physical health. Pyridoxine is required for the balancing of hormonal changes in women as well as assisting the immune system and the growth of new cells. It is also used in the processing and metabolism of proteins, fats and carbohydrates, while assisting with controlling your mood as well as your behavior. Pyridoxine might also be of benefit for children with learning difficulties, as well as assisting in the prevention of dandruff, eczema and psoriasis. It assists in the balancing of sodium and potassium as well promotes red blood cell production. It is further involved in the nucleic acids RNA as well as DNA. It is further linked to cancer immunity and fights the formation of the toxic chemical homocysteine, which is detrimental to the heart muscle. Women in particular may suffer from pre-menstrual fluid retention, severe period pains, emotional PMS symptoms, premenstrual acne and nausea in early pregnancy. Mood swings, depression as well as loss of sexual drive is sometimes noted when pyridoxine is in short supply and the person is on hormone replacement therapy or on birth control pills.

Deficiency of vitamin B6: Irritability, nervousness and insomnia as well as general weakness, skin changes such as dermatitis and acne as well asthma and allergies might develop when pyridoxine is in short supply. Symptoms may include nails that are ridged, an inflamed tongue as well as changes to your bones - which can include osteoporosis and arthritis. Kidney stones may also appear.

Vitamin B6 deficiency symptoms: will be very much like those of B2 and B3. Vitamin B6 is needed by the body to manufacture its own B3 vitamin.

Dosage: The dosage underneath is the (RDA), but be aware that this dosage is the minimum that you require per day, to ward off serious deficiency of this particular nutrient. In the therapeutic use of this nutrient, the dosage is usually increased considerably, but the toxicity level must be kept in mind. Males 2 mg per day and females 2 mg per day.

Toxicity and symptoms of high intake: Supplementation should be controlled as extreme dosage, such as in excess of 2,000 mg per day, may cause neurological damage. People on medication for Parkinson's disease should be careful about taking Vitamin B6 as it can inactivate levo-dopa.People taking pyridoxine late at night sometimes experience very vivid dreams.

Best used with: Pyridoxine should be taken together with the entire B group vitamins, and in supplementation the quantity of B6 should be nearly the same as B2, as the B 2 is needed to activate the Pyridoxine. Vitamin C is a good partner in nutrition and magnesium, sodium, potassium, zinc, linoleic acid and fatty acids make good running mates.

When more may be required: Should you be taking antidepressants, contraceptive pills or be on hormone replacement therapy you may need more of this vitamin. As this vitamin is readily lost in the urine, it